

SOI: 1.1/TAS

DOI: 10.15863/TAS

Scopus ASJC: 1000

ISSN 2308-4944 (print)

ISSN 2409-0085 (online)

№ 10 (114) 2022

Teoretičeskaâ i prikladnaâ nauka

Theoretical & Applied Science



Philadelphia, USA

**Teoretičkaâ i prikladnaâ
nauka**

**Theoretical & Applied
Science**

10 (114)

2022

International Scientific Journal

Theoretical & Applied Science

Founder: **International Academy of Theoretical & Applied Sciences**

Published since 2013 year. Issued Monthly.

International scientific journal «Theoretical & Applied Science», registered in France, and indexed more than 45 international scientific bases.

Editorial office: <http://T-Science.org> Phone: +777727-606-81

E-mail: T-Science@mail.ru

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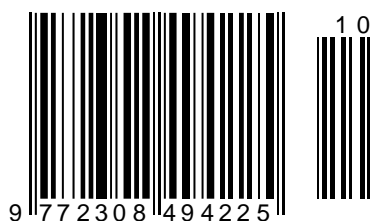
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ISSN 2308-4944



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International Scientific Journal
Theoretical & Applied Science



ISJ Theoretical & Applied Science, 10 (114), 884.
Philadelphia, USA



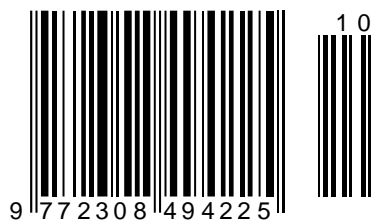
Impact Factor ICV = 6.630

Impact Factor ISI = 0.829
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The percentage of rejected articles:



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OAJI (USA) = 0.350

SOI: [1.1/TAS](#) DOI: [10.15863/TAS](#)

International Scientific Journal Theoretical & Applied Science

p-ISSN: 2308-4944 (print) e-ISSN: 2409-0085 (online)

Year: 2022 Issue: 10 Volume: 114

Published: 19.10.2022 <http://T-Science.org>

Issue

Article



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DIGITAL RECEIVER PRODUCTIVITY AND BIT ERROR PROBABILITY

Abstract: The paper presents the optimal value of BER by selecting the threshold current. By optimizing the threshold current, we should get the optimal value of BER. The change of the threshold level in the decision device has a great influence on the optimization of the $Q=(BER)$ parameter. The threshold I_{th} should be chosen so as to minimize the BER. The paper presents a $BER= \Psi(Q)$ graph where even a small change in Q leads to a significant reduction (improvement) in BER.

Performance degradation/disruption of an optical telecommunication system, among other factors, is uniquely dependent on the receiver noise, transmitter intensity noise (RIN), which requires proper design and selection of operating modes considering the operating conditions of the transmission line.

Key words: BER - Bit Error rate; RIN - Relative Intensity Noise; DFOTS - Digital fiber-optic transmission system.

Language: English

Citation: Berianidze, T., & Rostiashvili, N. (2022). Digital Receiver Productivity and Bit Error Probability. *ISJ Theoretical & Applied Science*, 10 (114), 201-204.

Soi: <http://s-o-i.org/1.1/TAS-10-114-36> **Doi:**  <https://dx.doi.org/10.15863/TAS.2022.10.114.36>

Scopus ASCC: 2600.

Introduction

Productivity of the digital receiver is the technical ability of the receiver to maintain the main characteristics of the receiver, both under the conditions of its standard (normal) operation and during the emergency mode. One of the important characteristics of the connection is the high bit error probability (BER), completely above the designed level. Performance degradation/disruption of an optical telecommunication system, among other factors, is uniquely dependent on the receiver noise, transmitter intensity noise (RIN), which requires proper design and selection of operating modes considering the operating conditions of the transmission line. The presence of noise degrades the

quality of the connection as a whole, as the quality of the useful signal deteriorates.

As mentioned many times, the error probability (BER) in the case of a uniform distribution of data is the same as the bit error probability coefficient K . In general, optical systems are characterized by high quality of connection. For satisfactory quality of connection in optical systems, BER should be higher than 10^{-9} . In particular, in high-quality optical systems, $BER=10^{-9}-10^{-15}$ is within the limits.

In order to determine the BER, we must assume that the noise is described by a Gaussian (normal) distribution law as a standard deviation from symbols 0 and 1. The probability of these deviations is usually different for months 0 and 1, however, in the case of

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the dominant mode of thermal noise, both become the same σT .

fig. 1.1 presents several cases: as we can see, among these distributions is the I_{th} decision-making threshold (threshold).

If $I \geq I_{th} = 1$ the bit is 1
 If $I < I_{th} = 0$ the bit is 0

Thus, if the curves of probabilities 1 and 0 cross each other, the area between the curves determines the probability of error.

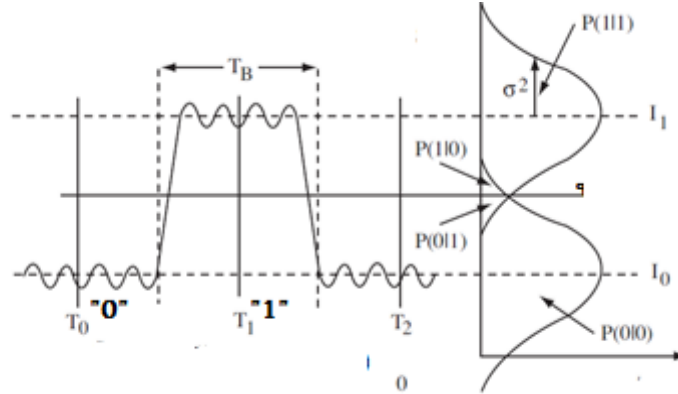


fig. 1.1. Receiving data in the optical receiver $P(1/0)$ Probability of transition from "1" to "0"

Receiving data in the optical receiver $P(1/0)$ transition of "1" to "0"

Probability, (0/1) i.e., error occurs when bit 0 is defined as and bit 1 is defined as $I < I_{th}$.

For BER data with a statistically equal bit value (that is, the number of 1s and 0s in the total signal is distributed equally, (statistically equal) as 50%/50%), then:

$$BER = \frac{1}{2} (P(0/1) + P(1/0)) \quad (1.1)$$

$$P(0/1) = \frac{1}{\sigma_1 \sqrt{2\pi}} \int_{I_{th}}^{\infty} \left[\frac{(I - I_1)^2}{2\sigma_1^2} \right] dI = \frac{1}{2} \operatorname{erfc} \left(\frac{I - I_{th}}{\sigma_1 \sqrt{2}} \right) \quad (1.2)$$

$$P(0/1) = \frac{1}{\sigma_0 \sqrt{2\pi}} \int_{I_{th}}^{\infty} \left[\frac{(I - I_0)^2}{2\sigma_0^2} \right] dI = \frac{1}{2} \operatorname{erfc} \left(\frac{I_{th} - I_0}{\sigma_0 \sqrt{2}} \right) \quad (1.3)$$

$$\operatorname{erfc}(x) = \frac{2}{\sqrt{\pi}} \int_x^{\infty} \exp(-y^2) dy \quad (1.4)$$

There are standard tables for reporting additional error functions. In case of using additional error function, BER for binary signals is given as

$$BER = \frac{1}{4} \left[\frac{1}{2} \operatorname{erfc} \left(\frac{I_1 - I_{th}}{\sigma_1 \sqrt{2}} \right) + \frac{1}{2} \operatorname{erfc} \left(\frac{I_{th} - I_0}{\sigma_0 \sqrt{2}} \right) \right] \quad (1.5)$$

Thus, BER represents the current decision function with respect to the I_{th} threshold (threshold) current. Therefore, by selecting this threshold current, we need to get its optimal value, that is, by optimizing the threshold current, we need to get the optimal value

of BER. i.e. the threshold I_{th} should be chosen so as to minimize the BER,

$$Q_1 = \frac{I_1 - I_{th}}{\sigma_1} \quad (1.6)$$

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$$Q_2 = \frac{I_{th} - I_0}{\sigma_0} \quad (1.7)$$

So,

$$Q_1 = \frac{I_1 - I_{th}}{\sigma_1} = Q_2 = \frac{I_{th} - I_0}{\sigma_0} = Q \quad (1.8)$$

then

The optimal value of the threshold $I_{th\ opt}$ will be the minimum of BER:

$$I_{th\ opt} = \frac{\sigma_0 I_1 + \sigma_1 I_0}{\sigma_0 + \sigma_1} \quad (1.9)$$

The change of the threshold level in the decision device has a great influence on the optimization of the $Q=(BER)$ parameter. The optimal threshold setting is selected by selecting all four ($I_1, I_0, \sigma_1, \sigma_0$) parameters in this formula. The parameters I_1, I_0 , are the input signal levels, and σ_1, σ_0 are the thermal and quantum mean square deviation values from the I_1, I_0 , levels. Since the average current I_p is different for levels 1 and 0, the scatter noise and thermal noise levels and variances will be different. In the case when the thermal mode dominates ($\sigma_0 \gg \sigma_1$ thermal noise ($\sigma_0 = \sigma T$)) the threshold will be the average value, that is, the threshold will be at half of the 1 and 0 levels.

$$I_{th} = \frac{I_1 - I_0}{2} \quad (1.10)$$

In the case of the dominance of the scattering mode (scattering noise $\sigma_1 = \sigma_s$) $\sigma_0 \ll \sigma_1$ the threshold approaches the threshold (below the threshold) for the optimal threshold

$$BER = \frac{1}{2} \operatorname{erfc} \left(\frac{Q}{\sqrt{2}} \right) \quad (1.11)$$

where, the Q -factor is defined as

$$Q = \frac{I_1 - I_0}{\sigma_1 + \sigma_0} \quad (1.12)$$

In the case of $Q > 3$, the probability function, which, as mentioned above, is given by the tables can be approximately approximated in the following simplified form:

$$BER \approx \frac{1}{Q\sqrt{2\pi}} \exp \left(-\frac{Q^2}{2} \right) \quad (1.13)$$

This formula essentially gives us the noise margin of the binary signal. The relationship $BER = \Psi(Q)$ can be determined from the graph (Fig. 1.2.)

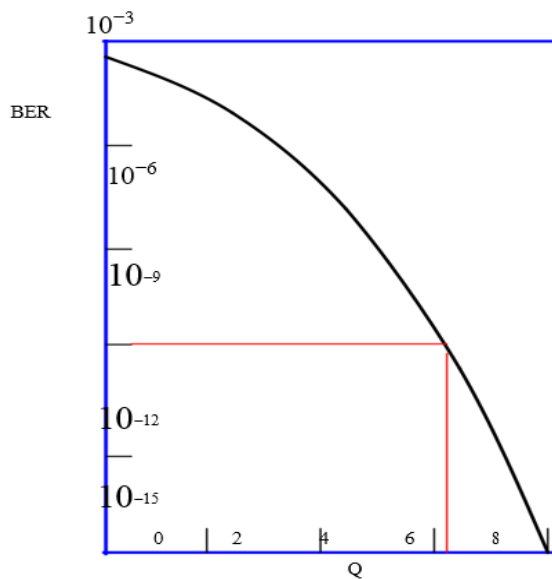


Fig. 1.2. BER= Ψ (Q) dependence graph

The given graph shows that $Q=6$ ($BER=10^{-9}$) to the right ($Q=7,8$) in the middle, when the value of BER changes very quickly, by several orders of magnitude ($BER=10^{-10}$ - 10^{-15}), this In between, the $BER = \Psi(Q)$ dependence curve changes very steeply, and even a small change in Q leads to a significant reduction (improvement) in BER. Which is technically difficult to achieve but very important.

Results and its discussion. Optimizing the receiving threshold of the GSM is of great importance in improving the overall optical communication. By decisively optimizing the receiver, we ensure that the probability of bit errors is optimized. Maintaining a critical threshold optimization position in the following: In such a selection of parameters, when among all possible cases of the threshold of the

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decisive device, the best (optimal) value is obtained, which guarantees the best value of BER_{opt}.

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SOI: [1.1/TAS](#) DOI: [10.15863/TAS](#)

International Scientific Journal Theoretical & Applied Science

p-ISSN: 2308-4944 (print) e-ISSN: 2409-0085 (online)

Year: 2022 Issue: 10 Volume: 114

Published: 19.10.2022 <http://T-Science.org>

Issue

Article



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FORMING STUDENTS' LINGUISTIC AND CULTURAL COMPÉTENCE ON THE BASIS OF FOLKLORE MATERIALS AS A SOURCE OF KNOWLEDGE

Abstract: This article contains information about folklore as folk wisdom, noting the role and importance of folklore as a source of linguistic and cultural cognition, presents teaching materials on folklore for the formation of specific moral qualities among young students, and also help to enrich students' vocabulary, enhance their cognitive activities, increase their interest in the study of the Russian language, and foster a culture of inter-ethnic relations and tolerance for other peoples and ethnic groups.

Key words: linguoculture, folklore, wisdom, cognition, cognitive aspect, linguocultural competence, morality, moral qualities, formation, interest, motivation, tolerance, vocabulary, texts, cultural character, proverbs, tales, legends, national, tradition.

Language: Russian

Citation: Sadykova, R. R., & Mamadzhanova, G. M. (2022). Forming students' linguistic and cultural competence on the basis of folklore materials as a source of knowledge. *ISJ Theoretical & Applied Science*, 10 (114), 205-209.

Soi: <http://s-o-i.org/1.1/TAS-10-114-37> **Doi:**  <https://dx.doi.org/10.15863/TAS.2022.10.114.37>

Scopus ASCC: 3304.

ФОРМИРОВАНИЕ ЛИНГВОКУЛЬТУРОЛОГИЧЕСКОЙ КОМПЕТЕЦИИ СТУДЕНТОВ НА ОСНОВЕ ФОЛЬКЛОРНЫХ МАТЕРИАЛОВ КАК ИСТОЧНИКА ПОЗНАНИЯ

Аннотация: В данной статье содержатся сведения о фольклоре как народной мудрости, отмечается роль и значение фольклора, который является источником лингвокультурологического познания, представлены учебные материалы во фольклору в целях формирования у студенческой молодёжи конкретных моральных, нравственных качеств, а также способствуют обогащению словарного запаса студенческой молодёжи, активизации их познавательной деятельности, повышает интерес к изучению русского языка, воспитывает культуру межнациональных отношений, толерантности к другим народам и этносам.

Ключевые слова: лингвокультурология, фольклор, мудрость, познание, когнитивный аспект, лингвокультурологическая компетенция, нравственность, моральные качества, формирование, интерес, мотивация, толерантность, словарный запас, тексты, культурологический характер, пословицы, сказки, легенды, национальный, традиция.

Введение

Динамизм развития лингвокультурологической науки, а также тщательное исследование

лингвокультурологических метаединиц в рамках как российской и отечественной, так и зарубежной науки, специфика их разработки и особенности их применения, являются предпосылками для

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раскрытия общей логики построения целостной метаязыковой системы лингвокультурологической науки. Всё это говорит о роли межкультурной коммуникации и междисциплинарного трансфера в развитие и обосновании понятийного аппарата лингвокультурологии.

Начало всех начал - истоки национальной культуры - это народная мудрость, народная память, связывающая прошлое с настоящим и будущим, отражающая представления народа о мире, человечности, добре и зле, справедливости.

Бесспорно, основа каждой национальной художественной культуры - народное творчество (искусство слова, устное народное творчество: словесность, народная музыка и др.).

Современный вуз призван формировать у учащейся молодёжи конкретные моральные, нравственные качества, опираясь, прежде всего на исторический опыт цивилизаций, моральные общечеловеческие критерии: патриотизм, гуманизм, трудолюбие, уважение к старшим, чувство долга, коллективизм, честность, преданность, долг, совесть, правдивость, терпимость по отношению к людям и т.д. Национальные корни жизни каждого этноса, народа раскрыты в его национальных традициях, истории и культуре. Одним из таких благодатных и бесценных источников, безусловно, является фольклор.

Как известно, фольклор - выразитель народного самосознания, в переводе на русский язык значит "народная мудрость"[2, с. 169] – такое определение глубоко справедливо, ибо в нём отражён жизненный опыт предков, их бесценные суждения и мысли о жизненных реалиях.

Устное народное творчество, служившее народу в течение многих веков, явилось учебником жизни, в котором спрессована мудрость, житейская философия, этика и, конечно, оно стало средством воспитания национального характера, лучших человеческих качеств.

В настоящее время осуществляется тесная связь фольклористики и с другими науками, в частности, лингвокультурологией, этнографией, изучающей быт и нравы разных народов, их культуру.

Исследование показало, что незнание национальных особенностей этноса, народа, его психологии, традиций и обычаев, пренебрежительное отношение к прошлому означает разрушение диалоговых отношений и тесной связи между поколениями.

В указанном плане интересна точка зрения Л.Я. Штернберга: «кто знает один народ - не знает ни одного; кто знает одну религию, одну культуру - не знает ни единой». [1, с. 142], которое не потеряло своей значимости и в наши дни. К

сожалению, в силу целого ряда причин фольклористы часто не выходят за рамки изучения одного народа, этноса, либо обращаются к сравнительному материалу, чтобы обнаружить их сходства или различия. При этом теряется представление об этнических особенностях, культуре, традициях, обычаях, о специфическом развитии процессов в разных исторических условиях и этнических средах.

На наш взгляд, важно выявить роль фольклорных материалов в обучении русскому языку и воспитании молодого поколения, а также проанализировать материалы по устному народному творчеству с точки зрения национально-культурной насыщенности и включения его в ткань учебного процесса.

В связи с этим на занятиях русского языка нами используются фольклорные материалы, в том числе материалы о жизни и быте русского народа, этноса, его национальных традициях, искусстве, литературе. Необходимо отметить, что нами сделана попытка систематизации фольклорных материалов, а также выявления их особенностей и разновидностей в воспитательных целях, а также широкого использования в процессе коммуникации как на занятиях русского языка, так и за его пределами (на внеаудиторных мероприятиях).

Пословицы и поговорки в определённой степени, можно сказать, что это «национальные картинки мира», имеющие своеобразную национальную палитру, как составляющую данной культуры. Безусловно, не все пословицы и поговорки можно отнести к лингвокультурологическим, а только те, которые неразрывно связаны с жизнью, историей, культурой народа. Например: в русском языке: *волк в овечьей шкуре; с волками жить – по-волчьи выть; а где щи, тут и нас ищи. Азбука - к мудрости ступенька. Не плюй в колодез, пригодится воды напиться. Без труда не выловишь и рыбку из пруда. Не беречь поросли, не выдуть и дерева. Дважды в год лето не бывает. Летом не припасешь, зимой не принесешь (ритуальном предмете)* («Комсомольская правда» за 2021 – 2022). Примеры из узбекского языка: *Ойда ҳам доғ бор. Ит хура, карвон ўтар. Бош омон бўлса, дўппи топилади. Тоқатни таги роҳат. Ақл ёида эмас, боида. Яхши отга бир қамчи, ёмон отга минг қамчи. Қўз қўрқоқ, қўл ботир* и др. («Халқ сўзи» за 2021 - 2022).

Как видно, паремии, в основном с компонентами животных, создают яркую картину морально-нравственных качеств человека, закрепляют универсальную образность, а также их семантические изменения ведут к переносу имён и развитию вторичных значений или являются одним из универсальных тенденций метафоризации. При этом для каждого из рассмотренных народов качества животных

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воспринимаются по-разному. Здесь соматизмы в составе пословиц и поговорок представляют ценности человека как такового или опосредованно через его характеристику.

Если говорить о специфике фразеологизмов русского и узбекского языков, то она хорошо видна при сопоставлении. Как видно схожих черт мало, так как рассмотренные нами лингвокультурологические единицы относятся к разносистемным языкам. Отличия лингвокультурем в структуре фразеологизмов можно объяснить через национальную картину мира, её специфичность и уникальность. Лингвокультуремы в составе фразеологизмов выражают различные оттенки понятий, что выражает их отнесённость к другому, т.е. «неродному» или чужому культурному коду. Например, в русском языке: *бить баклуши, кричать во всю ивановскую выносить сор из избы, в семье не без урода, авгиевы конюшни, реветь белугой, без царя в голове, шить белыми нитками, валять дурака* и др. («Лексикографическое описание фразеологии» Бушуй М.А.); в узбекском языке: *судай сероб бўл, тошдек қатиб яша, нондай азиз бўл, яхши ит ўлимини кўрсатмайди, озиқли от хоримас; махтанма гоз, ҳунаринг оз, пашишадан фил ясамоқ; ит қонар, карвон юрар; қуш унида кўрганини қилади* и др. (Акобиров С.Ф., Михайлов Г.Н. «Узбекско-русский словарь»).

Устное народное творчество всегда присутствовало в жизни как русского, так и узбекского народов. Пословицы, поговорки бытовали ещё с античных времён, интерес к ним остаётся до сих пор. По ним можно воссоздать картину мира (прошлую, настоящую и будущую). В связи с этим важно отметить, что в этих повествованиях также имеются лингвокультурологические единицы национального характера, которые были нами упомянуты выше. При сопоставлении можно наблюдать черты сходства (совпадения в значении, смысла, написании (кальки) и др.) и расхождения (в национальной окраске, понимание смысла или значения понятия и др.).

Система работы с фольклорным материалом на занятиях русского языка и литературы включает как теоретический материал (описании дефиниций фольклорных терминов, разновидностей фольклора, научных основ применения материалов по фольклористике с лингвокультурологических и когнитивных позиций, а также фоновых особенностей применительно к возможностям её презентации и реализации в процессе обучения русскому языку с целью формирования лингвокультурологической компетенции учащейся молодёжи), так и практический материал (поэтический и прозаический), взятый из фольклорных источников.

Считаем, что необходимым приобщение молодого поколения к истокам духовной культуры народа, чтобы оно могло увидеть и почувствовать уникальность и национальное своеобразие его фольклорного искусства - словесного творчества.

По утверждению А.С. Пушкина, в народном творчестве отражена «особенная психология» народа, его образ мыслей и чувств, «тьма обычаев, поверий и привычек». И это действительно так, ибо фольклор - подлинная энциклопедия быта, верований, культуры, психологии, мировоззрения, этических и эстетических представлений народа.

В связи с этим считаем, что создание своеобразной антологии фольклорных материалов, в которой соберутся бесценные творения людей, станет хорошим подспорьем в познавательном плане, а также изучении молодёжью фольклора, истории, географии, этнографии, литературы контактируемых народов (в нашем случае русского и узбекского).

Педагогические сокровищницы народов, их устные фольклорные произведения широко бытовали в народе. Наиболее значительными произведениями русского народа являются повествования о жизни Древней Руси, «Поучение» Владимира Мономаха», былины о русских богатырях («Илья Муромец и Соловей Разбойник», «Добрыня Никитич», «Илья Муромец и Алеша Попович»), сказки («Золушка», «Курочка Ряба», «Колобок»), обрядовые и колыбельные песни, частушки, загадки, пословицы, поговорки и т.д.

Самобытными произведениями узбекского эпоса являются "Тахир и Зухра", "Легенда о любви" и др. Сказочная фантастика в их воображении неотделима от следующих персонажей: джигит, Турай-батыр, Камыр-батыр, падишах, змей (белый, черный), волк (белый), пэри, джин, див и др.

Примеры показывают, что они отражают не только национальное мировидение, но и национальное миропонимание. Другими словами, можно согласиться в одном: фольклорные материала, в частности, пословицы и поговорки, в каждом из указанных примеров (в русском и узбекском языках) имеют специфические национально-культурные представления народа - носителя языка, которые характерны для данной ментальности.

Конкретизируем сказанное на материале занятия на тему: «Люди Древней Руси (былина «Садко»)». Работа проводится по следующему плану:

1. Подготовка к восприятию нового материала: объявление темы, раскрытие целей занятия.
2. Актуализация опорных знаний (вызов).
3. Уточнение значения незнакомых слов в тексте былины «Садко» (после предварительного домашнего самостоятельного прочтения былины).

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Воспользоваться, в случае необходимости, словарём С.И.Ожегова.

4. Осмысление содержания и языковых особенностей былины (мозговая атака). Самостоятельное составление вопросника по содержанию «Садко».

5. Просмотр и прослушивание видеозаписи или слайдовой презентации былины (отрывок). Проведение ролевого диалога персонажей в соответствии с содержанием былины.

6. Размышление: составление небольшого рассказа характеристики Садко с использованием в качестве названия древнерусского афоризма, пословицы или поговорки.

7. Вопрос-резюме: Как вы думаете, в чем поучительный смысл былины «Садко» для современных людей?

8. Оценивание: знания и умения учащихся, интересные и оригинальные мысли, идеи, оценочные суждения; активности, слаженность работы в малых группах, эмоциональный тонус.

9. Домашнее задание: Письменно оформить рассказ - характеристику Садко. Предложить своё задание по содержанию произведения «Садко».

10. К следующему занятию прочитать фольклорный материал о трёх русских богатырях. Составить план в тезисной форме.

11. Подготовить материал на тему: «Общая сравнительная характеристика русского и узбекского устного народного творчества (пословицы, сказки, легенды)».

12. Составить диаграмму Венна на тему: «Сказки русского народа» и «Сказки узбекского народа» (что общего и в чём отличия).

Фольклорные данные чрезвычайно интересны, однако, на наш взгляд, привлекать их можно только в комплексе с другими историко-этнографическими материалами и при достаточной изученности особенностей фольклора.

Безусловно, лингвокультурологические единицы функционируют в фольклорных материалах и до настоящего времени, оставаясь одним из ярких маркеров этнической принадлежности контактируемых народов (русского и узбекского). В данном контексте

чрезвычайно важна интерпретация фольклорно-этнографических текстов, через которые осознаётся великая сила – древо национальной культуры контактируемых этносов, их самобытность, духовность. Ибо, по мнению Гельдиевой А.Ч., цель изучения духовного наследия – кладезя мудрости наших великих предков, выдающихся личностей не в том, чтобы твёрдо закрепить какую-либо систему ценностей за данной нацией, но в том, чтобы разглядеть многовариантность и многоаспектность мироздания, используя в качестве наблюдения разные национальные космосы, национальные картины мира, поэтому данная проблема не может ограничиться исключительно ретроспективным рассмотрением культуры данной нации. Более глубокий и полный анализ проблемы предполагает рассмотрение и других аспектов. Например, как языковую картину мира этноса, народа, в том числе в “горизонтальной” плоскости, т.е. изучение процессов освоения культурного наследия, связанных с взаимодействием культур различных народов, живущих в одну историческую эпоху”. Значит, предполагается преемственность этих национальных вариантов, из которых строится мировая цивилизация.

Итак, использование в учебном процессе по русскому языку фольклорных текстов культурологического характера: пословиц, сказок, легенд, текстов о богатырях, национальных праздниках и традициях способствует обогащению словарного запаса студенческой молодёжи, активизации их познавательной деятельности, повышает интерес к изучению русского языка, воспитывает культуру межнациональных отношений, толерантности к другим народам и этносам, гарантирует дружеские взаимоотношения, высокую культуру общения представителей двух контактируемых народов: узбекского и русского народов.

Народы создавали, хранили и бережно передавали последующим поколениям свои культурные ценности, свои несметные словесные богатства, поэтому никогда не будут бедны ни духовно, ни морально.

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SOI: [1.1/TAS](#) DOI: [10.15863/TAS](#)

International Scientific Journal
Theoretical & Applied Science

p-ISSN: 2308-4944 (print) e-ISSN: 2409-0085 (online)

Year: 2022 Issue: 10 Volume: 114

Published: 20.10.2022 <http://T-Science.org>

Issue

Article



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**ON THE PECULIARITIES OF FILLING THE MARKETS OF THE
 REGIONS OF THE RUSSIAN FEDERATION WITH COMFORTABLE
 EQUIPMENT FOR THE ENTIRE POPULATION (MESSAGE 1)**

Abstract: *in message 1, the authors analyze the Strategy for the socio-economic development of the regions of the Russian Federation, the purpose of which is to propose a set of strategic directions, measures and steps aimed at reversing the negative trends in the economy and social sphere of the regions of the Russian Federation and its entry into a sustainable trajectory of socio-economic development, which is based on the model of accelerated economic growth and strengthening of the economic base of the Russian Federation for the subsequent improvement of the quality of life and well-being of the inhabitants of these regions. The mission of the socio-economic development of the Russian Federation is the growth of the true well-being of the inhabitants of the regions of the Russian Federation, the creation of opportunities for their self-realization through the outstripping pace of creating new high-tech and knowledge-intensive jobs, increasing the level and quality of life, access to social and cultural benefits. The concept of true well-being comes from the assumption that today the content of the concepts of "development" and "progress" has acquired a new meaning. Development is becoming human-oriented (humanistic) and environmentally-oriented, based on investments in human capital, innovative sectors of the economy, and the preservation of ecosystems. This means an increase in the subjective feeling of personal happiness, including not only the level of income, but also non-economic indicators, including the value of leisure, eco-system services, and the quality of work.*

Genuine well-being is assessed by an expanded set of indicators that characterize the quality of human life from all sides (opportunities for self-realization, wealth inequality and other indicators of inclusive economic growth, subjective happiness, quality of the urban environment, environmental indicators, healthy life expectancy, indicators of human development, development of democratic institutions and public participation, etc.). At the same time, not only the economic (level of income, volume of production and investment) is taken into account, but also the social,

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environmental, spatial and managerial (institutional) components. Economic development not only does not contradict the conservation of nature ("industrialization at any cost"), but also leads to a reduction in social disproportions, the goal for the period up to 2026 (first stage) is to ensure rapid economic growth and development of the social sphere of the regions of the Russian Federation by strengthening the economic base, stimulating entrepreneurial initiative, sustainable spatial development and improving the efficiency of state and municipal government. At the first stage, due to outstripping growth rates, basic conditions will be created for entering the trajectory of sustainable development.

The goal for the period 2027-2030 (second stage) is the formation of a new development model of the Russian Federation based on the principles of sustainable development, including through the implementation of the provisions of the Decree of the President of the Russian Federation of May 7, 2018 No. 204 "On national goals and strategic objectives for the development of the Russian Federation for the period up to 2035".

At the second stage, a new model of sustainable long-term development of the Russian Federation will be formed due to investments in human capital, ecology, and industrial renewal, which implies the harmonious development of economic, social and environmental components.

The goal for the period 2031-2035 (stage three) is to increase the true well-being of people and their subjective sense of happiness through the scaling up of the sustainable development model, the transition to a fundamentally new quality of economic growth, in which social, economic and environmental development complement each other, the introduction of best practices environmentally-oriented and human-oriented development.

Thus, by 2035, the Strategy is designed to realize the existing human potential of the regions of the Russian Federation, increase opportunities for self-realization, ensuring an increase in the level and quality of life, access to social and cultural benefits, creating an environment of equal opportunities for everyone. This will create conditions for the implementation of the catch-up development model with access to the model of sustainable long-term development by 2027. The implementation of the Strategy will make it possible to make a consistent transition from the old industrial model of extensive economic growth at the expense of natural resources to a sustainable development model that balances economic, environmental and social components. The new development model will be based on the concentration of value added in the regions, the development of innovations and human potential,

Key words: population, regions, comfort, equipment, livelihoods, safety, well-being, demand, profit, profitability, stable financial condition, stable TEP, priority, preference, competitiveness.

Language: English

Citation: Rumyantseva, N. S., et al. (2022). On the peculiarities of filling the markets of the regions of the Russian Federation with comfortable equipment for the entire population (message 1). *ISJ Theoretical & Applied Science*, 10 (114), 210-238.

Soi: <http://s-o-i.org/1.1/TAS-10-114-38> **Doi:**  <https://dx.doi.org/10.15863/TAS.2022.10.114.38>

Scopus ASCC: 2000.

Introduction

UDC 684.35:685.37

There is no progress without setbacks, slowdowns, recessions. The policy is called upon by active, purposeful actions to help overcome the obstacles that arise in development. Politicians must be ahead of the economic movement and direct it, stimulate domestic economic factors with political levers, and clear economic paths to efficient production. Instead, politicians continue to tie development plans to the price of oil, the ruble value of the European and American currencies, referring to the integration trends in the world and globalization. The integration of transnational relations is an objective reality, but for all its objectivity, it does not negate the specifics of national economic advancement. Moreover, integration is objectively designed to promote national development. Why don't we get it right then? This question arises from a logical comparison of the policy in the field of strengthening the defense capability, restoring the country's international prestige in the most difficult circumstances of the formation of a new world

architectonics with the fact that from year to year the Russians observe and fully feel for themselves in the rest of the economy - we accidentally do not two governments? The second "presses on the gas and slows down" at the same time.

The protracted recession in the Russian economy has two explanations. The first is that the people have lost the ability to work well, they have wasted "human capital", the second is that the managers are helpless. The media assures that politicians know their business, keep events under control, take the necessary measures and promise changes for the better in the near future. Therefore, the reason is the poor work of the performers and the unfavorable world conjuncture.

How naive do you need to be in order to rely on sincerity, disinterestedness, and the sympathy of competitors when planning your economic policy? The President of the Russian Federation has long stated that our Western partners do not want the strengthening of Russia, they need an obedient Russia, like the Baltic Republics, formerly part of the USSR. I didn't want to sadden the politicians responsible for the economy, but, following Aristotle, we are forced

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to state: "Friends in the East" are also on their minds" - in the sense of "Plato is my friend, but the truth is dearer." They will help us to the extent they benefit from such assistance.

It is time to understand that all economic and political unions in the modern world space are an attempt to achieve national gain in the environment of transnational relations, i.e. you can count on partners as long as this cooperation is beneficial to them. From which the conclusion follows - it is necessary to face your own economy. Only in this way, albeit with great tension, will it be possible to solve your problems. For example, there are no such objective reasons that would justify the decline in production in light industry over a quarter of a century.

The problems of agriculture and light industry are not their specifics; they have always been political. In the US and Europe, farmers have a lot of our problems. The difference is that there the farmer is one

of the most important, basic national problems. Its consideration is relevant for the existence of politicians. From how politics contributes to the resolution of this problem, the place of the politician is evaluated publicly. Farmer and politician are bound by economic policy. They balance on one taut economic tension - the "rope" of viability.

There is nothing similar in Russia. Let us recall the history of the last ministers of agriculture. In the USSR, there was a Ministry of Light Industry, which emphasized the importance of the industry. What prevents in the conditions of import substitution and declarations about the importance of developing our own production to restore equality in industrial management. The "calico region" without light industry is the same as native nature without birch groves or lyric poetry without the work of S. Yesenin (Figure 1).



Figure 1. Equipment for the population of the regions of the Russian Federation

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The reformers of the 1990s were least concerned about the fate of the Fatherland and domestic industrial originality. They built their business on the ease of maximizing profits and placed the margin away from the land of their ancestors. Light industry has traditionally been a difficult problem to manage. Managers must be, first of all, patriots, otherwise light industry cannot be raised. It is also necessary to understand the national importance of "long money". Compensation for the difficulties would be the stability of demand.

What is the essence of policy inefficiency in the economy of the end of the last and the beginning of the new century? This is question number 1, and it's not so much about who is to blame. We are interested in the essence of the political paradigm developed by those who were "at the helm". Question number 2 - what should be changed and how, apparently, it should be done in order to raise the national industry, the production of clothing, shoes, leather goods, textiles, accessories, not least?

The answer to question No. 1 is simple - no one was going to develop an economic policy paradigm aimed at a radical transformation of the basis. It was decided to choose the method of reforming (not without outside help) from ready-made samples. It was proposed to take the Swedish experience, the Polish "shock therapy", reforms in Portugal and Argentina as a model. Such innovators, courageous scientists, wise organizers as Gaidar, Chubais, Kokh, Burbulis did not come up with the idea with which a responsible owner usually starts - what I have to copy something.

Politics is not done depending on the state of feelings - either you like it or you don't like the level of everyday perception of the world. It is harmful to be in the "political kitchen" with such an approach. Economic policy does not qualify as "good" or "bad", "effective" or "ineffective". It has the right to be called either "useful" or "harmful." The price of such a policy is too high, and, accordingly, the responsibility is not limited to the professional form. Politics is politics. It is anti-political and unprofessional to make politics a source of one's own income.

Whatever the economic situation is, it is extremely dangerous to absolutize the importance of economic criteria, endow them with the property of universality. F. Engels spoke out sharply against attempts to reduce K. Marx's theory of social development to "economic materialism", "economic determinism". The economic basis is the basis of social organization, but by no means a system-forming factor in its improvement.

The most difficult component of economic reforms is to achieve satisfaction in society with the distribution of the national product. The health of society depends on this satisfaction, and not on the form of ownership. And we have come to an important conclusion - the quality of reforms is assessed not by

the changes themselves, but by the ability to give social life features of stability.

Integration and globalization are not a panacea for development. They do not cancel the competitive struggle, in which there are more than one winners. There are more losers. Hence the relevance of the old truth, the meaning of which became clear in dialectics. Movement under any conditions becomes self-movement. The Chinese rationally shut themselves down and won. Their victory was ensured by Eastern caution and skepticism about unification. They figured out before us that integration and globalization are varieties of "pyramids" and are conditionally useful for national development. From the outside, it might seem that the Chinese reformers abandoned the mentality of the curse: "to live you in a time of change." From the inside, everything looked traditional - politicians did not betray with a sharp movement on a national scale, they were in a hurry, but with a constant binding of actions to the state economic structure, reforms in the economy were not subordinated to traditional political dominants, did not repent and did not try to please. Nobody seriously thought about any economic shocks. Finance, as the circulatory system of the economic organism, was taken into "hedgehog state mitts", they introduced toughening for economic and corruption crimes, equating many of them with dangerous actions against the state, they did not come up with new parties - they updated the existing one, as before, they paid special attention to personnel policy. The Chinese took into account the Soviet party experience of "cultivating" personnel, which was based on the principle of progressive promotion depending on business efficiency and lifestyle. Finance, as the circulatory system of the economic organism, was taken into "hedgehog state mitts", they introduced toughening for economic and corruption crimes, equating many of them with dangerous actions against the state, they did not come up with new parties - they updated the existing one, as before, they paid special attention to personnel policy. The Chinese took into account the Soviet party experience of "cultivating" personnel, which was based on the principle of progressive promotion depending on business efficiency and lifestyle. Finance, as the circulatory system of the economic organism, was taken into "hedgehog state mitts", they introduced toughening for economic and corruption crimes, equating many of them with dangerous actions against the state, they did not come up with new parties - they updated the existing one, as before, they paid special attention to personnel policy. The Chinese took into account the Soviet party experience of "cultivating" personnel, which was based on the principle of progressive promotion depending on business efficiency and lifestyle.

Main part

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Modern culling as an action aimed at standardization dates back to the last quarter of the 19th century. The experience of S. Colt's factories is recognized as the beginning, it is believed that the idea of "standard quality" was born there. If we evaluate the system of our version of "quality - standard", then this was a subconscious embodiment of Hegel's conclusion about the dialectic of the ascent of knowledge from the abstract concept of quality to the specific concept of the "standard" of product quality.

At S. Colt, the assembly went without preliminary adjustment of parts. Specially trained inspectors carried out pre-calibration and rejected out-of-condition, thereby accelerating the main - the assembly part of production. The experience of S. Colt at the beginning of the next century was developed in the automobile production of G. Ford and G. Leland ("Cadillac"). G. Ford, having introduced conveyor assembly, removed the control of components from the conveyor, logically considering that such work should be done earlier. As a result, the "input control" of compliance with the calibers of the standard was replaced with an "output control" at an adjacent production, which cleared the main production of defects, made it qualitatively, cleaner. In this regard, the process of standardization went by improving what was achieved, theorists F. Taylor, A. Fayol, M. Weber joined it. In alliance with managers, they identified the basic principles of a scientific approach to the organization of mass production: a systematic approach to management; personnel management; delegation of responsibility; scientific regulation of labor. The developed production management system went down in history as the Ford-Taylor production system. Having indisputable advantages, the Ford-Taylor system also contained serious defects, which for a long time "dormant" in its potential. The development of production in the new socio-political conditions of the activation of social democratic interests inevitably pushed the Ford-Taylor system into a dead end. Technological progress, the process of turning scientific knowledge into a direct productive force, also contributed to this.

This was also driven by the lack of a clear understanding of quality and standard in management theory. They were changed, instead of being considered in development. The most noticeable and sensitive was the identification of quality and standard in the production of consumer goods, where the concept of product quality reflects the dual nature of the product. A product intended for subjective, more precisely, subjective use by a person or a social group must be of high quality objectively, physically and subjectively, and satisfy the consumer with its physical quality. It is naive to believe that only by advertising the physical perfection of a product can one arouse the consumer's disposition towards it. Such a consumer should be subjectively none. Interest in the

physical quality of a product can be formed by demonstrating its capabilities, but in order to for interest to form into a need to buy it, this is not enough. The product must captivate the feelings of the buyer, and this is an irrational process, deeply intimate in nature, expressing the individuality of the consumer. Especially if the consumer is attached to a significant assortment, picky and fastidious.

The quality of consumer goods is not reducible to a system of physical parameters, but in their quality it exists as a kind of core. Just as an atom is not limited to the presence of a nucleus, so the quality of such goods is not limited to a system of physical characteristics. On the contrary, the standard is a purely physical phenomenon and requires a clear description in physical units. The concept of "quality of goods" should be approached through the market, and "standard of goods" should be determined in the conditions of scientific and technical creativity. Subconsciously, the differentiation of the concepts of "quality" and "standard" was approached by the end of the first quarter of the 20th century, when they felt the insidiousness of absolutization of control over the standard conformity of products. In high-tech, complex production, the share of controllers exceeded one third of those employed at the enterprise, which significantly increased the burden on the cost of goods. The price has risen, but the quality has not improved accordingly. The buyer had to pay for the previous level of guarantees. Quality began to slow down the efficiency of production. In fact, the contradiction was between standardization and efficiency. It was necessary to think about how to improve the physical model of the standard - about new materials, original design, technological solutions. A standard is a technical image of a product's quality. Just as the quality of a product, described in words, depends on knowledge and the ability to use it, the standard is determined by the possibilities of technical modeling of the concept of quality. The understanding of quality is evolving, and the technical model of the quality standard is also changing. Thinking has its own language and technical creativity has its own language, designed to serve as a translator from a scientific language into a technical language that is understandable to production. At the same time, the translator must feel well the organizational and technological capabilities of production, so as not to absolutize the value of the idealized model. The image of the model is significant when it fits into the image of production, otherwise the above situation will arise. Good intentions will lead the organization of production to a hellish state.

When the desire for a total organization of quality control came into conflict with the total target setting to increase production efficiency and it became clear that the conflict could not be resolved in the previous way, V. Schuchert, who worked in the technical control department of the American

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company Western Electric, proposed to shift the focus of management quality on the organization of the dynamics of the production process. The innovation of V. Schuchert was that he looked at production and the quality of production as a movement and in this context understood the main thing in the quality of movement: firstly, the achievement of stability, and secondly, the inevitability of deviation from the direction of movement.

The task of achieving the quality of production acquired a technical form and meaning from V. Schuchert: it is impossible to avoid variations in the parameters of the obtained quality of products, one must strive to reduce variations. The criterion of quality is the stability of production in the static sense, that is, the convergence of variations with the central line. One of the most important factors in solving the problem, V. Schuchert called the restructuring of personal interaction - cooperation, team organization. W. Schuhert was the first to approach the interpretation of the standard in terms of mass production, presenting the quality of production and goods as a statistical form, suggesting a certain fluctuation, which was called tolerance. W. Schuchert did not introduce the concept of a statistical standard model, but it was necessarily formed on the basis of his innovative ideas. AT. Schuchert tried to give quality management a human face. He emphasized the importance of internal, including personal, motivation. But he did not seek to radically change the position of the worker in production. The alienation of the individual remained fundamentally the same, so the motivation was supported mainly by the financial evaluation of the activity. Researchers of the experience of V. Schuhert clearly overestimated its content, introducing into the description such a reaction of workers as "the joy of getting results"; "pleasure from teamwork, recognition of merit by colleagues and management"; "feeling of one's importance", etc. It would be more appropriate to say that the method of V. Shukhert forced managers to learn what is called humanitarian knowledge, Guaranteeing effective results for manufacturers in their enterprises The reformers of the 1990s were the least concerned about the fate of the Fatherland and domestic industrial originality. They built a business on the ease of obtaining maximum profit and placed the walrus far from the land of their ancestors. Light industry has traditionally been a difficult problem to manage. Managers must be, first of all, patriots, otherwise light industry cannot be raised. It is also necessary to understand the national importance of "long money". Compensation for the difficulties would be the stability of demand. What is the essence of policy inefficiency in the economy of the end of the last and the beginning of the new century? This is question number 1, and it's not so much about who is to blame. We are interested in the essence of the political paradigm developed by those who were "at

the helm". Question #2 - what should be changed and how, presumably,

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In such conditions, it is time to step back from the abstract political ideals of the democratic reformers and come to grips with developing a "road map" for the revival of the light industry, in the expectation that the crisis emphasizes the relevance of the rationality of "brainstorming" as opposed to "economic schools" in the trend. What kind of "map" is this, based on the historical experience of the 20th century, when all the main events took place:

- the interests of national advancement should be a sustainable priority. I would very much like to talk about development, but it is not possible to get it on a national scale now;
- the rate on all-round support for light industry, like most areas of investment of public funds (financial, legal, political, humanitarian), contains a risk, but within acceptable limits;
- the creative potential of specialists is still high. He is quite competitive;
- make it clear to large retail chains the importance of acquiring and distributing goods produced in Russia, of course, taking into account their proper quality;
- to place first of all orders for production from those "who have already got on their feet and know how to sew." They have proven their worth;
- assist companies in obtaining European certification of materials, otherwise foreign firms will not be interested in them, and the goods produced by us will not get to the West;
- actively support companies with collective stands at international exhibitions;
- provide such enterprises with subsidies on loans for the purchase of raw materials and materials. The share of these loans in the total volume of lending should be from 50 to 85%;

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- exempt modern imported equipment from import duties and VAT. Machines used in sewing shops are 90% imported;

- implement preferential leasing.

The wise Buddha laid down four key steps in the eightfold path: correct understanding; making the right decision; finding the right words and, finally, the right actions aimed at implementing the right decisions. The fate of the light industry, now, depends on what this last step will be. Its execution is the function of the Government. The political paradigm is extremely simple - we should not compete with anyone in the struggle for the global market, especially with the Chinese. The Chinese rightfully want to shoe and clothe the whole world. One fifth of the world's population lives in China. Our task is quite different. We need to make sure that the Chinese do not shoe or dress us. To transfer the purchasing demand to our own Russian production, to interest in goods produced in the country. Such a task is quite within our power, as the manufacturers say.

Never before have shoe companies found themselves in such a situation as they are now. All markets are divided into many segments. Specialization has reached such a level that one can still hide from competition only in a small space between two adjacent segments of different markets or of the same market. When creating new enterprises for the production of footwear products in a competitive environment, they are not attractive due to the successfully developed shoe production. As a result of segmentation, it was determined that the population of the two districts is unevenly distributed over the territory. The income of the population is much less than the average for Russia. When forming the assortment of footwear, one should also take into account the fact that a large proportion of the population is rural residents. It is also necessary to take into account the national characteristics of the inhabitants, their traditions. What is the main thing today for success in the market of many new and established firms, small, medium and large enterprises, many of which were small not so long ago, for numerous commercial structures and joint ventures? This is the company's ability to provide the consumer with higher quality shoes.

Modern production, or, as it is commonly called, world-class production, must meet the following requirements:

- have greater flexibility, the ability to quickly change the range of products. The life cycle of products has become shorter than ever, the diversity of the product range is higher, and the serial production, the volume of batches of one-off production, is smaller. Hence, production focused on the production of mass, standardized products (strictly complying with standards, specifications, technical conditions), which is not able to constantly adapt to

the needs of real, often small groups of consumers, is now doomed to extinction;

- use new forms of control, organization and division of labor, taking into account the more complex production technology;

- rely on integrated quality management. Quality requirements not only increased, but also changed the nature of decision-making: it is not enough to produce good products, you still need to think about organizing after-sales service, about providing additional branded services to consumers who are highly individualized in their requests;

- simultaneously improve product quality and reduce costs. If before it was possible to offer the consumer a lower quality product at a lower price and, conversely, a high price always corresponded to high quality, but today the situation has changed. Higher quality of the product should be provided at the expense of the same lower price.

Now in our country there is a situation where most of the population has a very modest income, and it is they who are a potential buyer of mass-produced shoes.

Solving the problems of style, marketing, advertising will allow domestic mass-produced footwear to be demanded by this wide sector of the Russian population. Small and medium-sized shoe enterprises should provide footwear for the more profitable part of the population, however, as well as highly automated production complexes.

In recent years, the absolute increase in the production of leather shoes has been constantly increasing, the range of shoes has been updated at shoe enterprises, taking into account the demand of the population, the production of model and insulated shoes, shoes with white leather uppers and natural patent leather, dressy shoes for children is increasing. The transition of the country's economy to market relations led to a sharp deterioration in the situation in the Russian footwear industry due to a decrease in the effective demand of the population, deepening inflationary processes, and a non-payment crisis, which, in turn, caused an imbalance in the sphere of production and circulation.

The shoe market is an integral element of economic relations, the main participants of which are, on the one hand, shoe manufacturers, and on the other hand, consumers. Footwear is one of the most complex groups of non-food products with a very diverse assortment as a product in this market.

Footwear is one of the most important goods produced by the light industry of the Russian Federation and imported from abroad. The degree of satisfaction of consumer demand, the profitability and profitability of organizations depend on the correct determination of the quantity and quality of models produced by shoe enterprises, on the competitiveness of the assortment. The result of the interaction of the constituent parts of the market (demand, supply,

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prices for shoes) is the possibility of supply to satisfy the demand for products at a specific price as much as possible.

Thus, the value of the footwear market is to meet the needs of the population. Accordingly, the development of the market leads to an increase in the level of security of an individual member of society. Markets are made up of buyers, and buyers differ from each other in a variety of ways: by their needs, financial and other opportunities, location, buying attitudes and buying habits. In market segmentation, businesses subdivide large heterogeneous markets into smaller (and more homogeneous) segments that can be served more efficiently, according to the specific needs of these segments. Shoe enterprises for the successful implementation of their products, first of all, need to segment the consumer market and determine the target segment of this market.

In a general sense, market segmentation is understood as the process of dividing the market into groups of consumers according to predetermined

characteristics, which allows you to concentrate funds on the most effective. A market segment is a homogeneous set of consumers who react in the same way to a product and how it is presented.

Target segment (market) - a segment selected as a result of a study of the sales market of a particular product or service, characterized by minimal costs for the means of promoting the product and providing the enterprise with the main share of the result of its activities (profit or other criteria for the enterprise to enter this market).

Segmentation of the footwear market can be carried out both on the basis of one, and with the consistent use of several indicators, clearly presented in the diagram (table 1).

Segmentation results of the analyzed basic costume market. The Southern and North Caucasian federal districts can be presented in the form of a table of ratings. The segment with the minimum number of seats in the end is the most attractive.

Table 1. Segmentation criteria in the Southern Federal District and the North Caucasus Federal District

Criteria for segmenting the footwear market in the Southern Federal District and the North Caucasus Federal District				
Segmentation subject	Segmentation object	Segmentation by population	Segmentation by income level	Segmentation by average salary
All enterprises producing or intending to produce footwear in the territories of the Southern and North Caucasian Federal Districts	Southern and North Caucasian Federal Districts of the Russian Federation	The larger the population of the segment, the more profitable for the enterprise	The higher the profitability of each resident, the greater the chance to purchase the company's products	The higher the salary of a villager, the more likely he is to spend it on a costume

As a result of the analysis of Table 1, two regions and three regions were identified, where the largest segmentation of the consumer market is observed from two districts: Krasnodar Territory - 2.15%, Rostov Region - 2.65%, Astrakhan Region - 2.7%, Volgograd Region - 3.25%, Stavropol Territory - 5.4%.

However, when conducting segmentation, it is necessary to take into account the goals of segmentation.

When creating new enterprises for the production of light industry products, these five subjects of the Southern Federal District and the North Caucasus Federal District identified in a competitive environment are not attractive due to the successfully developed light industry.

As a result of segmentation, it was determined that the population of the two districts is unevenly distributed over the territory. The income of the population is much less than the average for Russia. When forming the range of costumes, one should also take into account the fact that a large proportion of the population is rural residents. It is also necessary to take into account the national characteristics of the inhabitants, their traditions (Table 2).

When organizing the marketing of manufactured products, one should also not forget that in the Southern and North Caucasian federal districts there were and still are so-called "hot spots", which are territories with an economic crisis and a negative political situation.

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Table 2. The results of segmentation of the consumer market of the Southern Federal District and the North Caucasian Federal District by the method of the sum of places, taking into account weight coefficients

Name of the territorial unit	Rating positions			Sum of points, %
	yield, score×0.45	salary, score×0.30	number, score × 0.25	
Southern Federal District, c. including				
Krasnodar region	1.8	0.6	0.25	2.65
Republic of Adygea	3.6	2.1	2.75	8.45
Republic of Kalmykia	4.95	2.4	3.25	10.6
Astrakhan region	0.9	0.3	1.5	2.7
Volgograd region	1.35	0.9	1.0	3.25
Rostov region	0.45	1.2	0.5	2.15
North Caucasian Federal District, incl.				
Republic of North Ossetia-Alania	2.25	3	2	7.25
Kabardino-Balkarian Republic	2.7	3.6	1.75	8.05
The Republic of Dagestan	4.5	3.9	1.25	9.65
The Republic of Ingushetia	5.4	1.8	2.5	9.7
Karachay-Cherkess Republic	4.05	3.3	3	10.35
Stavropol region	3.15	1.5	0.75	5.4
Chechen Republic	5.85	2.7	2.25	10.8

The correct definition of quality, consistency and systematic quality management gives the manufacturer a decisive advantage in the competition for the consumer. It would seem that everything is simple, but simplicity is equally ingenious and deceptive. The general plan for solving the problem determines the vector of movement, sets the factorial priorities of the activity - nothing more.

The product produced by man is dual in nature, it combines the natural properties of raw materials and the features introduced into it by human labor. A product has a rental value and an added value. In this context, it is not the cost that is important - it serves as a quantitative equivalent of the quality of the goods in general, but the result of labor - in the form of a transformation of the natural state of the object. The product of human activity has a natural, basic, level and a superstructural, introduced one. Hence the need for a dualistic perception of the quality of the product, which should not be interpreted primitively as a double quality. The quality of the commodity is one, but the production duality of the product is associated with it.

Such a two-sided quality of the goods misleads those who, without understanding the art of dialectical thinking, seek to put everything “on the shelves”, forgetting about the structure of which these shelves are parts. The quality of the goods is only determined by a natural basis, but it is built artificially. The quality of goods has several creators. This is a fashion designer, designer, technologist, manager; their qualifications, experience is measured without problems. Others are also within reach, only their measurement is difficult, especially when it comes to the consumer. The economic situation affects both

producers and consumers, shakes the market on the waves of its uneven movement, and along with purchasing power, the idea of quality.

Outwardly, the definition of the quality of a product produced for sale on the market seems to be an impossible task, because for this it is necessary to combine not converging, but (mostly) diverging views. Involuntarily, Krylov's Fish, Cancer and Pike, who undertook to drag the cart, are recalled. In our case, there are even more subjects. The designer, technologist, manager (they can be combined) develop their understanding of the quality of the goods, they are connected by the common interest of the manufacturer. The buyer has a special approach to quality. As a consumer, he is not sure about the integrity of the manufacturer. In addition, the buyer has his own tastes, reasons, due to the real buying opportunity. There are also the interests of the market, which has become an independent subject of the economy. Speculation is legalized, attracts with its potential. Controlling the market an intermediary - a speculator - is able to form an image of quality in his own interests, in particular, through advertising, the provision of priorities, etc. Finally, there is the quality of the product itself, expressed in the totality of properties of natural origin and added by the manufacturer. As a result, we came to the “quality square”, which combines the qualities of the product and the image of quality.

Any general exists objectively, but only through the singular: at the end of the process, there is always a single, specific buyer, Pyotr Stepanovich Sidorov, and boots that Pyotr Stepanovich chose from dozens of different ones. They seemed to him the best in

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quality and price. The sales consultant professionally explained to Petr Stepanovich that there are boots of better quality in the same price range, but, being an independent person, he did not change his mind. That's why pre-sales product preparation and seller culture are important. The last word belongs to the buyer, his perception of the quality of the product. Everything else just plays along with it.

The most serious contradiction, apparently, remains the divergence in the images of the quality of the product by the manufacturer and the consumer. The special importance of a different approach to the quality of the manufacturer and consumer is natural. They are the main subjects of the system of economic relations, they have a common goal - the product. The former produce it, the latter consume it, but they have different motives due to their different position in the system and the culture of perceiving the goal.

The manufacturer creates a product, but not the product - the ultimate goal of the manufacturer, but the realization of the product. The direct connection between the producer and the consumer is therefore local, which negatively affects the producer. The seller blocks the consumer from the producer, and the producer is forced to focus not on the market, but on the market situation, most often artificially formed by the speculator and advertising.

Money, perhaps, "does not smell", the advertising policy frankly "stinks", it is so far from objectivity and free from professional honor. Being in a state of irresponsibility for information, advertising serves the market clearly and in any form.

The manufacturer, unlike the seller, is responsible for information both by law and by his professional reputation. The seller manipulates information as he sees fit, the manufacturer is constrained by responsibility, and the market often dictates the rules of relations to him.

What is the output for the manufacturer? There is only one way out - a direct presence in the market and significant investments in the education and education of consumers. It is difficult to overcome such a program alone, but united, it is absolutely real. The domestic manufacturer has everything necessary to oust the speculator from the retail market. It has professional experience, qualified personnel, scientific and technical support, a certain confidence of buyers returning to the previous, pre-reform priorities, which are actively exploited by unscrupulous manufacturers and which the authorities bashfully close their eyes to, not wanting to return to the Soviet experience. Confectioners, meat makers, winemakers shamelessly use Soviet brands, replacing them with surrogates. The brands of Vyatka, Orenburg, Ivanovo, some Moscow and Leningrad enterprises. The return trend is gaining momentum. Of course, clothes and shoes are not sausage and vodka or chocolate and confectionery products of natural origin.

The formation of the assortment is the problem of specific goods, their individual series, determining the relationship between "old" and "new" goods, goods of single and serial production, "high-tech" and "ordinary" goods, materialized goods and (or) licenses and know-how ". When forming the assortment, there are problems of prices, quality, guarantees, service, whether the manufacturer is going to play the role of a leader in the creation of fundamentally new types of products or is forced to follow other manufacturers.

The formation of the assortment is preceded by the development of an assortment concept by the enterprise. It is a directed construction of the optimal assortment structure, product offer, while taking as a basis, on the one hand, the consumer requirements of certain groups (market segments), and on the other hand, the need to ensure the most efficient use of raw materials, technological, financial and other resources by the enterprise with to produce products at low cost. The assortment concept is expressed as a system of indicators characterizing the possibilities for the optimal development of the production assortment of a given type of goods. These indicators include: a variety of types and varieties of goods (taking into account the typology of consumers); the level and frequency of updating the assortment;

The assortment formation system includes the following main points:

- determination of current and future needs of buyers, analysis of ways to use shoes and features of consumer behavior in the relevant market;
- assessment of existing analogues of competitors;
- a critical assessment of the products manufactured by the enterprise in the same assortment, but already from the position of the buyer;
- deciding which products should be added to the assortment and which should be excluded from it due to changes in the level of competitiveness; whether it is necessary to diversify products at the expense of other areas of production of the enterprise that go beyond its established profile;
- consideration of proposals for the creation of new models of footwear, improvement of existing ones;
- development of specifications for new or improved models in accordance with customer requirements;
- exploring the possibilities of producing new or improved models, including issues of price, cost and profitability.

But one thing is true: it is a constant evaluation and revision of the entire range.

In conclusion, I would like to emphasize once again that all this will become a reality if one main condition is met, namely, the production of domestic

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footwear will be of high quality and taking into account the interests of this very consumer.

As an object of study, the criteria for a reasonable choice of a package of materials in the production of a suit for military personnel in the Arctic were chosen. At the same time, preferences will be specified that would guarantee them comfortable conditions in the performance of their official duties. The environment for a person in clothes and shoes is air, hard ground or snow and water. Individual areas of the human foot may be in contact with any of these media. In cold conditions, with the difference between the temperatures of the human body and the environment, there is a continuous heat exchange, the transfer of thermal energy from the human body to the environment. Under rapidly changing environmental conditions and the regime of physical activity, it is almost impossible to maintain a state of thermal balance.

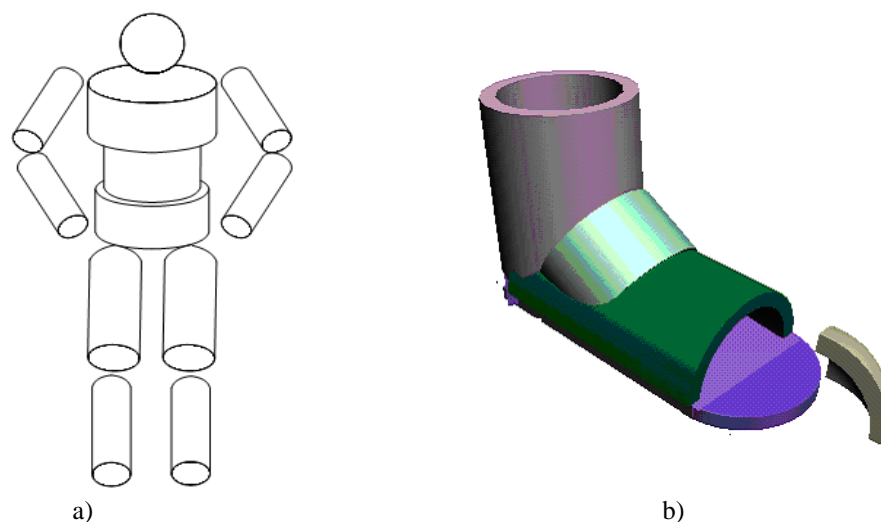
The development of mathematical models of the "man-suit-environment" system, which makes it possible to create algorithms for calculating the initial parameters for personal protective equipment for a person, is an urgent and direct task of mathematical modeling as part of the development of personal protective equipment for a person located in climatic zones with elevated temperatures.

Figures approximating the human body are considered as systems with distributed or lumped parameters. When approximating the body with one cylinder, one can speak only of an approximate

reproduction of the thermal regime of a person. A rough approximation is provided by models in which the thermal conductivity, heat production and heat loss of body tissues are assumed to be constant throughout the entire thickness of the cylinder or layer. Most authors do not take into account the system of human physiological thermoregulation. They consider a person in comfortable conditions, when the mechanisms of thermoregulation are inactive. Our studies take into account the thermoregulation system. Tissue blood flow, metabolic heat production, and evaporative heat loss are considered as functions of mean body temperature; brain temperature and average skin temperature; brain temperature,

Analysis of existing mathematical models of the thermal state of a person under the influence of environmental parameters allows us to presumably determine the shape of the elements of the human body, which can be divided into the following sections: head - ball; arms, legs - cylinders; the torso is a set of elliptical cylinders - this is a rough approximation.

Thus, a person can be represented as a set of geometric shapes shown in Figure 2a. The concept of mathematical formation of a geometric image is based on its representation for a suit as a set of multilayer packages of materials of various shapes and compositions. Using the 3D Studio MAX 5 program, a geometric image of a person (Figure 2a) and a foot (Figure 2b) was constructed.



**Figure 2 - Geometric image:
a- human body, b - human feet**

The main factors affecting the temperature inside the suit space when constructing a mathematical model are the ambient temperature, the heat generation of the human body, the thermophysical properties of the materials that make up the packages,

the shape of these packages, and heat transfer from the outer surface of the suit set to the environment.

The main criterion for a person's comfortable state is the temperature inside the suit space ranging from 21 to 25°C. At the same time, when a person is exposed to low temperatures, as a rule, sweating of a

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person is not taken into account due to its small effect on the heat transfer process. At elevated ambient temperatures, the main role in maintaining a constant body temperature belongs to the skin, through which heat is transferred by radiation, conduction and evaporation. When the ambient temperature coincides with the temperature of the human body, heat transfer is carried out mainly due to sweating (evaporation of 1 liter of water leads to a loss of heat equal to 580 cal). Therefore, at high humidity and high air temperature, when the evaporation of sweat is difficult, overheating of the human body most often occurs. Such cases arise when working in tight non-ventilated clothing and, especially, in protective anti-chemical suits. In this regard, it is very important to consider sweating when designing a suit that provides the necessary time for a comfortable stay in conditions of elevated temperatures. The indicators characterizing the thermal state of a person include body temperature, skin surface temperature and its topography, warmth sensations, the amount of sweat produced, the state of the cardiovascular system and the level of performance.

The temperature of the human body characterizes the process of thermoregulation of the body. It depends on the rate of heat loss, which, in turn, depends on the temperature and humidity of the air, the speed of its movement, the presence of thermal radiation and the heat-shielding properties of clothing.

The performance of work of categories Pb and III is accompanied by an increase in body temperature by 0.3 ... 0.5 ° C. With an increase in body temperature by 1 ° C, the state of health begins to deteriorate, lethargy, irritability appear, the pulse and breathing become more frequent, attentiveness decreases, and the likelihood of accidents increases. At a temperature of 39 ° C, a person may faint.

The temperature of the skin of a person who is at rest in comfortable conditions is in the range of 32 ... 34 ° C. With an increase in air temperature, it also rises to 35 ° C, after which sweating occurs, limiting a further increase in skin temperature, although in some cases (especially at high humidity) it can reach 36 ... 37 ° C. It has been established that when the temperature difference in the central and peripheral parts of the body surface is less than 1.8°C, a person feels heat; 3...5 °C — comfort; more than 6 ° C - cold. With an increase in air temperature, the difference between the temperature of the skin in open and closed areas of the body also decreases.

The software product was written using MAPLE applied mathematical packages and is designed to calculate the distribution of temperature and partial pressure in the process of heat and mass exchange in the system "man - clothes - shoes - environment" for a flat package of materials, in the case when a person is in a climatic environment with elevated temperature.

Let us introduce the following notation:

T_c — ambient temperature (°C);

U_c — partial pressure of moisture vapor in the environment (mm Hg);

t — time (h);

x_i — coordinate i — th layer package (m), $l_{i-1} < x_i < l_i$;

$l_{i-1}; l_i$ — borders i — th layer of the package;

$\hat{T}_i(x_i; t)$ — temperature i — th layer of the package (°C);

$\hat{U}_i(x_i; t)$ — partial pressure of moisture vapor for i — th layer of the package (mm Hg);

$T_i(x_i; t) = \hat{T}_i(x_i; t) - T_c$ — relative temperature i — th layer of the package (°C);

$U_i(x_i; t) = \hat{U}_i(x_i; t) - U_c$ — relative partial pressure of moisture vapor for i — th layer of the package (mm Hg);

λ_i — coefficient of thermal conductivity i — th layer of the package (W / (m ° C));

d_i — vapor permeability coefficient i — th layer of the package (kg / (m h mm Hg));

$a_{11}(i)$ — thermal diffusivity i — th layer of the package (m²/h);

$a_{22}(i)$ — vapor diffusion coefficient i — th layer of the package (m²/h);

$a_{12}(i)$ — diffuse thermal conductivity i — th layer of the package (m²/h);

$a_{21}(i)$ — vapor thermal diffusion coefficient i — th layer of the package (m²/h);

$q(t)$ — foot heat flux density (W/m²);

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$M(t)$ – the flux density of the mass of moisture released by the human body (kg / (m² h));

α – heat transfer coefficient (W/(m² °C));

β – mass transfer coefficient (kg / (m² h mm Hg));

The system of equations for describing the process of heat and mass transfer in the system "man

- clothes - shoes - environment" has the following form

$$\begin{cases} \frac{\partial T_i}{\partial t} = a_{11}(i) \frac{\partial^2 T_i}{\partial x_i^2} + a_{12}(i) \frac{\partial^2 U_i}{\partial x_i^2}; \\ \frac{\partial U_i}{\partial t} = a_{21}(i) \frac{\partial^2 T_i}{\partial x_i^2} + a_{22}(i) \frac{\partial^2 U_i}{\partial x_i^2}, \end{cases} \quad i = 1, 2, \dots, n. \quad (1)$$

The following boundary conditions are considered.

The heat flux of the human body entering the inner surface of the suit is equal to $q(t)$

$$\lambda_1 \frac{\partial T_1}{\partial x_1}(0, t) + q(t) = 0; \quad (2)$$

The flux density of the mass of moisture released by the human body is equal to $M(t)$

$$d_1 \frac{\partial U_1}{\partial x_1}(0, t) + M(t) = 0; \quad (3)$$

Heat transfer on the surface of the suit occurs according to Newton's law

$$\lambda_n \frac{\partial T_n}{\partial x_n}(l_n, t) + \alpha T_n(l_n, t) = 0; \quad (4)$$

The sole of the suit is waterproof, which is expressed on its inner surface by the equality:

$$\frac{\partial U_n}{\partial x_n}(l_{n-1}, t) = 0; \quad (5)$$

ideal contact is assumed between the layers of the bottom of the shoe, which is expressed by the conditions of conjugation at the joints:

$$T_{i-1}(l_{i-1}, t) = T_i(l_{i-1}, t), \quad (6)$$

$$\lambda_{i-1} \frac{\partial T_{i-1}}{\partial x_{i-1}}(l_{i-1}, t) = \lambda_i \frac{\partial T_i}{\partial x_i}(l_{i-1}, t), \quad i = 2, \dots, n, \quad (7)$$

$$U_{i-1}(l_{i-1}, t) = U_i(l_{i-1}, t), \quad (8)$$

$$d_{i-1} \frac{\partial U_{i-1}}{\partial x_{i-1}}(l_{i-1}, t) = d_i \frac{\partial U_i}{\partial x_i}(l_{i-1}, t), \quad i = 2, \dots, n - 2. \quad (9)$$

Initial conditions:

$$T_i(x_i, 0) = f_i(x_i). \quad (10)$$

$$U_i(x_i, 0) = g_i(x_i) \quad i = 1, 2, \dots, n. \quad (11)$$

As an example, consider the theoretical calculation of heat and mass transfer through the sole of a shoe at an elevated ambient temperature of 40°C.

The characteristics of the package of materials for the bottom of the shoe are given in table 3.

Table 3. Characteristics of the material package of the bottom of the shoe

layer number	layer material	Layer thickness (mm)
1	Cotton sock	2
2	insole	5
3	cardboard	1.8
4	sole	10

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To realize these very conditions of comfort and significantly improve the working conditions of a person in extreme conditions. Let us give a description of modern technical textiles of domestic production. Technical textiles are one of the strategic directions for the development of textile materials and are widely used in almost all industries: the automotive and electrical industries, construction and transport, medicine, sports and other industries. It is of particular importance as a reinforcing filler for composite materials. Technical textiles include textile materials with a special set of properties, with special performance, quality and functional characteristics. To obtain the required set of properties, in the production of technical textiles, as a rule, high-strength chemical fibers and threads are used that are resistant to aggressive media and elevated temperatures. In order to impart special properties, textile materials are subjected to various types of finishes: fire retardant, oil-water-dirt-repellent, resin (polymer binder), antimicrobial, antistatic and other types of treatment. Currently, despite the introduction of sanctions on the Russian economy (introduced after February 24), domestic companies continue to work on the innovative development of technical textiles, the emergence of new and improvement of existing types of technical textiles. Achievements in the field of development, production and application of technical textiles are regularly presented at the well-known exhibitions of technical textiles "Techtextil Russia". Of interest is the current state of the production of technical textiles in the context of sanctions. Data characterizing the production volumes of technical textiles in physical terms in the 1st half of 2022, compared with the 1st half of 2021, are shown in Table 4. treatment with resins (polymer binders), antimicrobial, antistatic and other types of treatment. Currently, despite the introduction of sanctions on the Russian economy (introduced after February 24), domestic companies continue to work on the innovative development of technical textiles, the emergence of new and improvement of existing types of technical textiles. Achievements in the field of development, production and application of technical textiles are regularly presented at the well-known exhibitions of technical textiles "Techtextil Russia". Of interest is the current state of the production of technical textiles in the context of sanctions. Data characterizing the production volumes of technical textiles in physical terms in the 1st half of 2022, compared with the 1st half of 2021, are shown in Table 4. treatment with resins (polymer binders), antimicrobial, antistatic and other types of treatment. Currently, despite the introduction of sanctions on the Russian economy (introduced after February 24), domestic companies continue to work on the innovative development of technical textiles, the emergence of new and improvement of existing types of technical textiles. Achievements in the field of

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Table 4. Characteristics of production volumes of technical textiles

Products, county	1st half		
	2022	2021	2022 in % to 2021
Fabrics impregnated with a polyvinyl chloride composition, or coated with polyvinyl chloride, mln. m	20.8	22.3	93.3
Federal districts:			
Central	15.4	15.7	98.1
Volga	5.1	6.1	83.6
Fabrics impregnated with polyurethane composition or coated with polyurethane, mln. m	1.4	3.1	45.2
Siberian Federal District, thousand sq. m	0.46	0.46	-
Fabrics impregnated with other polymer compositions, or coated, other, mln. m	5.9	29.5	20
Central Federal District	2.7	26.6	10.2
Fiberglass fabrics (including narrow fabrics), thousand tons; metric ton (1000 kg)	33.0	24.1	136.9
Central Federal District	31.6	22.6	139.8
Fiberglass fabrics (including narrow fabrics), million square meters m	88.1	-	-
Central Federal District	75.5	-	-

In the first half of 2022, domestic enterprises produced 116.2 million m² of technical textiles in physical terms, namely: fabrics impregnated or coated with polymer compositions and fiberglass fabrics (including narrow fabrics), which is 2.5% (by 3.0 million m²) is less compared to the production of such

fabrics in the same period in 2021 (119.2 million m²). The shares of fabrics impregnated or coated with polymer compositions and fiberglass fabrics (including narrow fabrics) produced in H1 2022 are shown in Figure 3.

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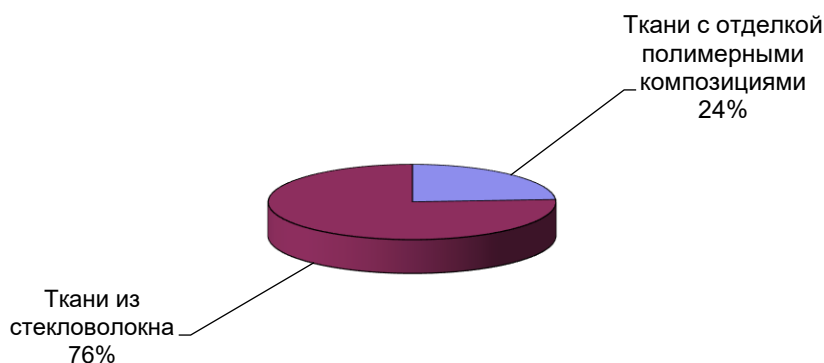


Figure 3. Proportion of fabrics impregnated or coated with polymer compositions and fiberglass fabrics produced in the 1st half of 2022

From the data presented in Figure 3, it follows that in the structure of technical textiles produced in the 1st half of 2022, fabrics finished (impregnated or coated) with polymer compositions account for 24% (24.2%), and fiberglass fabrics (including narrow tissues) about 76% (75.8%). Fabrics impregnated or coated with polymer compositions are the most important products of technical textiles. They are widely used in the manufacture of conveyor belts, industrial belts, presses, technical hoses, replaceable

filters and other products. In the first half of 2022, 28.1 million m2 of fabrics of this group were produced, which is significantly, by 48.8% (26.8 million m2) less compared to the same period in 2021 (54.9 million m2). To obtain fabrics of this group, polyvinyl chloride (PVC), polyurethane (PU) and other polymer compositions. The distribution of fabrics depending on the type of polymer composition used for impregnation or coating in the 1st half of 2022 is shown in Figure 4.

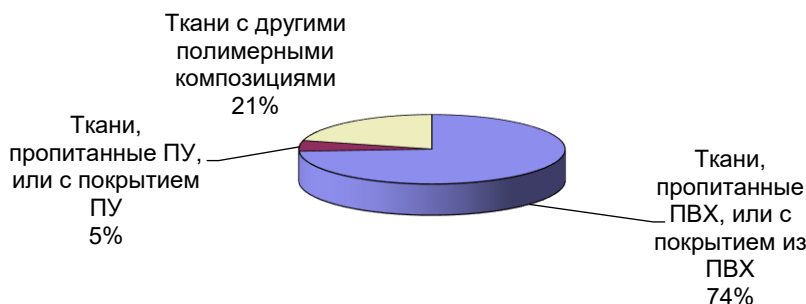


Figure 4. Distribution of fabrics depending on the type of polymer composition for impregnation or coating in H1 2022

From the data presented in Figure 4, it follows that in the production of fabrics impregnated or coated with polymer compositions, the largest share, 74%, falls on fabrics impregnated with PVC composition, or coated with PVC. The proportion of fabrics impregnated or coated with PU composition is small, 5%, while fabrics impregnated or coated with other polymer compositions is 21%. Data on fabrics impregnated with compositions based on cellulose

derivatives or coated with cellulose derivatives are not shown; therefore, in Fig. 2 these fabrics are not shown. In the 1st half of 2022, 20.8 million m2 of fabrics impregnated or coated with PVC composition were produced, which is 6.7% (1.5 million m2) less compared to the same period in 2021 (22.3 million m2). Fabrics of this group are produced in various federal districts. Shares of fabric production.

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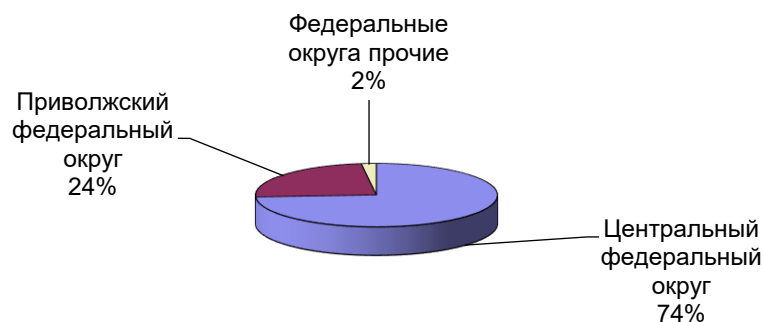


Figure 5. Shares of production of fabrics impregnated or coated with PVC composition in various federal districts in the 1st half of 2022

From the data presented in Figure 4, it follows that almost the entire volume of fabrics impregnated or coated with PVC composition, more than 98% (98.5%), or 20.5 million m², was produced in two federal districts: in the Central and Volga districts. The largest volume of fabrics of this group, 74% of their all-Russian output, was produced in the Central Federal District, 15.4 million m², which is insignificant, 1.9% (0.2 million m²) less compared to the same period in 2021 city (15.7 million m²). The share of production of such fabrics in the Volga District is more than 24% (24.5%), or 5.1 million m², but production decreased by 16.4% (1.0 million m²). In the other federal districts, about 2% of fabrics impregnated or coated with PVC composition were produced. The output of fabrics impregnated with PU composition, or coated with PU, decreased significantly, by 54.8% (1.7 million m²), and amounted to 1, 4 million m². It is shown that about 33%, or 0.46 million m², of fabrics of this group were produced in the Siberian Federal District. The same amount in this district (0.46 million m²) was produced of fabrics impregnated or coated with PU in the same period of the previous year. In the first half of 2022, 5.9 million m² of fabrics impregnated or coated with other polymer compositions were produced, which is only 20% of the production of these fabrics in the same period in 2021 (29.5 million m²). About half of the production of fabrics in this group, 45.8% (2.7 million m²), was produced in the Central Federal District. The leading domestic manufacturers of fabrics impregnated or coated with polymer compositions are the following companies: JSC "Kursk factory of technical fabrics", LLC NPF "Fabitex", JSC "TEKSKOR" ("TEXXCORE"), LLC "Baltex", LLC "HK "Spetstechnotkan" and other firms. In this way, in the 1st half of 2022, the output of fabrics impregnated or coated with polymer compositions decreased in almost all groups, which is probably due to insufficient provision of the production of these fabrics with the necessary chemical fibers and threads. The largest share in the production of fabrics impregnated or coated with

polymer compositions, 74% (20.8 million m²), is made up of fabrics impregnated with PVC composition, or coated with PVC. At the same time, the largest volume of fabrics in this group, 74% (15.4 million m²), was produced in the Central Federal District. Fiberglass fabrics have a number of unique properties: increased strength, resistance to high temperatures, aggressive environments, non-conductivity of electric current and other characteristics. Glass fabrics are used as a structural and reinforcing material in various industries. In particular, innovative multiaxial fabric is used in aircraft and shipbuilding, medicine, construction and other industries. Glass fabrics are also used for the production of special clothing for those working at elevated temperatures: metallurgists, welders, firefighters. In the 1st half of 2022, unlike fabrics impregnated or coated with polymer compositions, the production of fiberglass fabrics (including narrow fabrics) increased significantly, by 36.9% (8.9 thousand tons), compared to the same period of 2021 (24.1 thousand tons), and amounted to 33 thousand tons. Almost the entire volume of such fabrics, 95.7%, or 31.6 thousand tons, was produced in the Central Federal District. In the meter measurement, in the 1st half of 2022, 88.1 million m² of such fabrics were produced. In the Central District, 85.7%, or 75.5 million m², of glass fabrics were produced. Fiberglass fabrics are produced by well-known companies: LLC HK Spetstekhnnotkan, JSC Glass Fiber Plant, LLC Sudogodskie fiberglass and other companies. Thus, in recent years there has been an increase in production and innovative development of such a segment of technical textiles as fiberglass fabrics, glass fabrics. This can be explained by the unique set of properties of glass fabrics and a sufficient amount of raw material for their production (you can use "cullet", which is formed in glass factories). It should be noted the increasing popularity of silica fabrics, which can operate at temperatures up to 1100-1200 degrees C, and are widely used in many industries as a thermal insulator and fire retardant. In recent years, there has been an increase in production and innovative

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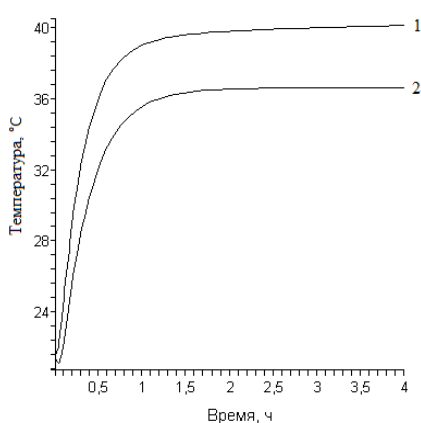
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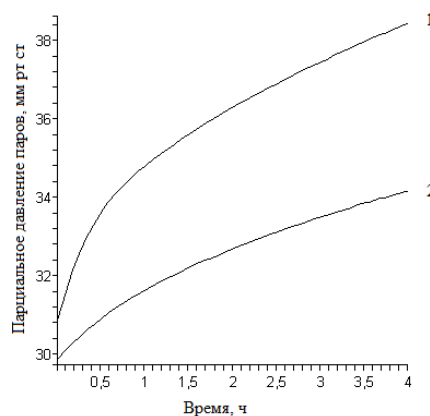
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If the software for substantiating the choice of packages of materials for clothing and footwear when creating comfortable conditions for a person in climatic zones with a low temperature is due to the control over the decrease in temperature inside the suit space to 21 C0 for the foot and to 31 C0 for the human body, which were are incorporated into the developed software with a reasonable choice of a package of materials taking into account thermal and physical characteristics, then when developing software for a reasonable choice of packages of materials for a person located in climatic zones with elevated temperatures, the problem was solved differently, namely, based on the need to control the prevention of an increase human body temperature.



a



b

Figure 6. Feature inside shoe space:

a- temperature

b- partial vapor pressure

This is due to the fact that an increase of 0.3-0.5 C0 already creates discomfort for a person, and with an increase of more than 1 C0, this excludes him from being in these conditions. Therefore, packages of materials and a suit made of them must guarantee the fulfillment of these requirements for a person during the entire time he is in these conditions (Figure 5). The heat flux density of the foot is 10 W/m², the mass flux density of the moisture released by the foot is 0.02 ((kg/(m² h)) in which curve 1 is for shoe bottom packs using non-porous waterproof rubber as the outsole, and curve 2 is for the bottom pack when a material is used as the sole. manufactured using nanotechnology

and having the ability to ventilate, i.e. to the exchange of air in the intra-shoe space.

Thus, the development of a software product for the formation of comfortable conditions for a person when he is in a climatic environment with an elevated temperature for the first time will allow for a reasonable choice of a package of materials for a suit in order to implement these same comfort conditions and significantly improve working conditions for a person in extreme conditions.

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control over the decrease in temperature inside the suit space to 21 C0 for the foot and to 31 C0 for the human body, which were are incorporated into the developed software with a reasonable choice of a package of materials taking into account thermal and physical characteristics, then when developing software for a

reasonable choice of packages of materials for a person located in climatic zones with elevated temperatures, the problem was solved differently, namely, based on the need to control the prevention of an increase human body temperature.

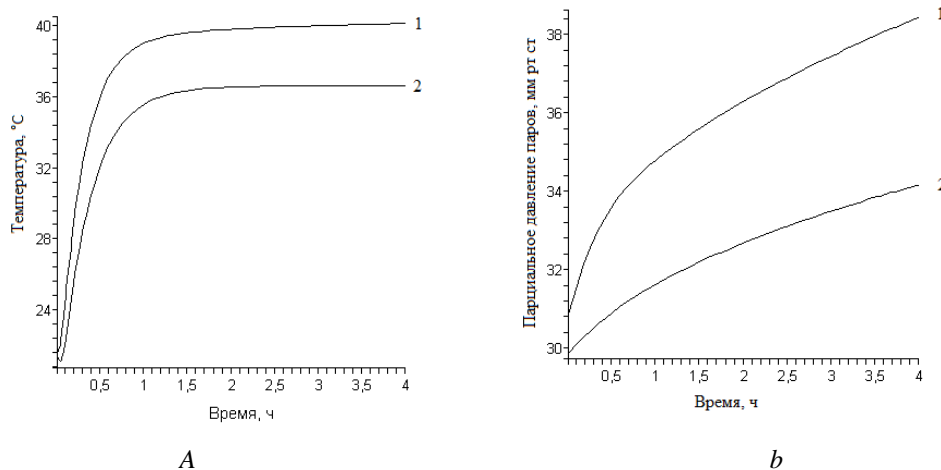


Figure 7. Characteristics inside the shoe space:
a- temperature
b- partial vapor pressure

This is due to the fact that an increase of 0.3-0.5 C0 already creates discomfort for a person, and with an increase of more than 1 C0, this excludes him from being in these conditions. Therefore, packages of materials and a suit made of them must guarantee the fulfillment of these requirements for a person during the entire time he is in these conditions.

The software developed by the authors solves this problem and creates the prerequisites for a reasonable choice of a package of materials based on the obtained thermophysical characteristics on the stands and devices described in communication 2. Therefore, the availability of modern tools for determining the thermophysical characteristics and packages of materials and the developed software guarantee manufacturers reliability to make a suit that creates comfortable conditions during the entire time they are on duty. The entire list of works offered to the reader should not mislead him that there is no need for experimental wear. Of course not. Experienced wear in real conditions confirms the validity of the conclusions drawn or rejects them. But the availability of highly efficient methods for studying the thermophysical properties of materials and software for a reasonable choice of packages of materials significantly reduces the cost of developing and manufacturing workwear for working military personnel both for low temperature conditions and for low temperature conditions. But what is also very important, the formation of requirements for materials

for the possibility of their use for the production of workwear is also in demand by the developers of the materials themselves, including the use of nanotechnology, and all this together will solve the problem of protecting military personnel from the effects of external negative conditions.

To select the optimal power, the authors have developed software that allows manufacturers, based on an innovative technological process using universal and multifunctional equipment, to produce the entire range of footwear at minimum, average and maximum costs, which creates the basis for varying the price niche, including through a gradual increase in the share of domestic components in the production of a suit for civil servants with a significant reduction in the cost of its manufacture. At the same time, it was justified to choose exactly those criteria that have the greatest impact on the cost of finished products as criteria for a reasonable choice of the optimal power when forming the algorithm, namely:

- load factor of workers, %;
- labor productivity of one worker, a pair;
- wage losses per unit of output, rub.;
- specific reduced costs per 100 pairs of shoes, rub.

Of the four criteria given, in our opinion, the main ones are the labor productivity of 1 worker and the specific reduced costs.

Labor productivity of 1 worker is the most important labor indicator. All the main indicators of

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production efficiency and all labor indicators depend to one degree or another on the level and dynamics of labor productivity: production, number of employees, wages, wages, etc.

To increase labor productivity, the introduction of new equipment and technology, extensive mechanization of labor-intensive work, automation of production processes, advanced training of workers and employees, especially when introducing innovative technological processes based on universal and multifunctional equipment, are of paramount importance.

Specific reduced costs - an indicator of the comparative economic efficiency of capital investments, used when choosing the best of the options for solving technological problems.

Reduced costs - the sum of current costs, taken into account in the cost of production, and one-time capital investments, the comparability of which with current costs is achieved by multiplying them by the standard coefficient of efficiency of capital investments. Tables 9 and 10 show optimal power calculations for the range from 300 to 900 pairs for men's and women's shoes for the entire shoe range. An analysis of the obtained

characteristics for three variants of a given technological process in the manufacture of the entire assortment of shoes confirmed the effectiveness of the software product for evaluating the proposed innovative technological process using universal and multifunctional equipment. So, with a range of 300 - 900 pairs, the best according to the specified criteria is the output of 889 pairs (for men) and 847 pairs (for women). If the production areas proposed by the regional and municipal authorities of two districts - the Southern Federal District and the North Caucasus Federal District, according to the standard indicators, do not allow the calculated production volumes to be realized, then in this case the option of the optimal capacity is selected that is acceptable, for example, the production volume of 556 pairs, which corresponds to the standard indicators for the proposed production areas and is characterized by the best values of the indicated criteria, which form the cost of the entire range of footwear. The authors have developed summary technological processes for assembling the blank of the shoe upper and for assembling shoes, respectively, for 12 models of men's and 12 models of women's shoes.

Table 5. Calculation of optimal power with a range of 300-900 pairs using men's shoes as an example

Power	Type of equipment	Optimal power, steam per shift	Labor productivity of 1 worker, steam	Worker load factor, %	Wage losses per unit of output, rub.	Specific reduced costs per 100 pairs of shoes, rub.
300-500	1	500	28.09	61.39	13.68	6735.36
500-700	1	556	27.73	69.14	9.83	6404.71
700-900	1	889	28.09	77.20	6.42	5236.17
300-500	2	500	28.09	61.39	13.68	6728.68
500-700	2	556	27.91	68.70	9.97	6083.28
700-900	2	889	28.09	77.20	6.42	5240.72
300-500	3	500	28.09	61.39	13.68	7533.95
500-700	3	700	28.12	67.28	10.56	6734.02
700-900	3	889	28.09	77.20	6.42	5876.59

To assess the effectiveness of the production activities of a shoe enterprise, it is necessary to analyze the annual results of the enterprise for the

production of men's and women's footwear assortment.

Table 6. Calculation of optimal power with a range of 300-900 pairs using women's shoes as an example

Power Options	Type of equipment	Optimal power, steam per shift	Labor productivity of 1 worker, steam	Worker load factor, %	Wage losses per unit of output, rub.	Specific reduced costs per 100 pairs of shoes, rub.
300-500	1	500	27.73	62.18	13.40	6980.5
500-700	1	700	27.73	69.14	9.83	6277.43
700-900	1	847	27.73	74.50	7.54	5673.49
300-500	2	500	24.45	63.90	14.11	7630.92
500-700	2	556	27.73	69.14	9.83	6404.71
700-900	2	812	25.64	75.40	7.77	6060.55

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300-500	3	500	27.00	61.74	14.02	7827.12
500-700	3	556	29.32	68.21	9.71	6607.65
700-900	3	847	27.00	74.70	7.66	6341.05

These calculations indicate that with 100% of the sale of men's and women's shoes in the specified period of time, not only the costs of production and sale of products are covered, but there is also a profit in the amount of 3697.4 thousand rubles. This indicates the effective operation of the enterprise, as well as the correct marketing and assortment policy. Product profitability is 14.9%.

Shoe enterprises should focus on both external (consumer enterprises, competition, market conditions, etc.) and internal factors, such as sales volume, profitability, covering basic costs, etc. However, it is impossible to take into account and foresee all situations that may arise. when selling light industry products, i.e. some costume models at a certain stage are no longer in demand.

Thus, the regions on whose territory the territories of advanced socio-economic development are organized, including light industry enterprises, become leaders in economic development, determine the competitiveness of the economy of these regions, and provide social protection to the population of these regions.

Conclusion

The purpose of developing the Strategy is to propose a set of strategic directions, measures and steps aimed at reversing the negative trends in the economy and social sphere of the regions of the Russian Federation and entering a sustainable trajectory of socio-economic development, which is based on a model of accelerated economic growth and strengthening the economic base of the Russian Federation for subsequent improvement in the quality of life and well-being of its inhabitants.

The mission (strategic goal) of the socio-economic development of the Russian Federation is the growth of the genuine well-being of the inhabitants of the regions of the Russian Federation, the creation of opportunities for their self-realization by outstripping the rate of creation of new high-tech and knowledge-intensive jobs compared to other regions of Russia, the growth of the level and quality of life, access to social and cultural benefits.

The concept of true well-being comes from the assumption that today the content of the concepts of "development" and "progress" has acquired a new meaning. Development is becoming human-oriented (humanistic) and environmentally-oriented, based on investments in human capital, innovative sectors of the economy, and the preservation of ecosystems. This means an increase in the subjective feeling of personal happiness, including not only the level of income, but also non-economic indicators, including the value of leisure, eco-system services, and the quality of work.

Genuine well-being is assessed by an expanded set of indicators that characterize the quality of human life from all sides (opportunities for self-realization, wealth inequality and other indicators of inclusive economic growth, subjective happiness, quality of the urban environment, environmental indicators, healthy life expectancy, indicators of human development, development of democratic institutions and public participation, etc.). This takes into account not only the economic (level of income, volume of production and investment), but also the social, environmental, spatial and managerial (institutional) components. Economic development not only does not contradict the conservation of nature ("industrialization at any cost"), but also leads to a reduction in social disproportions.

The goal for the period up to 2026 (the first stage) is to ensure the outstripping growth of the economy and the development of the social sphere of the Russian Federation at a rate higher than the national average based on strengthening the economic base, stimulating entrepreneurial initiative, sustainable spatial development and improving the efficiency of state and municipal government. At the first stage, due to outstripping growth rates, basic conditions will be created for entering the trajectory of sustainable development.

The goal for the period 2027 - 2030 (second stage) is the formation of a new model for the development of the Russian Arctic, based on the principles of sustainable development, including through the implementation of the provisions of the Decree of the President of the Russian Federation dated May 7, 2018 No. 204 "On national goals and strategic objectives for the development of the Russian Federation for the period up to 2035".

At the second stage, a new model of sustainable long-term development of the Russian Arctic will be formed due to investments in human capital, ecology, and industrial renewal, which implies the harmonious development of the economic, social and environmental components.

The goal for the period 2031-2035 (the third stage) is to increase the true well-being of people and their subjective sense of happiness through the scaling of the sustainable development model, the transition to a fundamentally new quality of economic growth, in which social, economic and environmental development complement each other, the introduction of best practices environmentally-oriented and human-oriented development.

Thus, by 2035, the Strategy is designed to realize the existing human potential of the Russian Arctic, increase opportunities for self-realization, ensuring an increase in the level and quality of life, access to social

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and cultural benefits, creating an environment of equal opportunities for everyone. This will create conditions for the implementation of a catch-up development model (with growth rates higher than the average Russian ones) with access to a model of sustainable long-term development by 2027.

The implementation of the Strategy will make it possible to make a consistent transition from the old industrial model of extensive economic growth at the expense of natural resources to a sustainable development model that balances economic, environmental and social components. The new development model will be based on the concentration of added value in the region, the development of innovations and human potential, the implementation of a smart specialization policy for certain territories, the greening of industry, and the creation of a new quality of business and management institutions.

The implementation of the Strategy will help strengthen the status of the Russian Arctic as a geostrategic Arctic zone of the Russian Federation.

The Spatial Development Strategy of the Russian Federation until 2035 considers all regions that are essential for ensuring the territorial integrity of the country and the security of the state. The regions of the Russian Federation are included in the list of geostrategic territories as regions bordering the countries of the European Union, with a level of economic development below the Russian average. Among the main directions of development of the regions of the Russian Federation, those that are focused on realizing the potential of the border geographical position of the Russian Federation as a promising major economic center stand out. In accordance with the Strategy for the Spatial Development of Russia, this Strategy defines measures to strengthen effective specialization through the development of the timber industry, mining, fishing and fish farming, engineering and tourism.

The regions of the Russian Federation in the long term are positioned as pilot regions for the implementation of the global sustainable development agenda for the period up to 2035. This agenda was adopted on September 25, 2020 by the UN member states, including Russia.

Within the framework of the Strategy, by 2035 the regions of the Russian Federation are considered

as regions with territories with a unique specialization at the national and regional levels. At the same time, the regions themselves already perform or are potentially capable of performing several functions at once (“development through diversity”) at the national level: an innovative industrial center, a scientific and educational center, a transport and logistics center, a digital economy center, a tourist center, a territory of cooperation and interactions, areas of sustainable development.

The Strategy identifies 7 equivalent and interrelated strategic areas focused on the formation of human potential, the creation of new incentives to live and work in the regions of the Russian Federation, and 50 main tasks for moving forward in each of them. At the same time, some of the activities can be implemented only at the regional and municipal levels.

Within the framework of the strategic direction "Infrastructure for Life", the main directions of infrastructure development are set as a necessary condition for the development of the economy and the social sphere. The strategic direction "Development of the economy and entrepreneurship" defines measures to strengthen key competitive and promising sectors of the economy of the regions of the Russian Federation. Within the framework of the strategic direction "Development of tourism and the hospitality industry", the unique tourist and cultural opportunities of the regions of the Russian Federation are separately disclosed. The strategic direction "Sustainable Spatial Development" is aimed at realizing the unique spatial potential of the republic. The strategic direction "Improving environmental sustainability and security" sets the values of sustainable development, green economy in order to.

The strategic direction "Human Capital and the Social Sphere" is aimed at the development of science and education, health care, and social support for people. The multiplication of human potential is the biggest task, a necessary condition for retaining the population, solving problems in the field of industrial development. Finally, the strategic direction "Effective Governance: Tools for Implementation" sets the vector in the field of creating a modern development management system, introducing advanced practices of public participation, and new instruments of tax, budget and investment policy.

Table 7. Priority areas and strategic goals of the Strategy

Strategic Direction	Strategic goal
Infrastructure for life	Improvement of transport, engineering, housing and communal infrastructure as a necessary condition for the development of the economy and the social sphere
Development of the economy and entrepreneurship	creating new jobs, increasing investment attractiveness, pursuing a cluster policy, developing traditional industries and services, creating conditions for the development of new industrial clusters

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Development of tourism and hospitality industry	preservation of the cultural and historical heritage of the regions of the Russian Federation, the creation of a modern hospitality industry in the regions of the Russian Federation
Sustainable spatial development	expanding international cooperation, pursuing a balanced spatial policy aimed at strengthening the economies of municipalities in the regions of the Russian Federation, creating a comfortable urban environment, introducing new technologies
Enhancing environmental sustainability and safety	implementation of the value system of sustainable development, green economy, ensuring the reproduction of a healthy population, as well as the growth of life expectancy and quality by solving environmental problems to pass on to future generations for subsequent multiplication of the opportunities that the region currently has
social development	ensuring a high quality of life for the population by increasing the availability of high-quality social services, the implementation of spiritual and cultural development, interethnic harmony
Effective Governance: Implementation Tools	creation of a modern development management system, introduction of advanced practices of public participation, new instruments of tax, budget and investment policy

The strategy takes into account the provisions of the Decree of the President of the Russian Federation dated May 7, 2018 No. 204 “On the national goals and strategic objectives of the development of the Russian

Federation for the period up to 2035”, including within the framework of individual national projects and programs (table 8).

Table 8. Priority areas and strategic goals of the Strategy, compliance with the May Decree of the President of the Russian Federation

Priority areas	National projects and key quantitative targets of the May Decree	Federal projects in which the regions of the Russian Federation are expected to participate
Development of human capital and social sphere	national project "Demographic Development": increase in healthy life expectancy up to 67 years; an increase in the total fertility rate to 1.7; an increase in the proportion of citizens leading a healthy lifestyle, as well as an increase to 55% of the proportion of citizens systematically engaged in physical culture and sports; national project "Health": reduction in mortality of the working-age population (up to 350 cases per 100 thousand population), mortality from diseases of the circulatory system (up to 450 cases per 100 thousand population), mortality from neoplasms, including malignant (up to 185 cases per 100 thousand population), infant mortality (up to 4.5 cases per 1 thousand born children); ensuring coverage of all citizens with preventive medical examinations at least once a year; ensuring optimal accessibility for the population of medical organizations providing primary health care; optimization of the	"Demography" (P): 1) "Financial support for families at the birth of children"; "Establishment of a nursery - promotion of women's employment"; "Older generation"; "Strengthening public health"; "New physical culture of the population"; "Health" (N): "Development of the primary health care system"; "The fight against cardiovascular diseases"; "Fight against oncological diseases"; 1) "Child development healthcare, including the creation of a modern infrastructure for providing medical care for children"; 2) "Provision of medical organizations of the system health care qualified personnel"; 3) "Creation of a single digital circuit in healthcare based on a unified state information system health care (EGISZ)"; 4) "Development of export of medical services"; "Education" (E): 1) "Modern School"; 2) "Success of every child"; 3) "Modernparents"; 4) "Digital School"; 5) "Teacher of the Future"; 6) "Young professionals";

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	<p>work of medical organizations providing primary health care, reducing the waiting time in line when citizens apply to these medical organizations, simplifying the procedure for making an appointment with a doctor;</p> <p>the national project "Education": ensuring the global competitiveness of Russian education, the entry of the Russian Federation into the top 10 countries in the world in terms of the quality of general education;</p> <p>national project in the field of science:</p> <p>ensuring the presence</p>	<p>7) "New Opportunities for Everyone";</p> <p>8) "Social activity";</p> <p>9) "Improving the competitiveness of Russian higher education";</p> <p>"Science" (S):</p> <p>1) "Creation of a network of leading research centers and world-class centers";</p> <p>2) "Creation advanced research infrastructure";</p> <p>3) "Generation of fundamental scientific knowledge";</p> <p>4) "Creation of scientific and educational centers and cooperation with organizations"</p>
	<p>the Russian Federation among the five leading countries of the world carrying out research and development; ensuring the attractiveness of work in the Russian Federation for Russian and foreign leading scientists and young promising researchers;</p> <p>outpacing increase in domestic spending on research and development; national program in the field of culture:</p> <p>There are no specific target indicators in the May decree</p>	<p>operating in the real sector of the economy";</p> <p>5) "Digital technologies in science";</p> <p>"Culture" (A):</p> <p>1) "Cultural environment";</p> <p>2) "Creative people";</p> <p>3) "Digital Culture"</p>

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<p>Development of the economy and entrepreneurship; development of tourism and hospitality industry</p>	<p>the national program in the field of increasing labor productivity and supporting employment: the growth of labor productivity in medium and large enterprises of the basic non-primary sectors of the economy is not less than 5 percent per year; involvement in implementation of the specified national program at least 10 constituent entities of the Russian Federation annually; involvement in the implementation of the specified national program of at least 10 thousand medium and large enterprises of the basic non-primary sectors of the economy; national project in the field of development of small and medium-sized businesses and support for individual entrepreneurial initiatives: increase in the number of people employed in the small and medium entrepreneurship, including individual entrepreneurs, up to 25 million people</p>	<p>"Productivity and Employment Support" (L): Systemic measures to increase labor productivity"; 1) "Implementation of measures to increase labor productivity and expert support for enterprises in non-primary industries"; 2) "Employment support: employment, training, infrastructure development"; "Small and medium business and support for individual entrepreneurial initiative" (I): 1) "Improving the conditions for doing business activities"; 2) "Creation of a digital platform for supporting production and marketing activities of small and medium-sized entities entrepreneurship"; 3) "Improvement procurement systems carried out by the largest customers from subjects of small and medium business"; 4) "Expanding access of SMEs to financial support, including concessional financing"; 5) "Creation of a system of acceleration of subjects of small and medium entrepreneurship"; 6) "Modernization of the exporter support system –</p>
		<p>subjects of small and medium business"; 7) "Creation of a support system for farmers and development of rural cooperation"; 8) "Promotion of Entrepreneurship"</p>

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<p>Infrastructure for life, sustainable spatial development; international relations</p>	<p>national project in the field of housing and urban environment: providing affordable housing for middle-income families; increase in housing construction to at least 120 million square meters per year; drastic increase comfort of the urban environment, increasing the index of urban environment quality by 30 percent; increase in the share of citizens participating in solving issues of urban environment development, up to 30 percent; sustainable reducing the uninhabitable housing stock; national project for creation of safe and high-quality roads: increase in the share of regional roads that meet regulatory requirements in their total length of at least than up to 50 percent; reduction in the share of highways of federal and regional significance, operating in overload mode, in their total length by 10 percent compared to 2020; reduction in the number of places of concentration of road traffic accidents (dangerous sections) on the road network by half compared to 2020; a 3.5-fold reduction in deaths from road traffic accidents compared to since 2017 - to the level</p>	<p>"Housing and Urban Environment" (F):</p> <ol style="list-style-type: none"> 1) "Housing"; 2) "Formation of a comfortable urban environment"; 3) "Ensuring a sustainable reduction in the uninhabitable housing stock"; <p>"Safe and quality roads" (R):</p> <ol style="list-style-type: none"> 1) "Road network"; 2) "System-wide measures for the development of the road sector"; <p>"International cooperation and export" (T):</p> <ol style="list-style-type: none"> 1) "Industrial export"; 2) "Export of agricultural products"; 3) "Logistics international trade"; 4) "Export of services"; 5) "Systemic measures to promote international cooperation and export"
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	<p>not exceeding four people per 100 thousand of the population (by 2035 - the desire for zero mortality).</p> <p>national program in the field of development of international cooperation and export: formation of global competitive non-primary sectors, the total share of exports of goods (works, services) of which will be at least 20 percent of the country's gross domestic product; achieving the volume of exports (in value terms) of non-commodity non-energy goods in the amount of 250 billion rubles.</p> <p>US dollars per year, including engineering products - 60 billion US dollars per year and agricultural products - 45 billion US dollars per year, as well as the volume of exports of services rendered in the amount of 100 billion US dollars per year; formation of an effective system of division of labor and industrial cooperation within the framework of the Eurasian Economic Union in order to increase the volume of trade between the member states of the union by at least one and a half times and ensure the growth of the volume of accumulated mutual investments by one and a half times</p>	
<p>Enhancing environmental sustainability and safety</p>	<p>national project "Ecology": liquidation of all unauthorized landfills identified as of January 1, 2021 within city boundaries; cardinal decrease in the level of atmospheric air pollution in large industrial centers; improving the quality of drinking water for the population; ecological improvement of water bodies; conservation of biological diversity, including through the creation at least 24 new protected areas</p>	<p>"Ecology" (G):</p> <ol style="list-style-type: none"> 1) "Clean country"; 2) "Construction of facilities for sorting and processing MSW"; 3) "Drinking water"; 4) "Forest Conservation"

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<p>Effective Governance: Implementation Tools</p>	<p>National program "Digital Economy of the Russian Federation": increase in internal costs for the development of the digital economy through all sources at least three times compared to 2021; building sustainable and secure information and telecommunications infrastructure; use of predominantly domestic software</p>	<p>"Digital Economy" (D):</p> <ol style="list-style-type: none"> 1) "Regulatory regulation of the digital environment"; 2) "Information infrastructure"; 3) "Personnel for the digital economy"; 4) "Information safety"; 5) "Digital Technologies"; 6) "Digital public administration"
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The implementation of the Strategy is designed to respond to the main demographic challenge of the long-term development of the regions of the Russian Federation. In conditions of rather high mobility of the population, people choose to live in those regions where they can realize their potential. The answer to this should be an appeal to the needs and capabilities of each resident of the regions of the Russian Federation and positioning the state as an assistant, the role of civil society in governance should be radically changed, mechanisms for effective feedback from residents should be established. Therefore, at the center of the Strategy are people and their well-being. Our country is the only one in the world that has proved that nothing depends on the climatic zone if there is a developed industry and infrastructure. We offer our own solution to a whole range of problems, the most optimal, in our opinion, namely: the creation of light industry enterprises in the regions of the Russian Federation is due not only to their location on the railway tracks, which is not unimportant, but also

to their advantageous location near large rivers of the Russian Federation that go to the ocean, which will automatically provoke a sharp increase not only in freight traffic, but also the possibility, with necessary, at minimal cost to implement an industrial policy to provide these regions with demanded and import-substituting products, that is, it will be gold for light industry, will allow the production of cheap, unique and other goods such as shoes, belts, bags and other things made of fish skin, fur coats and clothes made of deer skins and so on, thus, light industry products will be in demand not only in our country, but also abroad. It is strange not to take advantage of such a treasure, when everything can not only pay off,

But this is in the future, but for now we propose to start small on the basis of our analytical work, that is, if everything is done wisely, then this will not only be our version of the development of events, but will become a reality and provoke the effective development of the regions of the Russian Federation.

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SOI: [1.1/TAS](#) DOI: [10.15863/TAS](#)

International Scientific Journal
Theoretical & Applied Science

p-ISSN: 2308-4944 (print) e-ISSN: 2409-0085 (online)

Year: 2022 Issue: 10 Volume: 114

Published: 20.10.2022 <http://T-Science.org>

Issue

Article



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**ON THE PECULIARITIES OF FILLING THE MARKETS OF THE
 REGIONS OF THE RUSSIAN FEDERATION WITH COMFORTABLE
 EQUIPMENT FOR THE ENTIRE POPULATION (MESSAGE 2)**

Abstract: *in the message 2, the authors analyze the Strategy for the socio-economic development of the regions of the Russian Federation, the purpose of which is to propose a set of strategic directions, measures and steps aimed at reversing the negative trends in the economy and social sphere of the regions of the Russian Federation and its entry into a sustainable trajectory of socio-economic development, which is based on the model of accelerated economic growth and strengthening of the economic base of the Russian Federation for the subsequent improvement of the quality of life and well-being of the inhabitants of these regions. The mission (strategic goal) of the socio-economic development of the Russian Federation is the growth of the genuine well-being of the inhabitants of the regions of the Russian Federation, the creation of opportunities for their self-realization through the outstripping pace of creating new high-tech and knowledge-intensive jobs, increasing the level and quality of life, access to social and cultural benefits.*

The concept of true well-being comes from the assumption that today the content of the concepts of "development" and "progress" has acquired a new meaning. Development is becoming human-oriented (humanistic) and environmentally-oriented, based on investments in human capital, innovative sectors of the economy, and the preservation of ecosystems. This means an increase in the subjective feeling of personal happiness, including not only the level of income, but also non-economic indicators, including the value of leisure, eco-system services, and the quality of work.

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Genuine well-being is assessed by an expanded set of indicators that characterize the quality of human life from all sides (opportunities for self-realization, wealth inequality and other indicators of inclusive economic growth, subjective happiness, quality of the urban environment, environmental indicators, healthy life expectancy, indicators of human development, development of democratic institutions and public participation, etc.). At the same time, not only the economic (level of income, volume of production and investment) is taken into account, but also the social, environmental, spatial and managerial (institutional) components. Economic development not only does not contradict the conservation of nature ("industrialization at any cost"), but also leads to a reduction in social disproportions,

the goal for the period up to 2026 (first stage) is to ensure rapid economic growth and development of the social sphere of the regions of the Russian Federation by strengthening the economic base, stimulating entrepreneurial initiative, sustainable spatial development and improving the efficiency of state and municipal government. At the first stage, due to outstripping growth rates, basic conditions will be created for entering the trajectory of sustainable development;

the goal for the period 2027-2030 (second stage) is the formation of a new development model of the Russian Federation based on the principles of sustainable development, including through the implementation of the provisions of the Decree of the President of the Russian Federation of May 7, 2018 No. 204 "On national goals and strategic objectives for the development of the Russian Federation for the period up to 2035". At the second stage, a new model of sustainable long-term development of the Russian Federation will be formed due to investments in human capital, ecology, and industrial renewal, which implies the harmonious development of economic, social and environmental components;

the goal for the period 2031-2035 (stage three) is to increase the true well-being of people and their subjective sense of happiness through the scaling up of the sustainable development model, the transition to a fundamentally new quality of economic growth, in which social, economic and environmental development complement each other, the introduction of best practices environmentally-oriented and human-oriented development.

Thus, by 2035, the Strategy is designed to realize the existing human potential of the regions of the Russian Federation, increase opportunities for self-realization, ensuring an increase in the level and quality of life, access to social and cultural benefits, creating an environment of equal opportunities for everyone. This will create conditions for the implementation of the catch-up development model with access to the model of sustainable long-term development by 2027. The implementation of the Strategy will make it possible to make a consistent transition from the old industrial model of extensive economic growth at the expense of natural resources to a sustainable development model that balances economic, environmental and social components. The new development model will be based on the concentration of value added in the regions, the development of innovations and human potential.

Key words: population, regions, comfort, equipment, livelihoods, safety, well-being, demand, profit, profitability, stable financial condition, stable TEP, priority, preference, competitiveness.

Language: English

Citation: Rumyantseva, N. S., et al. (2022). On the peculiarities of filling the markets of the regions of the Russian Federation with comfortable equipment for the entire population (Message 2). *ISJ Theoretical & Applied Science*, 10 (114), 239-275.

Soi: <http://s-o-i.org/1.1/TAS-10-114-39> **Doi:**  <https://dx.doi.org/10.15863/TAS.2022.10.114.39>

Scopus ASCC: 2000.

Introduction

UDC 684.35:685.37

The light industry market is also growing due to socio-cultural progress, in particular, thanks to the development of professional sports, an increase in demand for those who choose sports as a way to a healthy lifestyle. At the end of 2020, the Sport Express newspaper published an interview with A. Grebtsov, Chairman of the Board of the Russian Outdoor Group. "The outdoor market serves mountaineering, tourism, extreme sports, special forces, rescue units, polar services and troops. These are areas that require heavy-duty, frost-resistant, waterproof equipment that meets the latest global standards of safety and comfort." A. Grebtsov gave interesting details, in particular, he compared the technological base for the production of quality products in the Russian

Federation, Europe and Asia. We are "somewhat behind", in his assessment, from the Asian potential, but with Europe "We can definitely compete ... in Russia there are about 30 (!) Enterprises that know how to sew well." After the introduction of the import ban for state orders and state defense orders, the share of materials from the member countries of the Customs Union supplied to the country's law enforcement agencies increased from 30% in 2017 to 93% in 2020. In 2020, the trend towards an increase in the share of materials produced by the CPES countries used for the production of clothing items should be about 90-95%. The turn of the state order towards domestic production will open up opportunities for subcontractors of the chemical industry (raw materials for thread, accessories, membranes, insulation). It will increase the production of fabrics, tailoring, which will pull the

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development of equipment. D. Manturov believes that in order to consolidate the results achieved, it is important: but with Europe "We can definitely compete ... in Russia there are about 30 (!) Enterprises that know how to sew well." After the introduction of the import ban for state orders and state defense orders, the share of materials from the member countries of the Customs Union supplied to the country's law enforcement agencies increased from 30% in 2017 to 93% in 2020. In 2020, the trend towards an increase in the share of materials produced by the CPES countries used for the production of clothing items should be about 90-95%. The turn of the state order towards domestic production will open up opportunities for subcontractors of the chemical industry (raw materials for thread, accessories, membranes, insulation). It will increase the production of fabrics, tailoring, which will pull the development of equipment. D. Manturov believes that in order to consolidate the results achieved, it is important: but with Europe "We can definitely compete ... in Russia there are about 30 (!) Enterprises that know how to sew well." After the introduction of the import ban for state orders and state defense orders, the share of materials from the member countries of the Customs Union supplied to the country's law enforcement agencies increased from 30% in 2017 to 93% in 2020. In 2020, the trend towards an increase in the share of materials produced by the CPES countries used for the production of clothing items should be about 90-95%. The turn of the state order towards domestic production will open up opportunities for subcontractors of the chemical industry (raw materials for thread, accessories, membranes, insulation). It will increase the production of fabrics, tailoring, which will pull the development of equipment. D. Manturov believes that in order to consolidate the results achieved, it is important:) enterprises that know how to sew well. After the introduction of the import ban for state orders and state defense orders, the share of materials from the member countries of the Customs Union supplied to the country's law enforcement agencies increased from 30% in 2017 to 93% in 2020. In 2020, the trend towards an increase in the share of materials produced by the CPES countries used for the production of clothing items should be about 90-95%. The turn of the state order towards domestic production will open up opportunities for subcontractors of the chemical industry (raw materials for thread, accessories, membranes, insulation). It will increase the production of fabrics, tailoring, which will pull the development of equipment. D. Manturov believes that in order to consolidate the results achieved, it is important:) enterprises that know how to sew well. After the introduction of the import ban for state orders and state defense orders, the share of materials from the member countries of the Customs Union supplied to the country's law enforcement

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for thread, accessories, membranes, insulation). It will increase the production of fabrics, tailoring, which will pull the development of equipment. D. Manturov believes that in order to consolidate the results achieved, it is important:

- make it clear to large retail chains the importance of acquiring and distributing goods produced in Russia, of course, taking into account their proper quality;
- to place first of all orders for production from those "who have already got on their feet and know how to sew." They were able to prove their worth;
- to assist enterprises in obtaining European certification, otherwise foreign firms will not be interested in them, and the goods produced by us will not get to the West;
 - actively support enterprises in the provision of collective stands at international exhibitions;
 - provide such enterprises with subsidies on loans for the purchase of raw materials and materials. The share of these loans in the total volume of lending should be from 50 to 85%;
 - exempt modern imported equipment from import duties and VAT, such as equipment used in sewing shops, 90% is imported;
 - implement preferential leasing.

As you can see, the program of D. Manturov systematizes the main and primary steps in the direction of the light industry in order to return it to its former meaning. However, Heraclitus was right when he said that you cannot step into the same river twice. The rise of the light industry can be carried out on a new technological, economic and legal basis.

The manufacturer is currently not interested in producing a quality product. "Sheepskin is not worth the candle" - the costs are high, the cost of products will increase, the real price will be significantly increased by the intermediary and the seller. As a result, the market for such a product will not "digest" and the manufacturer will be struck by the deadly disease No. 1 according to E. Deming. On a limited scale, clearly scanty for Russia, quality things are guaranteed to be made, manufactured, but this practice has nothing to do with the situation in production, it is exclusive.

The first experience of control intervention in the production process in order to give it stability and a certain increment can be found in the activities of workshops, individual industries, and schools of masters. Most of the famous sculptors of the Renaissance tried to work in teams of stonemasons, directly in the places where the material was mined. They looked in the quarries for the texture they needed to create the image. It was then that a joke appeared: it's easy to make a masterpiece - you need to remove everything unnecessary, superfluous, but first you need to find the basis. In the workshops, in the interests of quality, the craftsmen carefully checked the products, observed the work of apprentices in the course of production, actively introduced the secrets of production to students, selecting the most capable of them. Despite the fact that each product was an individual, made by a master, it passed internal control, behind which there was also an external one from the side of the city guild organizations. Subsequently, such work was defined as the rejection phase.

In terms of content, it was much richer, synthetic, more like a "selection" than a "culling". Creativity moved the masters, the masters studied no less than the students. They were looking for paints, primers, foundations, ideal images, and they were wrong. Creativity spares no one - neither the great nor the beginners. Everyone had to work, and especially the masters, by sticking. The concept of "marriage" is not as simple as it seems from the outside. Marriage is not always in sight, the masters were taken out by its hidden forms, which appear over time. "Rejection" was not an act, as in mass production, but a technology. Today it is difficult for us to look beyond the achieved horizon in the development of mass production (Figure 1). What is clear is that its "zealous" form is still more of a direction of development than a phase. However, the logic of progress, built on continuity, does not exclude a return to some part, characteristic of the shop organization. Mass character should not be a brake on creativity. Over time, it will surely reveal the diversity under the common "roof" of the multiple result. Therefore, one should carefully examine the production process that has been perfected in the workshop form.

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Figure 1. Footwear for the population of the regions of the Russian Federation:
- internal multi-layer liner and porous insole; - rubber bottom Arctic; - EVA midsole - multi fastening on rings (D-ring); - ergonomic insulated leather; - upper: Timberwolf leather Diamond-Lite nylon with thermal insulation function.

Main part

When choosing packages of materials for the study, we took into account the physical, mechanical, thermophysical characteristics of the materials, information about the specifics of the operation of this clothing, which we obtained from open literary sources.

A feature of the reasonable choice of packages of materials for a suit for the population of the regions of the Russian Federation is the fact that they must not only provide him with a comfortable state due to the guaranteed temperature regime under the clothing space of at least 340C, but also meet all the requirements for the manufacture of heat-protective clothing.

For the study, packages of both imported polymeric materials for the production of jackets and packages of domestic polymeric materials were considered, which were evaluated for their satisfaction with the requirements for thermal protective clothing when military personnel are in

climatic zones with temperatures of -200C, -300C and -400C. The results of previous studies using the software product developed by the authors for the reasonable choice of a package of materials in the manufacture of comfortable equipment for the population of the regions of the Russian Federation showed that at an initial weighted average temperature of the human body surface of +360C for all packages of materials using both domestic polymeric materials and imported polymeric materials, there is observed a sharp drop in body temperature at an air temperature of -200C, -300C and -400C, Provoking a feeling of discomfort during the first hour of their stay in these conditions, which implies the search for new materials that would guarantee them a comfortable state for at least two hours. Table 1 shows the characteristics of the package of imported polymeric materials for the production of jackets, and Table 6.5 shows the characteristics of the package of domestic polymeric materials.

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Table 1. Characteristics of the package of imported polymer materials for the production of jackets

Model	Package materials	Thickness, mm	Coefficient of thermal conductivity λ , W/m °C
1	2	3	four
Model 1	Synthetic fabric (100% PE)	1.6	0.042
	Promaloft insulation (main)	12.0	0.034
	Gasket materials:		
	1. TKPM "Picardy" 1242\17	1.2	0.041
	2. TKPM "Kufner" R171G57	1.3	0.031
	3. TKPM "Kufner" B141N77	2.1	0.021
4. TKPM AKR-622\AKR218	3.5	0.009	
Lining fabric	0.76	0.039	
Model 2	Synthetic fabric (100% PE)	1.6	0.042
	Insulation "Hollofan" 2 layers basic		
	Gasket materials:	12.0	0.036
	1. TKPM "Picardy" 1242\17	1.2	0.041
	2. TKPM "Kufner" R171G57	1.3	0.031
	3. TKPM AKR-622\AKR218	2.1	0.021
	3.5	0.009	
Lining fabric	0.76	0.039	
Model 3	Synthetic fabric (100% PE)	1.6	0.042
	Insulation "Combiwool" "250 + 150" basic		
	Gasket materials:	12.0	0.33
	1. TKPM "Picardy" 1242\17	1.2	0.041
	2. TKPM "Kufner" R171G57	1.3	0.031
	3. TKPM AKR-622\AKR218	2.1	0.021
	3.5	0.009	
Lining fabric	0.76	0.039	

The packages of materials were selected in accordance with the requirements for thermal protective clothing and the materials used for its manufacture. When compiling the packages, the purpose of each layer and the thermophysical characteristics of the materials were taken into account.

On a number of materials. Therefore, the material packs for models No. 1-No. 3 are made up of the most famous imported materials, and the packs No. 1* - No. 3* are made up of domestically produced materials.

Table 2. Characteristics of the package of domestic polymeric materials for the production of jackets.

Model	Package materials	Thickness, mm	Coefficient of thermal conductivity λ , W/m °C
1	2	3	4
Model 1	Membrane fabric	3.5	0.06
	Sintepon (100% PE) basic	15	0.035
	Gasket materials:		
	1. TKPM "Picardy" 1242\17	1.2	0.041
	2. TKPM "Kufner" R171G57	1.3	0.031
	3. TKPM "Kufner" B141N77	2.1	0.021
4. TKPM AKR-622\AKR218	3.5	0.009	
Fleece	1.2	0.039	

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Model 2	PE fabric (art. 06617-kv)	2.1	0.040
	Thermal insulation Termofinn Micro basic	15	0.036
	Gasket materials:		
	1. TKPM "Picardy" 1242\17	1.2	0.041
	2. TKPM "Kufner" R171G57	1.3	0.031
	3. TKPM "Kufner" B141N77	2.1	0.021
Model 3	4. TKPM AKR-622\AKR218	3.5	0.009
	Visco-complex lining fabric	0.6	0.044
	Blended fabric (67% PE + 33% CL)	1.8	0.041
	Stitched fabric "wool" 2 layers (80% PE + 20% wool) main	20	0.038
	Gasket materials:		
	1. TKPM "Picardy" 1242\17	1.2	0.041
2. TKPM "Kufner" R171G57	1.3	0.031	
3. TKPM "Kufner" B141N77	2.1	0.021	
4. TKPM AKR-622\AKR218	3.5	0.009	
Lining fabric art. 32013	0.69	0.049	

The difficulty of choosing a package of materials lies also in the fact that when choosing materials used for a particular product, it is necessary to take into account the region in which these products will be used, since specific products will be subject to different operating conditions in relation to climatic zones. This is especially true of heat-protective clothing operated in various regions of the Russian Federation.

Let's repeat and name the main criteria for the comfort of clothes: skin temperature, which should not be lower than 33.3 °C, and the temperature of the under clothing space should not be lower than 34 °C, that is, the microclimate under the clothing space is an indicator of its comfort, including exposure to low temperatures. For a person, it is not indifferent which part of the body cools more while maintaining the total heat transfer, for example, a strong cooling of the legs cannot be fully compensated by heating another part of the body without disturbing the person's sense of comfort. Therefore, it was so important to develop a mathematical model to justify the choice of a package of materials in order to create comfort for a civil servant, taking into account the duration of exposure to low temperatures.

The concept of the mathematical model is based on the representation of clothing as a set of multilayer packages of materials of various shapes and compositions.

To calculate the temperature distribution, the authors used Maple mathematical packages.

The solution of the problem was reduced to finding such a combination of materials for the package, which would realize a minimum of heat flux from its surface while limiting the volume of the package. Thus, it can be concluded that with the help of the proposed mathematical model, it is possible to

optimize the choice of materials for the manufacture of a heat-protective suit.

Consider the problem of temperature distribution T_i i -layer in the details of the suit, which is a cylindrical multilayer surface. The ambient temperature is maintained constant, equal to T_0 . From the body to the inner surface of the clothing comes a heat flux of density q . On the outer surface of the clothing, heat exchange with the environment takes place according to Newton's law with a heat transfer coefficient α .

Let us introduce the following notation for basic criteria:

t – time; $T_i(r, t)$ – temperature i -th layer; λ_i – coefficient of thermal conductivity i -th layer; α_i – coefficient of thermal diffusivity i -th layer; R_{i-1}, R_i – inner and outer radii i -th layer; $i = 1, 2, \dots, n$.

Now consider n -layered hollow cylinder and boundary value problem

$$\frac{\partial T_i}{\partial t} = a_i \frac{1}{r} \frac{\partial}{\partial r} \left(r \frac{\partial T_i}{\partial r} \right), \quad R_{i-1} < r < R_i$$

$$i = 1, 2, \dots, n. \quad (1)$$

With boundary conditions:

$$\lambda_1 \frac{\partial T_1}{\partial r}(R_0, t) + q = 0;$$

$$\lambda_n \frac{\partial T_n}{\partial r}(R_n, t) + \alpha(T_n(R_n, t) - T_0) = 0; \quad (2)$$

Ideal contact is assumed between the layers:

$$T_{i-1}(R_{i-1}, t) = T_i(R_{i-1}, t);$$

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$$\lambda_{i-1} \frac{\partial T_{i-1}}{\partial r}(R_{i-1}, t) = \lambda_i \frac{\partial T_i}{\partial r}(R_{i-1}, t), i = 2, \dots, n. \quad (3)$$

Initial conditions

$$T_i(r, 0) = \varphi_i(r), \quad i = 1, \dots, n. \quad (4)$$

By solving the problem, it is possible to find the temperature distribution in the layers of the suit and, in particular, the change in the temperature of the under-clothing space depending on time.

The passage of heat through a multilayer spherical wall is described by a system of heat conduction equations:

$$\frac{\partial T_i(r_i, t)}{\partial t} = a_i \frac{1}{r_i} \frac{\partial^2 (r_i T_i(r_i, t))}{\partial r_i^2}, \quad (5)$$

$R_{i-1} \leq r_i \leq R_i$, where R_{i-1}, R_i – inner and outer radii \dot{i} – layer, t – time, a_i – thermal diffusivity \dot{i} – layer, ($i = 1, \dots, n$).

On the inner surface of the spherical segment from the foot enters the heat flux q :

$$\lambda_1 \frac{\partial T_1}{\partial r_1}(R_0, t) + q = 0. \quad (6)$$

On the outer surface of the body, heat exchange with the environment occurs according to Newton's law with the heat transfer coefficient α :

$$\lambda_n \frac{\partial T_n}{\partial r_n}(R_n, t) + \alpha(T_n(R_n, t) - T_c) = 0. \quad (7)$$

We will assume that there is an ideal contact between the layers, which is expressed by the following relations:

$$T_{i-1}(R_{i-1}, t) = T_i(R_{i-1}, t), \quad (8)$$

$$\lambda_{i-1} \frac{\partial T_{i-1}}{\partial r_{i-1}}(R_{i-1}, t) = \lambda_i \frac{\partial T_i}{\partial r_i}(R_{i-1}, t),$$

$i = 2, \dots, n$. At the initial moment of time, the body temperature is set

$$T_i(r_i, 0) = \varphi_i(r_i), \quad (9)$$

$$i = 1, \dots, n.$$

Thus, the process of heat passage through the spherical segment from the body to the outer surface is described by a boundary value problem with the initial conditions given above.

When calculating, we took into account the following criteria:

- the thickness of the layers of materials in the package;
- coefficient of thermal conductivity and thermal diffusivity of package materials;
- is the density of the heat flux coming from the body;
- ambient temperature;
- initial temperature of the package of materials;
- coefficient of heat transfer from the outer surface of the package to the environment;
- the presence of an additional layer in the form of thermal underwear and a woolen sweater.

The calculation also took into account the fact that a person has guaranteed thermal protection of the legs, arms and head, that is, he is dressed in accordance with climatic conditions.

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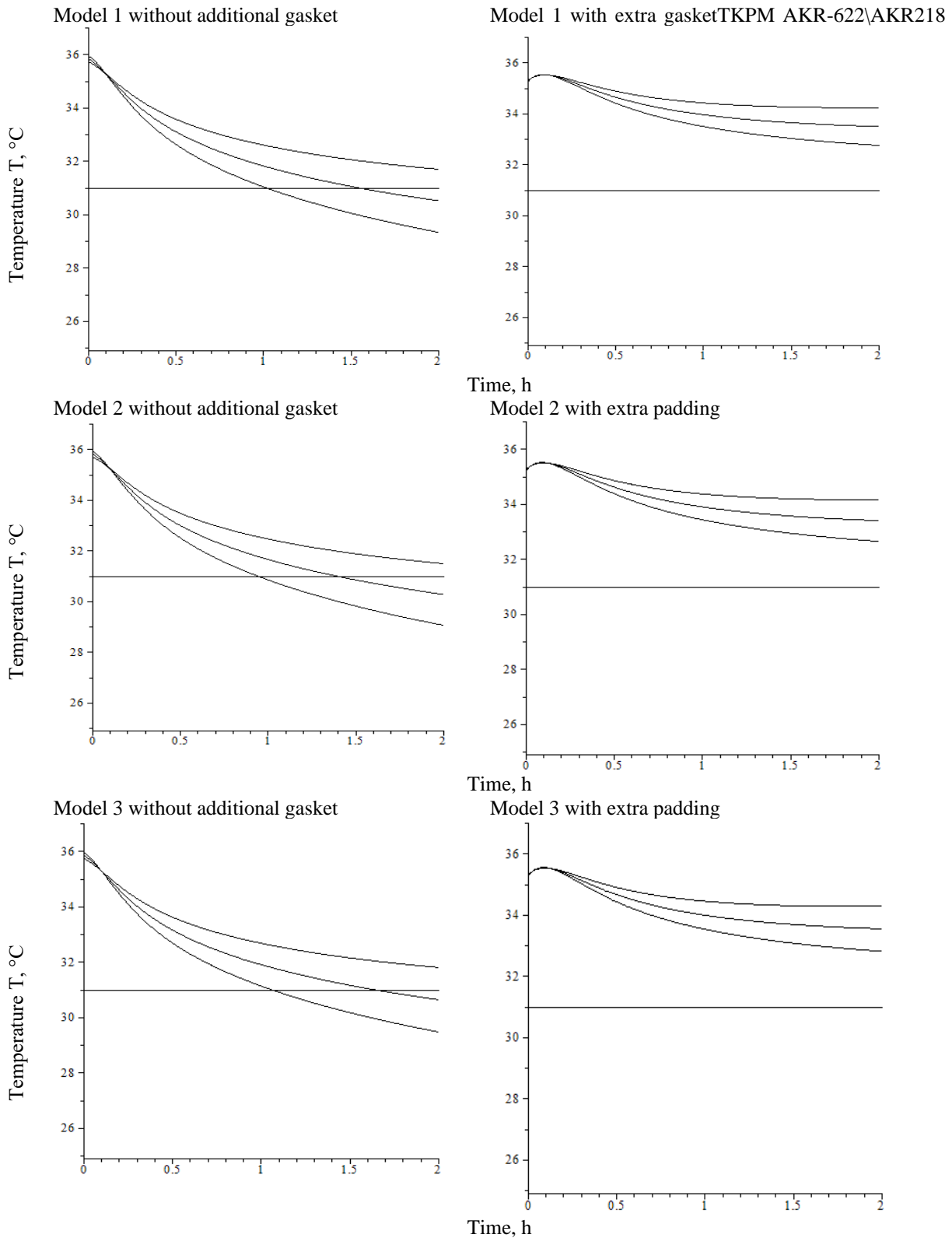


Figure 2 - The results of calculations of the weighted average skin temperature for packages consisting of imported materials at ambient temperatures: curve 1 -20°C, curve 2 - 30°C, curve 3 - 40°C.

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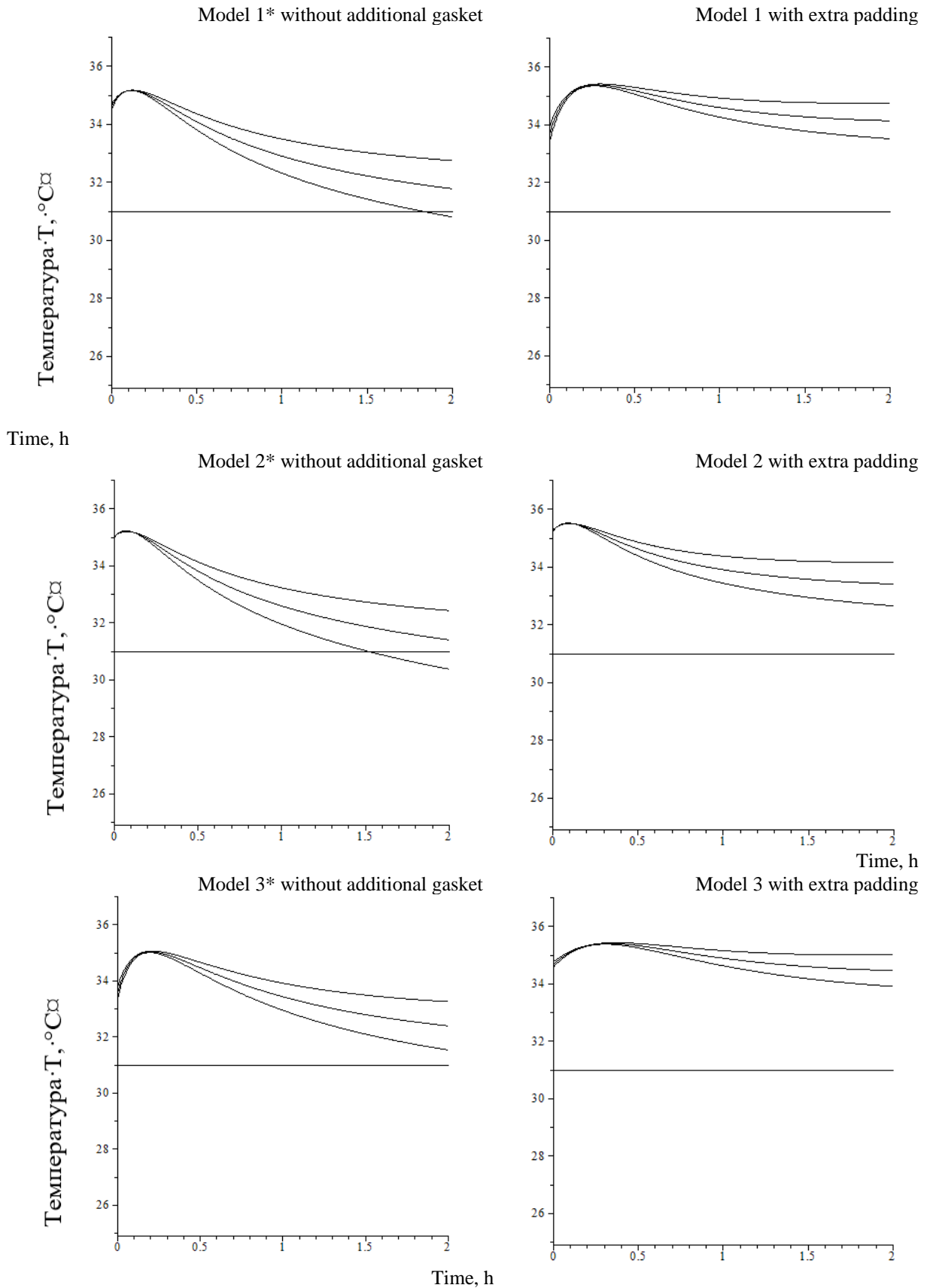


Figure 3 - The results of calculations of the weighted average skin temperature for packages consisting of materials of domestic production at ambient temperatures: curve 1 -20°C, curve 2 - 30°C, curve 3 - 40°C.

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The calculation results are presented in Figure 2 for imported materials and in Figure 3 for domestically produced materials. These figures show the dependence of the average weighted skin temperature of the human body on the time spent at low temperatures (-20°C; -30°C; -40°C). It can be seen from the above figures that at an initial weighted average skin temperature of +36°C for all packages of materials, a sharp drop in body temperature is observed at air temperatures of -20°C, -30°C, -40°C.

An analysis of the research results confirmed the justification for using TCPM as gasket materials in the manufacture of a suit for military personnel in the Arctic, since all TCPM provide comfort to a civil servant for 2 hours of his stay in climatic zones with an ambient temperature of -20 ° C and -30 ° C, but comfortable conditions when it is in the climatic zone at -40°C is provided only with the use of TKPM AKR-622/AKR218, the thermal conductivity coefficient, which has the lowest, namely, $\lambda=0.009\text{W/m}\cdot\text{C}$.

- it has been proved that the main criterion for the comfort of the suit of the military personnel of the Arctic when they are in different climatic zones is the coefficient of thermal conductivity;

- the possibility of using the software product to justify the choice of packages of materials for the costume of civil servants in the Arctic in various climatic zones was confirmed;

- a high coincidence of the calculated values of heat loss from the surface of the tested jackets with experimental data was achieved, which confirms the eligibility of using the software product developed by the authors for the reasonable selection of material packages for the suit of civil servants of the Arctic located in different climatic zones;

- it is proved that the use of domestic nanomaterials and nanotechnologies as pads for a suit for the population of the regions of the Russian Federation during the period of the need for import substitution due to sanctions, confirmed their high quality and efficiency, which allows expanding research and their production with the presence of the main criteria that form a comfortable state for him within two hours in any climatic zones.

If for footwear and clothing the software developed by the authors allows us to formulate requirements for a package of materials and provide a comfortable state for the population of the regions of the Russian Federation to perform their duties, then for the face, hand, and big toe, comfortable conditions are guaranteed without additional research on the choice of packages materials are not yet available.

Characteristics of materials for gloves, the use of which would be justified, is given in table 4.

An analysis of foreign experience has shown that the so-called mitts are used in conjunction with gloves.

There are different types of mitts: ordinary fingerless mitts; mittens with a fastened mitten; "pipes" without compartments for fingers and palms.

The peculiarities of the choice of materials for gloves for the population of the regions of the Russian Federation are provoked by the climatic conditions of this zone in order to guarantee them comfortable conditions during the entire period of use or their military duties. At the same time, special attention was paid to ensuring the comfort of not only the soldier's hand, but especially the right index finger if he is right-handed, and the left hand, of course, if he is left-handed. This need is dictated by the specifics of the performance of their duties by civil servants, namely, to carry out shooting, which provokes a more intense cooling of the index finger.

The use of mitts provides the population of the regions of the Russian Federation with additional protection for the hands, and, most importantly, for the index finger, while the main protection is provided by a glove, and here the authors test not only different wool, but also yarn, forming it from a single or double thread. Possibilities of using nanomaterials that are able to carry out thermal regulation and provide the skin of the hand with a comfortable temperature, namely, not lower than 32 ° C. Such studies are possible using the same software that the authors developed and used for materials, the characteristics of which are given in Table 4.

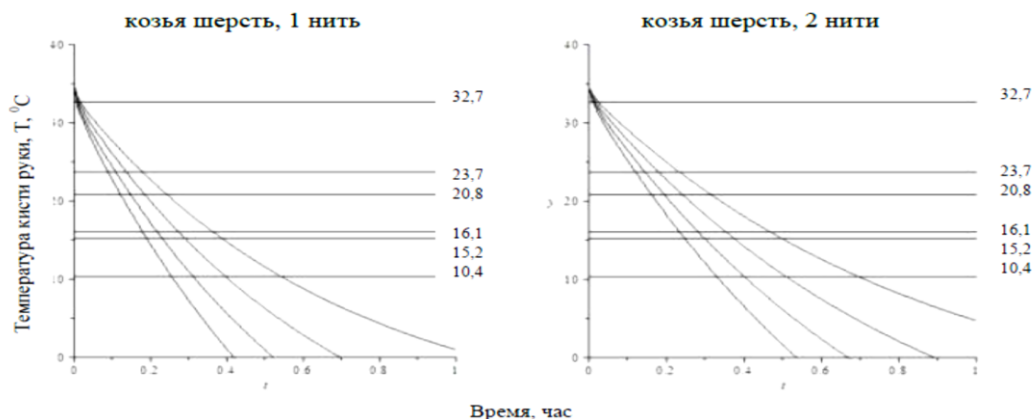
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Table 3. Characteristics of materials in the manufacture of gloves for the population of the regions of the Russian Federation

Materials used to make gloves	Thickness mm	Coefficient of thermal conductivity, λ , W/ m° C
1 Yarn from one thread:		
1.1 Goat wool	0.7	0.015
1.2 Sheep wool	0.8	0.020
1.3 Camel	0.9	0.005
1.4 From dog hair	0.8	0.010
2. Two-strand yarn:		
2.1 Goat hair	1.4	0.015
2.2 Sheep wool	1.6	0.020
2.3 Camel	1.8	0.005
2.4 From dog hair	1.6	0.010
3. A package of materials for the index finger of the hand, suede + yarn from one thread		
3.1 when using goat hair	1.7	0.02/0.015
3.2 when using sheep's wool	1.8	0.02/0.020
3.3 when using camel hair	1.9	0.02/0.005
3.4 when using dog hair	1.8	0.02/0.010
4. A package of materials for the index finger of the hand, suede + two-strand yarn		
4.1 when using goat hair	2.4	0.02/0.015
4.2 when using sheep's wool	2.6	0.02/0.020
4.3 when using camel wool	2.8	0.02/0.005
4.4 when using dog hair	2.6	0.02/0.010
5 Material for the fingertip of the index finger of the soldier's hand - "genuine suede leather" and for mitts	0.8	0.020

Using the software developed by the authors, graphs were constructed characterizing the condition of the skin of the hand of a soldier for four ambient temperatures, namely: -100C, -200C, -300C, -400C from the time he was on duty, but not less than 1 hour. The figures indicate the temperature values of the skin of the hand, characterizing the various warm sensations of a soldier, namely comfort 32.7°C,

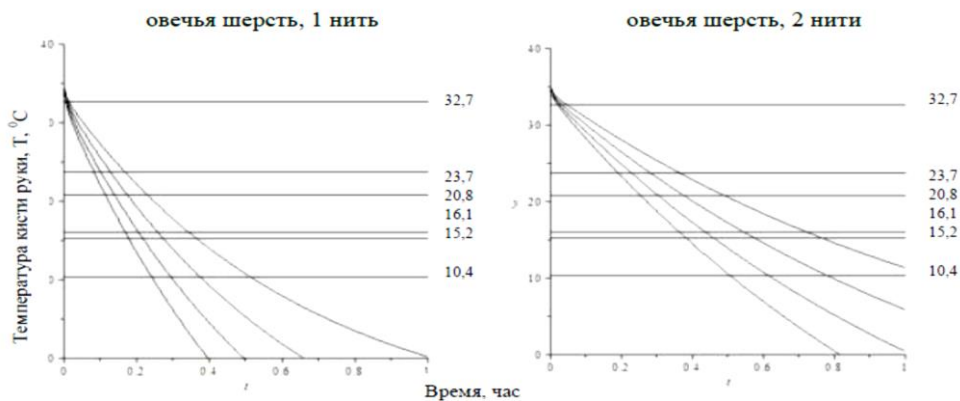
slightly cool 23.7°C, cool 20.8°C, cold 16.1°C, very cold 15, 2°C, pain 10.4°C (frostbite). At -10°C, a comfortable state is provided only by a package of suede-dog hair (double thread), and for -20°C, -30°C, -40°C none of the studied materials and their packages together with natural fur "winter" do not guarantee comfortable conditions for military personnel.



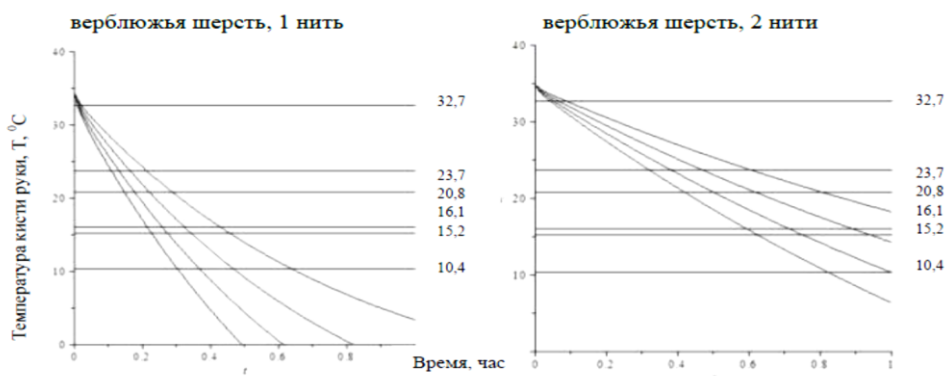
a) Change in the temperature of the skin of the hand when using goat wool yarn from 1 thread and 2 threads for gloves

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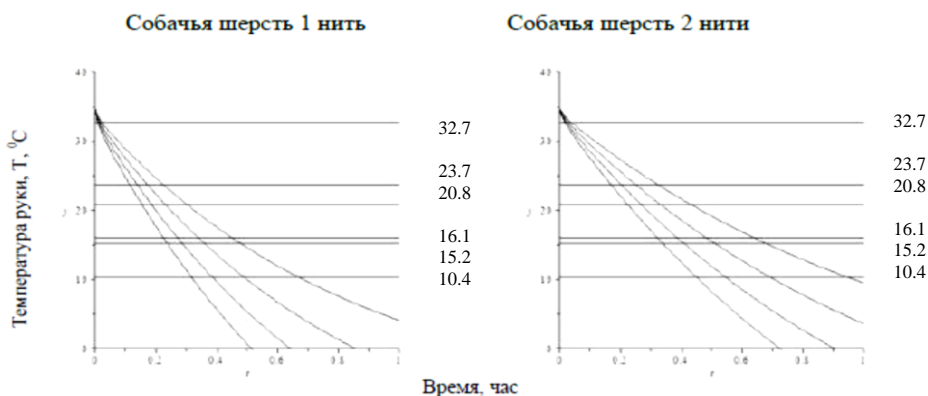
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b) Change in the temperature of the skin of the hand when using yarn from sheep wool for gloves from 1 thread and 2 threads



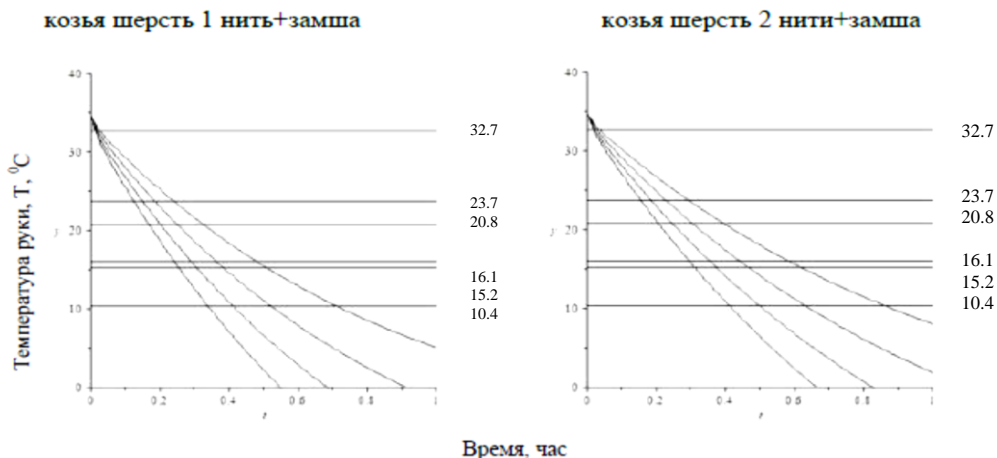
c) Change in the temperature of the skin of the hand when using camel wool yarn from 1 thread and 2 threads for gloves



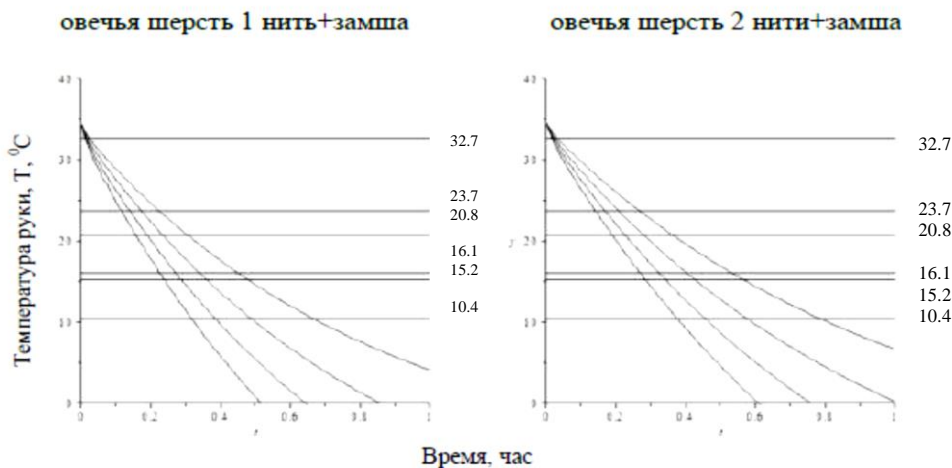
d) Change in the temperature of the skin of the hand when using yarn from dog wool for gloves from 1 thread and 2 threads

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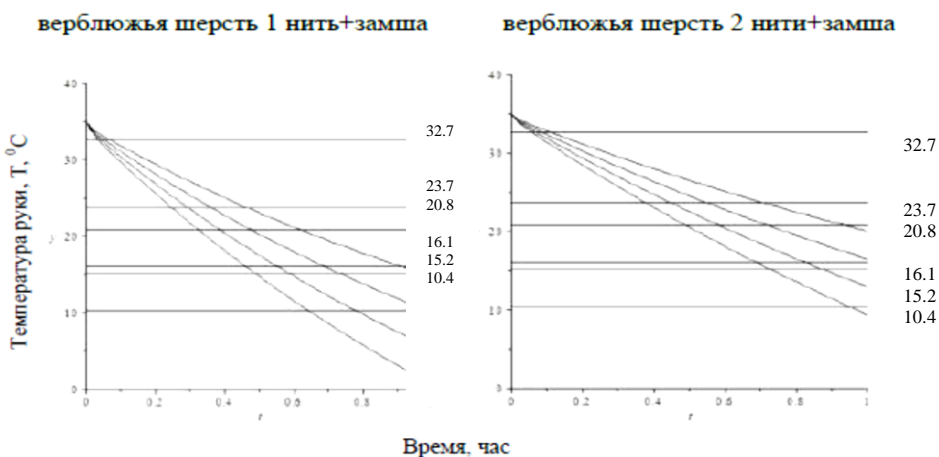
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e) Change in the temperature of the skin of the hand when using goat wool yarn for gloves from 1 thread + suede and 2 threads + suede



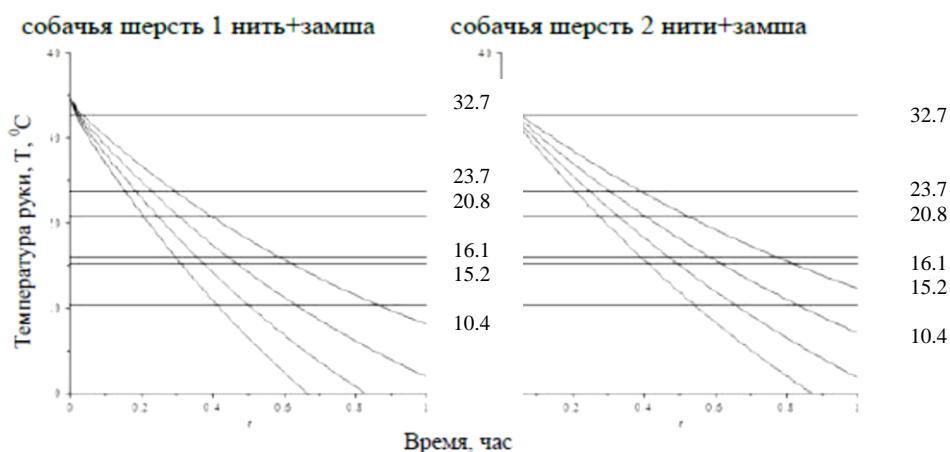
f) Change in the temperature of the skin of the hand when using yarn from sheep wool for gloves from 1 thread + suede and 2 threads + suede



g) Change in the temperature of the skin of the hand when using camel wool yarn for gloves from 1 thread + suede and 2 threads + suede

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h) Change in the temperature of the skin of the hand when using yarn from dog wool for gloves from 1 thread + suede and 2 threads + suede

Figure 4. - Characteristics of the state of comfort of the hand (skin) of a civil servant when he is in different climatic conditions: curve 1 - at -10°C, curve 2 - at -20°C, curve 3 - at -30°C, curve 4 – at -40°C

Therefore, the results obtained substantiated the high efficiency of using software for the reasonable selection of material packs for gloves and other sets of suits for Arctic military personnel and confirmed the need to continue research on the choice of such materials that would provide them with a comfortable state in a given temperature regime for at least one hour.

For the packages and materials shown in Table 3, curves were constructed that characterize the state of comfort of the soldier's hand for the following ambient temperatures, namely, curve 1 - at -10°C, curve 2 - at -20°C, curve 3 - at -30°C, curve 4 – at -40°C (Figure 4).

The software developed by the authors allows the manufacturer to have a tool for an informed decision on the choice of packages of materials for the suit of civil servants in the Arctic, including the production of gloves to protect the hand from exposure to low temperatures in the performance of their statutory duties.

Confirmation of these conclusions is the analysis of the properties of the most effective in terms of comfortable conditions for the skin of the hand, carried out by the authors, providing a constant temperature within 32.5°C.

Unfortunately, gloves made from wool of various animals, made from both one and two threads, do not guarantee civil servants such a comfortable state even at a temperature of -10 ° C, not to mention that the air temperature can be even lower. In this case, the surface of the skin of the hand is cooled below the critical value, i.e. below 10.4°C and can lead to frostbite and irreversible processes.

The use of mitts to protect the hand also does not guarantee the population protection from exposure to low temperatures, suggesting the search for such

materials and the formation of bags for making gloves from them that would provide them with comfortable conditions, which is possible when using nanomaterials capable of allowing the population of the regions of the Russian Federation to fulfill their statutory duties within the required time period.

If for footwear and clothing the software developed by the authors allows us to formulate requirements for a package of materials and provide a comfortable state for the population to perform their official duties, then for the face, hand, for the big toe, it guarantees comfortable conditions without additional research on the choice of packages of materials. fails.

Characteristics of glove materials that would be justified are shown in Table 4.

An analysis of foreign experience has shown that the so-called mitts are used in conjunction with gloves.

There are different types of mitts: ordinary fingerless mitts; mittens with a fastened mitten; "pipes" without compartments for fingers and palms.

Features of the choice of materials for gloves by civil servants of the Arctic are provoked by the climatic conditions of this zone in order to guarantee him comfortable conditions during the entire time of use or his official duties. At the same time, special attention was paid to ensuring the comfort of not only the hand of a civil servant, but especially the index finger of the right hand, if he is right-handed, and the left hand, of course, if he is left-handed. This need is dictated by the specifics of the performance of their duties by civil servants, namely, to carry out shooting, which provokes a more intense cooling of the index finger.

The use of mitts provides the civil servant with additional protection for the hand and, most

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importantly, the index finger, while the main protection is provided by the glove, and here the authors test not only different wool, but also yarn, forming it from one or double thread.

Possibilities of using nanomaterials that are able to carry out thermal regulation and provide the skin of

the hand with a comfortable temperature, namely not lower than 32 ° C. Such studies are possible using the same software that the authors developed and used for materials, the characteristics of which are given in Table 4.

Table 4. Characteristics of materials in the manufacture of gloves for the population of the regions of the Russian Federation

Materials used to make gloves	Thickness mm	Coefficient of thermal conductivity, λ, W/ m° C
1 Yarn from one thread:		
1.1 Goat wool	0.7	0.015
1.2 Sheep wool	0.8	0.020
1.3 Camel	0.9	0.005
1.4 From dog hair	0.8	0.010
2. Two-strand yarn:		
2.1 Goat hair	1.4	0.015
2.2 Sheep wool	1.6	0.020
2.3 Camel	1.8	0.005
2.4 From dog hair	1.6	0.010
3. A package of materials for the index finger of the hand, suede + yarn from one thread		
3.1 when using goat hair	1.7	0.02/0.015
3.2 when using sheep's wool	1.8	0.02/0.020
3.3 when using camel hair	1.9	0.02/0.005
3.4 when using dog hair	1.8	0.02/0.010
4. A package of materials for the index finger of the hand, suede + two-strand yarn		
4.1 when using goat hair	2.4	0.02/0.015
4.2 when using sheep's wool	2.6	0.02/0.020
4.3 when using camel wool	2.8	0.02/0.005
4.4 when using dog hair	2.6	0.02/0.010
5 Material for the fingertip of the index finger of the soldier's hand - "genuine suede leather" and for mitts	0.8	0.020

Using the software developed by the authors, graphs were constructed characterizing the condition of the skin of the hand of the population for four ambient temperatures, namely: - 100C, -200C, -300C, -400C from the time he was on duty, but not less than 1 hour. The figures indicate the temperature values of the skin of the hand, characterizing the various warm sensations of a soldier, namely comfort 32.7°C,

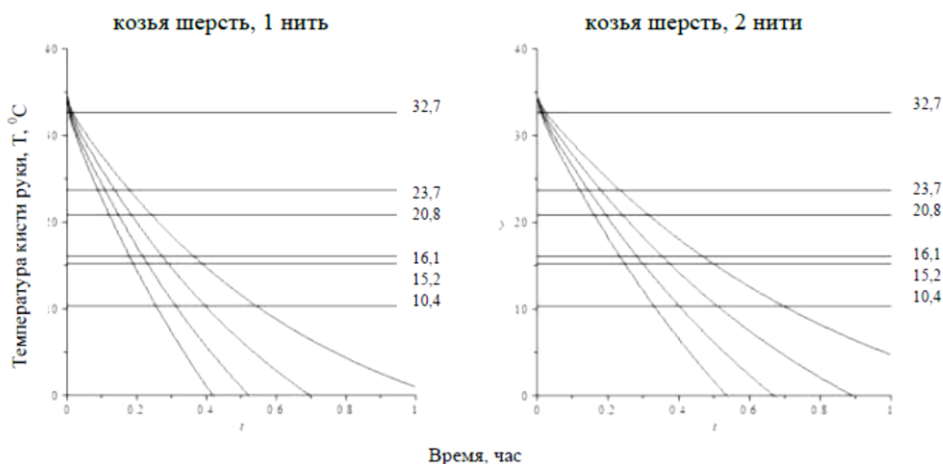
slightly cool 23.7°C, cool 20.8°C, cold 16.1°C, very cold 15, 2°C, pain 10.4°C (frostbite). At -10°C, a comfortable state is provided only by a package of suede-dog hair (double thread), and for -20°C, -30°C, -40°C none of the studied materials and their packages together with natural fur "winter" do not guarantee comfortable conditions for military personnel.

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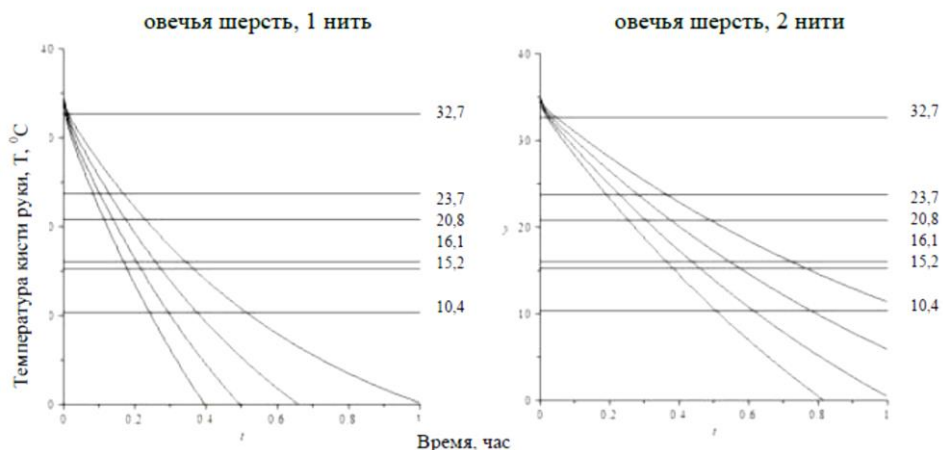
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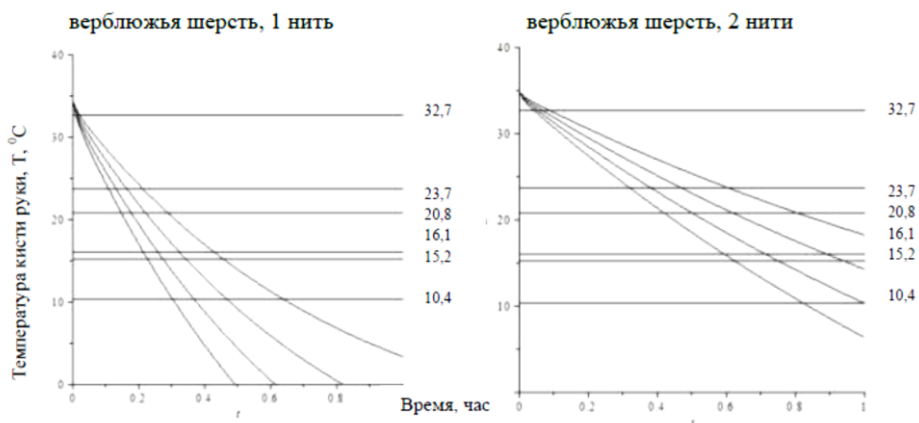
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a) Change in the temperature of the skin of the hand when using goat wool yarn from 1 thread and 2 threads for gloves



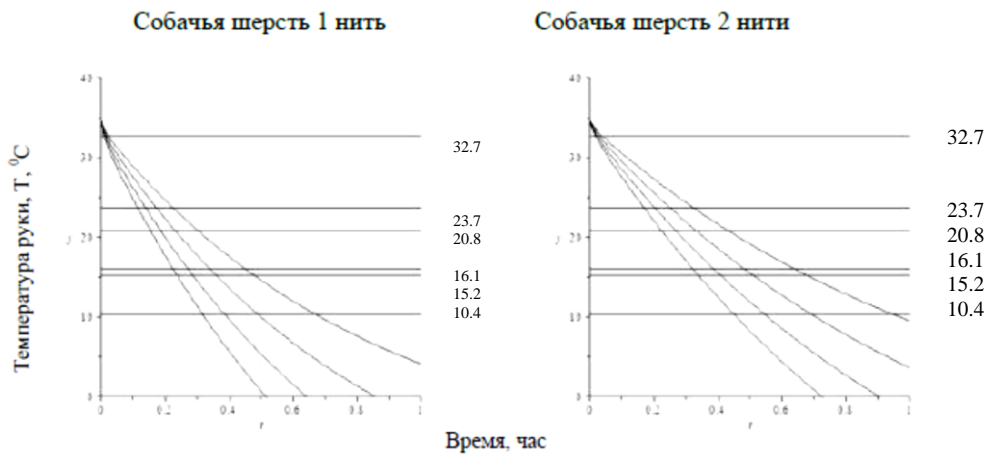
b) Change in the temperature of the skin of the hand when using yarn from sheep wool for gloves from 1 thread and 2 threads



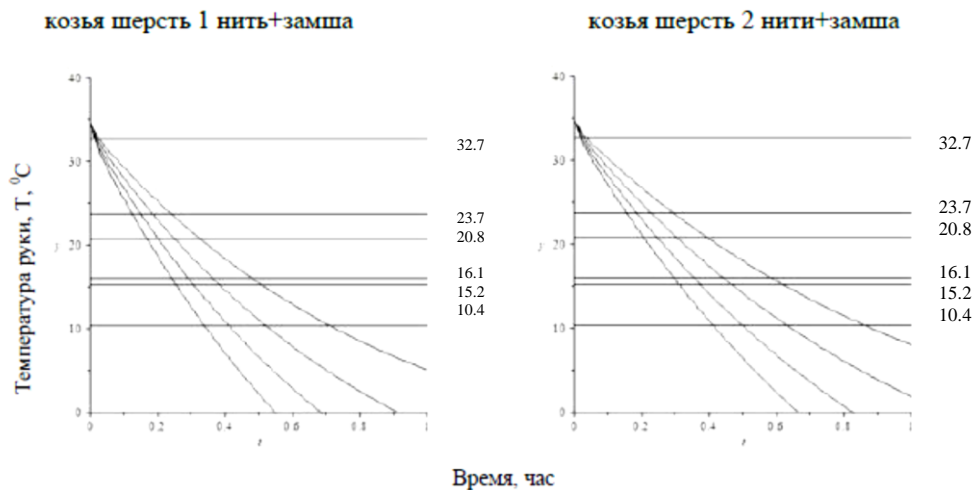
c) Change in the temperature of the skin of the hand when using camel wool yarn from 1 thread and 2 threads for gloves

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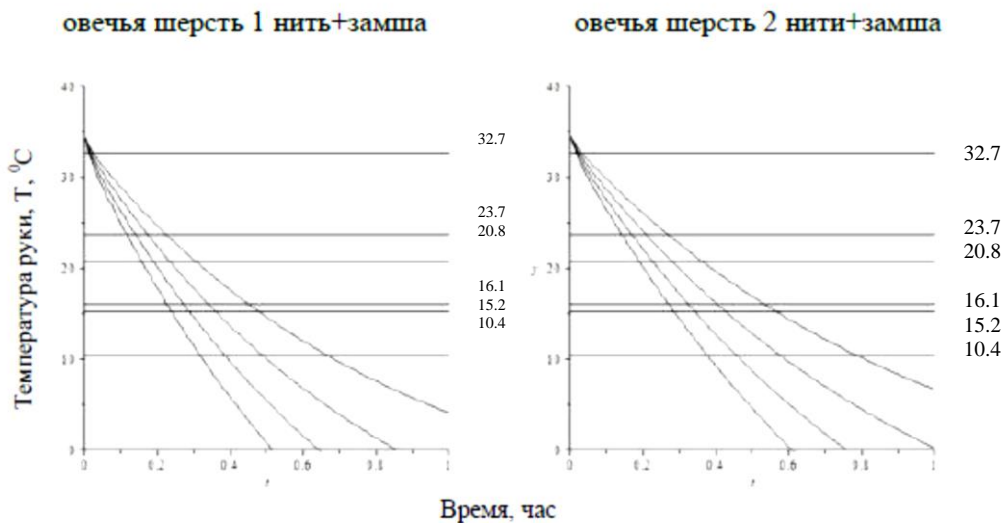
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d) Change in the temperature of the skin of the hand when using yarn from dog wool for gloves from 1 thread and 2 threads



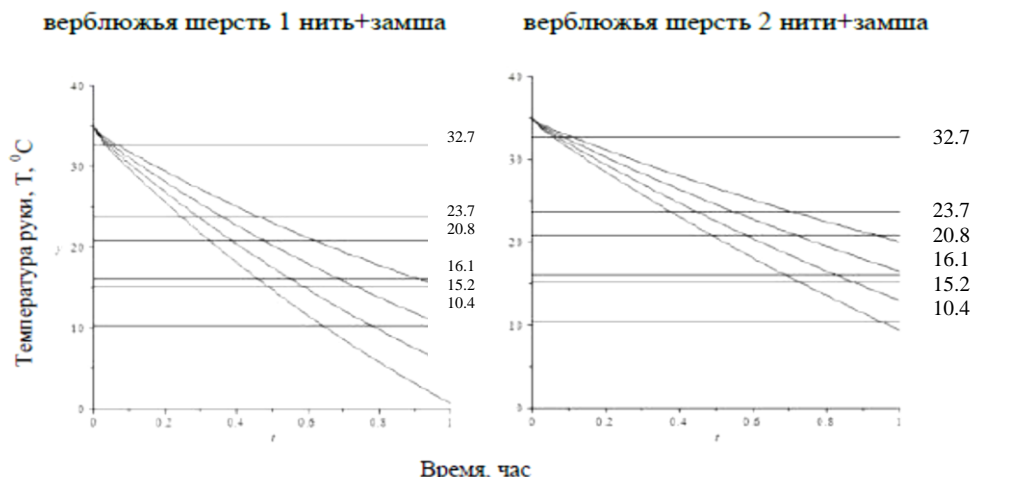
e) Change in the temperature of the skin of the hand when using goat wool yarn for gloves from 1 thread + suede and 2 threads + suede



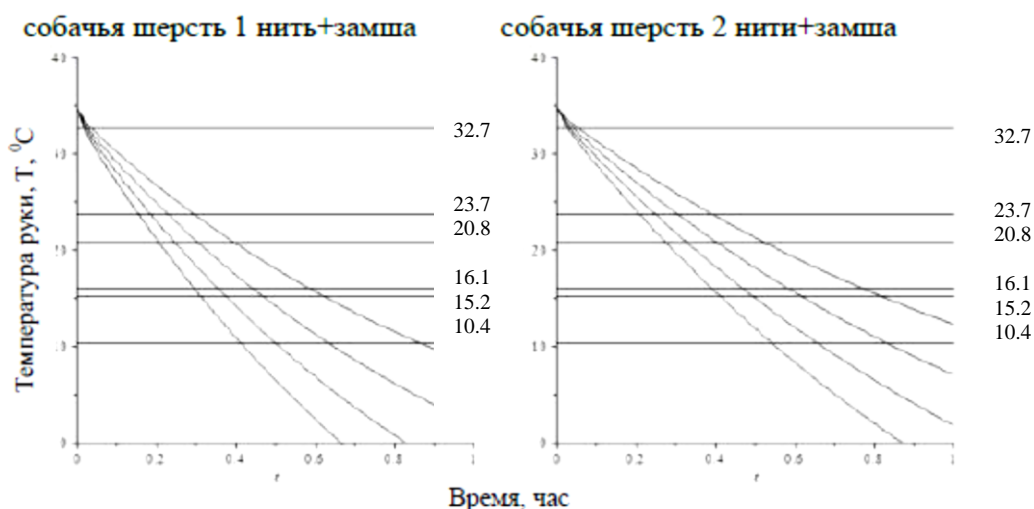
f) Change in the temperature of the skin of the hand when using yarn from sheep wool for gloves from 1 thread + suede and 2 threads + suede

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g) Change in the temperature of the skin of the hand when using camel wool yarn for gloves from 1 thread + suede and 2 threads + suede



h) Change in the temperature of the skin of the hand when using yarn from dog wool for gloves from 1 thread + suede and 2 threads + suede

Figure 5 - Characteristics of the comfort state of the hand (skin) of the participant of the experiment when he is in different climatic conditions: curve 1 - at -10°C, curve 2 - at -20°C, curve 3 - at -30°C, curve 4 – at -40°C

Therefore, the results obtained substantiated the high efficiency of using the software for the reasonable selection of packages of materials for gloves and other sets of costumes for the population of the regions of the Russian Federation and confirmed the need to continue research on the choice of such materials that would provide them with a comfortable state in a given temperature regime for at least one hour.

For the packages and materials shown in Table 6, curves were constructed that characterize the state of comfort of the soldier's hand for the following ambient temperatures, namely, curve 1 - at -10°C, curve 2 - at -20°C, curve 3 - at -30°C, curve 4 – at -40°C (Figure 7).

The software developed by the authors allows the manufacturer to have a tool for an informed decision on the choice of packages of materials for a suit for the population of the regions of the Russian Federation, including the production of gloves to protect the hand from exposure to low temperatures in the performance of their duties.

Confirmation of these conclusions is the analysis of the properties of the most effective materials carried out by the authors in terms of comfortable conditions for the skin of the hand, providing a constant temperature within 32.5°C.

Unfortunately, gloves made from wool of various animals, made from both one and two threads, do not guarantee the population of the regions of the Russian Federation to provide such a comfortable

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state even at a temperature of -10°C , not to mention that the air temperature can be even lower. In this case, the surface of the skin of the hand is cooled below the critical value, i.e. below 10.4°C and can lead to frostbite and irreversible negative processes.

The use of mitts to protect the hand also does not guarantee the population of the regions of the Russian Federation their protection from the effects of low temperatures, suggesting the search for such materials and the formation of bags from them for the manufacture of gloves that would provide them with comfortable conditions, which is possible with the use of nanomaterials capable of limits, allowing the population to fulfill their statutory duties within the required time period. Cold is one of the harmful environmental factors affecting a person. Reactions to exposure to cold can be both functional and pathological in nature: illness, injury, death.

At low temperatures, a person can experience cold stress. The cause of cold stress can be the cooling of the body as a whole or part of it, most often the face and respiratory organs, hands, feet. At the same time, different types of cold stress are formed due to a combination of climatic factors, physical activity, clothing, etc. The main types of cold stress are:

- cooling of the whole body;
- cooling of the extremities;
- skin cooling (convective);
- skin cooling (conductive);
- respiratory cooling.

Combinations of climatic factors are as follows:

- air temperature, average radiation temperature, air mobility, physical activity, relative humidity of air, clothing;

- air temperature, air mobility;
- clothing surface temperature;
- air temperature, physical activity.

The effect of cold stress on a person is due to the intensity of cold stress (tissue cooling).

The result of extreme intensity of cold stress is hypothermia.

The results of the intensity of cold stress I degree will be:

- local cold injury - frostbite, numbness;
- cold damage without freezing;
- pain;
- functional damage;
- acute cardiorespiratory effect;
- deterioration in performance;
- discomfort;
- heat balance.

Discomfort can cause a decrease in activity, especially in relation to solving problems associated with neuro-emotional stress, with the need to concentrate, and also increase the risk of occupational accidents and injuries. Moreover, tissue cooling can lead to reduced physical activity, which increases the risk of accidents.

Cooling of a person, both general and local (especially of the hands), contributes to a change in his motor activity, disrupts coordination and the ability to perform precise operations, causes the development of inhibitory processes in the cerebral cortex, which can cause injuries. With local cooling of the hands, the accuracy of the combat mission is reduced; activity decreases by 1.5% for each degree of decrease in temperature of the fingers.

A drop in body temperature, muscle and skin temperature leads to a decrease in the ability to perform physical work due to a decrease in the level of metabolism.

These changes reduce coordination and can lead to an increase in accidents, especially when performing a combat mission in the cold. The sensitivity of the receptors also changes with a decrease in skin temperature. So, at a skin temperature of 20°C , it is 1/7 of normal.

The above means that a set of heat-protective clothing intended for work in an open area, in particular, in climatic regions IA and I B ("special" and IV climatic zones), must include face and respiratory protection.

Hands and feet play an important role in thermoregulation, being specific heat exchangers of the body with the environment. The state of thermal comfort is provided at a temperature of the skin of the feet $29-31^{\circ}\text{C}$ and a heat flux of $52-87\text{ W/m}^2$. The thermal resistance of tissues remains within the limits of up to 0.3 clo.

Studies by a number of authors have shown that with an increase in the thermal insulation of footwear, the weighted average temperature of human skin increases (from 32.0 ± 0.30 to $33.5 \pm 0.32^{\circ}\text{C}$) and the weighted average heat flux decreases (from 90.3 ± 4.0 to $57.0 \pm 0.32\text{ W/m}^2$ ($\approx 40\%$)). The reduction in total heat loss as a result of increasing the thermal insulation of shoes can be 17.1°C .

Heat loss by convection and radiation from the surface of various areas human body when it is cooled:

- Head 19.0 W (12%);
- Arms 44.4W (31%);
- Torso 36.0 W (25%);
- Legs 49.0 W (32%);
- Whole person 148.4 W (100%).

The amount of thermal insulation of shoes can have a significant impact on the overall heat loss of a person and body surface temperature. This means that when developing thermal protective clothing, the requirements for thermal insulation of all areas of the body should be met. With an increase in the thickness of the package of materials of insulating clothing, practically only the temperature of the skin of those areas of the body that are protected (torso, shoulder, thigh) increases. There is only a slight increase in skin temperature in the area of the hands. The change in temperature depending on the degree of warming of the surface of the body is practically not

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observed. There is a certain relationship between the general thermal state of the body and the degree of cooling of a particular area of the body, in particular, the feet and hands. At the same time, the thermal insulation of the latter has a significant impact on the overall heat transfer of a person. The creation of heat-protective clothing for operation in the regions of the Russian Federation should be based on a scientific principle that takes into account the physiology of heat exchange between a person and the environment. Requirements for materials and construction thermal clothing for the regions of the Russian Federation:

- the heat-shielding ability of clothing to protect against cooling is determined by the thermophysical parameters of the package of materials from which it is made, design, type (jacket, jacket and trousers, overalls, etc.);
- The heat-protective clothing material package is formed from the base material, the

insulating pad and the lining. If necessary, to reduce the air permeability of the package of clothing materials, a windproof pad can be used, which should be placed between the base material and the insulation pad;

- the main material (integumentary, outer layer) determines the appearance of clothing and performs protective functions. It must have protective properties corresponding to the conditions of activity, be resistant to mechanical stress, precipitation, exposure to light, various types of pollutants, and be easy to clean from pollution. It must be able to conduct moisture from under the clothing to the environment and have breathability adequate to the wind speed.

The paper considers the process of cooling the surface tissues of the human knee and elbow when exposed to low temperatures (Table 6).

Table 5. Characteristics of the package of materials for the protection of the elbow and knee joints

Model	Package materials	Thickness, mm	Coefficient of thermal conductivity λ , W/m °C
1	2	3	4
Model 1	cotton linen	0.9	0.044
	Wool sweater or pants	2.4	0.027
	Nylon lining	1.6	0.042
	Thinsulate insulation (1 layer)	6.0	0.044
	Arctic-tech - outer layer (85% PE + 15% cotton)	1.8	0.041
	Arctic-tech (knee or elbow pad)	1.8	0.041
Model 2	thermal underwear	1.76	0.039
	Wool sweater or pants	2.4	0.027
	Nylon lining	1.6	0.042
	Thinsulate insulation (21 layers)	12	0.036
	Arctic-tech - outer layer	1.8	0.041
	Foam rubber damper	2.2	0.027
	Arctic-tech (patch pocket)	1.8	0.041

For the description, a mathematical model is built in the form of a boundary value problem:

$$\frac{\partial T_i}{\partial t} = a_i \left(\frac{\partial^2 T_i}{\partial r_i^2} + \frac{2}{r_i} \frac{\partial T_i}{\partial r_i} \right) + \frac{q_{iv}}{c_i \rho_i}, \quad i = 1, 2, \dots, n, \quad (21)$$

$$T_1(0, t) \neq \infty;$$

$$\lambda_n \frac{\partial T_n}{\partial r_n}(R_n, t) + \alpha(T_n(R_n, t) - T_c) = 0; \quad (22)$$

$$T_{i-1}(R_{i-1}, t) = T_i(R_{i-1}, t); \quad (23)$$

$$\lambda_{i-1} \frac{\partial T_{i-1}}{\partial r_{i-1}}(R_{i-1}, t) = \lambda_i \frac{\partial T_i}{\partial r_i}(R_{i-1}, t),$$

$$i = 2, \dots, n.$$

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Initial conditions , where $T_i(r_i, 0) = f_i(r_i)t -$ time; $-$ temperature of the i -th layer; $T_i i = 1, \dots, n$; $-$ ambient temperature; is the heat capacity coefficient of the i -th layer; $-$ coefficient of thermal diffusivity of the i -th layer; is the density of the i -th layer; $-$ coefficient of thermal conductivity of the i -th layer; volume density of the heat flux of the i -th layer; heat transfer coefficient from the surface of the skin or protective layer (hair, hat); $T_c c_i a_i \rho_i \lambda_i q_{iv} - \alpha - f_i(r_i) -$ initial temperature of the i -th layer.

The solution of the problem is in the following form

$$T_i(r_i, t) = \sum_{k=1}^{\infty} D_k(t) X_{k,i}(r_i), \quad (24)$$

where

$$X_{k,i}(r_i) = \frac{1}{r_i} \left(A_i \sin \left(\frac{\mu_k r_i}{\sqrt{a_i}} \right) + B_i \cos \left(\frac{\mu_k r_i}{\sqrt{a_i}} \right) \right) -$$

eigenfunctions of the corresponding boundary value problem:

$$\frac{\partial^2 X_i}{\partial r_i^2} + \frac{2}{r_i} \frac{\partial X_i}{\partial r_i} + \frac{\mu^2}{a_i} X_i = 0, \quad (25)$$

$$X_1(0, t) \neq \infty; \lambda_n \frac{\partial X_n}{\partial r_n}(R_n) + \alpha X_n(R_n) = 0; \quad (26)$$

$$X_{i-1}(R_{i-1}) = X_i(R_{i-1}); \quad (27)$$

$$\lambda_{i-1} \frac{\partial X_{i-1}}{\partial r_{i-1}}(R_{i-1}) = \lambda_i \frac{\partial X_i}{\partial r_i}(R_{i-1}).$$

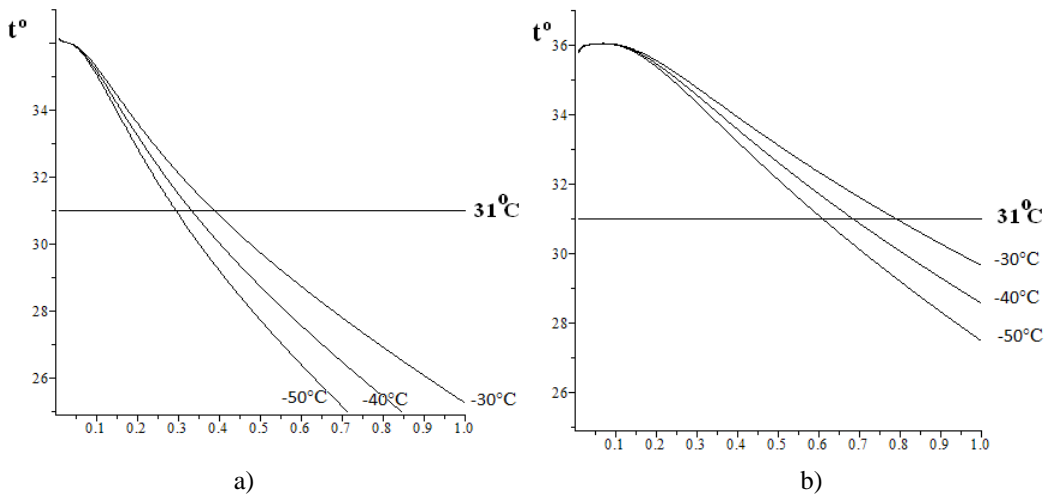


Figure 6 - knee:
a) model 1; b) model 2

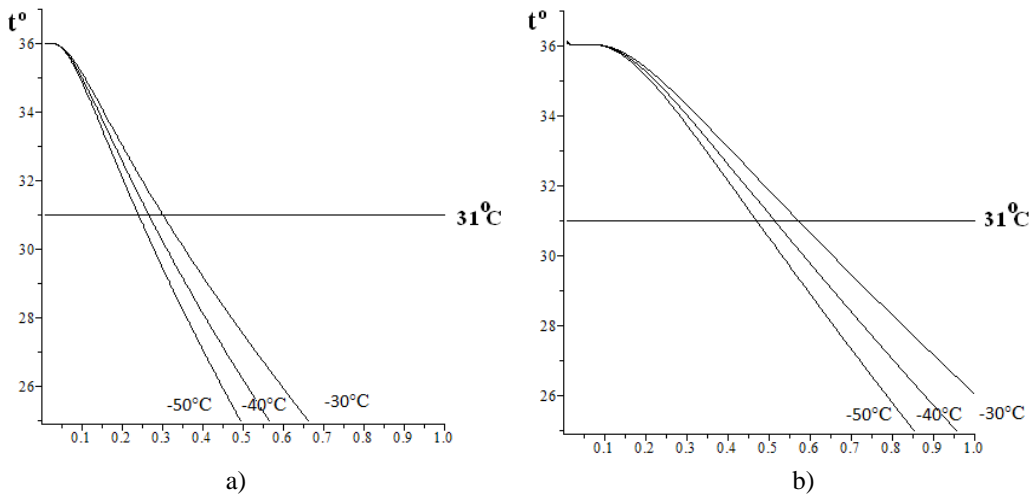


Figure 7 - Elbow:
a) model 1; b) model 2

The article presents the results of research on the reasonable choice of material packages for knee and elbow pads in order to ensure comfort for civil servants in the Arctic during the entire time they are in climatic zones with low temperatures. Approbation of the software product confirmed its high efficiency. Currently, despite the introduction of numerous sanctions on the Russian economy (sanctions were

introduced after February 24), domestic companies continue to produce various types of modern high-quality clothing and create new fashion clothing brands. This is evidenced by the results of the Fashion Week held in Moscow (June 20-26), where domestic designers presented numerous collections of clothes in various styles. Experts noted that in order to fill the vacant places after the mass withdrawal of foreign

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brands, the number of Russian designers is sufficient, while the question of quality remains. It was also noted that during the period of numerous sanctions, the holding of Fashion Week in Moscow is a professional support for micro and small businesses. For the production of clothing, various materials are used: fabrics, knitwear, leather, fur and others. The most demanded material are various types of fabrics.

Of interest is the current state of the production of clothing from textile materials in the context of sanctions. According to the operating conditions, clothing is divided into outerwear and light clothing.

Data characterizing the volume of production of outerwear made of textile materials in physical terms in the 1st half of 2022, compared with the 1st half of 2021, are shown in Table 6.

Table 6

Products, county	1st half		
	2022	2021	2022 in % to 2021
Coats, short coats made of textile materials, except for knitted or crocheted, thousand pieces	523.2	494.9	105.7
Coats and short coats for men or for boys, thousand pieces	57.3	58.3	98.3
Coats, short coats for women or for girls, thousand	465.9	436.6	106.7
Jackets made of textile materials, except knitted or crocheted, thousand pieces	1456.1	1410.7	103.2
Jackets for men or boys, thousand pieces	929.1	863.4	107.6
Jackets for women or girls, thousand pieces	527	547.3	96.3
Raincoats, raincoats with hoods made of textile materials, except for knitted or crocheted, thousand pieces	143.5	150.1	95.6
Raincoats, raincoats with hoods men's or boys', thousand pieces	93.1	103.1	90.3
Raincoats, raincoats with hoods women's or girls, thousand pieces	50.4	47	107.2
Suits and sets made of textile materials, except for knitted or crocheted, thousand pieces	2242.6	1970.5	113.8
Suits and sets for men or for boys, thousand pieces	1641.5	1543.6	106.3
Suits and sets for women or for girls, thousand pieces	601.1	426.9	140.8
Men's or boys' jackets and blazers, of textile materials, except knitted or crocheted, thous.	353.9	325.1	108.8
Women's or girls' jackets and blazers, of textile materials, except knitted or crocheted, thous.	521.6	385.5	135.3
Overalls with bibs and straps made of textile materials, except knitted or crocheted, thousand pieces	343	493.7	69.5
Overalls with bibs and straps men's or boys', thousand pieces	183.4	268.3	68.4
Overalls with bibs and straps women's or girls, thousand pieces	159.6	225.4	70.8
Anoraks, windbreakers, windbreakers and similar articles of textile materials, except knitted or crocheted, thous.	876.6	705.3	124.3
Anoraks, windbreakers, windbreakers and similar articles for men or boys, thous.	644.8	508.5	126.8
Anoraks, windbreakers, windbreakers and similar articles for women or girls, thousand	231.8	196.8	117.8

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In the 1st half of 2022, the output of outerwear made of textile materials amounted to 6460.5 thousand pieces, that is, it increased by 8.8% (by 524.7 thousand pieces), compared to the same period in 2021 (5935.8 thousand pieces). Domestic

companies and firms produce a wide range of outerwear from textile materials. The distribution of outerwear made of textile materials by main types, produced in the 1st half of 2022, is shown in Figure 8.

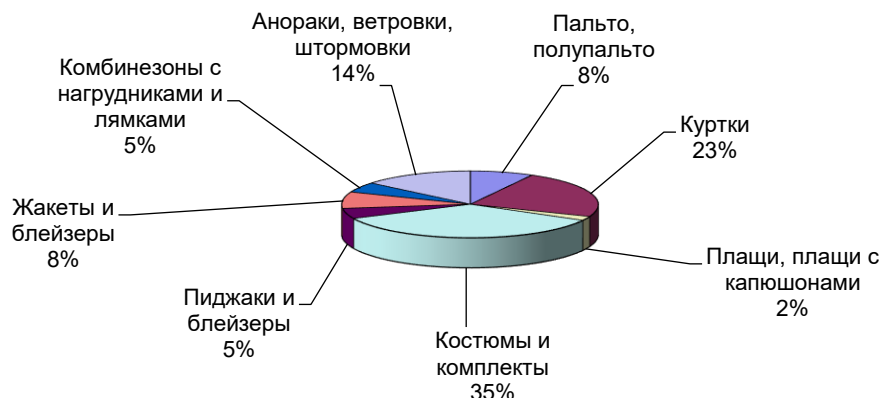


Figure 8. Distribution of outerwear made of textile materials by main types in the 1st half of 2022

From the data presented in Figure 8, it follows that in the structure of outerwear made of textile materials produced in the 1st half of 2022, more than half - about 58% - are suits and sets, jackets. The largest share - about 35% (34.7%) falls on suits and sets made of textile materials. 2242.6 thousand pieces of such clothes were produced, which is 13.8% (272.1 thousand pieces) more compared to the same period in 2021 (1970.5 thousand pieces). The main share - 73.2% - is made up of suits and sets for men or boys, of which 1641.5 thousand pieces were produced in the 1st half of 2022, or 6.3% (97.9 thousand pieces) more than in the same period of 2021 (1543.6 thousand units). The share of costumes and sets for women or girls - 26.8%, while their output increased significantly - by 40.8% (174.2 thousand pieces), compared to the previous period, and amounted to 601.1 thousand pieces. More than half of the production of suits and sets made of textile materials, about 51% (1142.8 thousand pieces) was produced in the Central Federal District. The next position with a share of about 23% (22.5%) is occupied by jackets made of textile materials. In the period under review, 1456.1 thousand units were produced. jackets, or 3.6% (45.4 thousand pieces) more compared to the same period in 2021 (1410.7 thousand pieces). The largest share - 63.8% - is made up of jackets for men or boys, the output of which in the 1st half of 2022 amounted to 929.1 thousand pieces, which is 7.6% (65.7 thousand pieces) more than their output in the same period of the previous year. The share of jackets for women or girls is 36.2%, their output decreased by 3.7% (20.3 thousand pieces) and amounted to 527 thousand pieces. More than two thirds of the output of jackets made of textile materials, 70.4% (1024.4 thousand pieces), produced in two federal districts: Central and Volga. At the same time, the largest

output of jackets, 46.7% (679.7 thousand pieces) was produced in the Central District. Privolzhsky District produced 23.7% (344.7 thousand pieces) of jackets. The share of coats, short coats made of textile materials is 8%, 523.3 thousand pieces were produced. such clothes, which is 5.7% (28.3 thousand pieces) more than in the 1st half of 2021 (494.9 thousand pieces). The main share, 89%, is coats, short coats for women or girls, the production of which increased by 6.7% (29.3 thousand pieces), up to 465.9 thousand pieces. Coats, short coats for men or boys were produced - 11%, their output decreased by 1.7% (1.0 thousand pieces) and amounted to 57.3 thousand pieces. The share of raincoats, raincoats with hoods made of textile materials is small - 2.2%, 143.5 thousand pieces were produced, which is 4.4% (6.6 thousand pieces) less, compared to the same period in 2021 (150.1 thousand units). The largest share - 64.9% - is raincoats, raincoats with hoods for men or boys, the output of which decreased by 9.7% (10 thousand pieces) and amounted to 93.1 thousand pieces. The share of raincoats, raincoats with hoods for women or girls accounted for 35.1%, their output, on the contrary, increased by 7.2% (3.4 thousand pieces), up to 50.4 thousand pieces. Jackets and blazers for men or boys account for 5% of the production of outerwear made of textile materials. In the 1st half of 2022, 353.9 thousand units were produced. such clothes, which is 8.8% (28.8 thousand pieces) more than their output in the 1st half of 2021 (325.1 thousand pieces). The share of jackets and blazers for women or girls made of textile materials is 8%, their output increased significantly, by 35.3% (136.1 thousand pieces) and amounted to 521.6 thousand pieces. The share of overalls with bibs and straps made of textile materials accounts for 5% (5.3%), there is a significant decrease in their production, by 30.5% (150.7 thousand pieces),

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to 343 thousand pieces. Of these, overalls with bibs and straps for men or boys account for 53.5%, 183.4 thousand pieces were produced. such overalls, which is also significantly less by 31.6% (84.9 thousand pieces) than in the previous period. The share of overalls with bibs and straps for women or girls is 46.5%, 159.6 thousand pieces were produced, there is a decrease in their production by 29.2% (65.8 thousand pieces). Anoraks, windbreakers, windbreakers and similar items made of textile materials are popular in cool weather. In the 1st half of 2022, 876.6 thousand units were produced. such clothing, which is about 14% (13.6%) of the output of outerwear made of textile materials. The output of the types of clothing under consideration significantly, by 24.3% (171.3 thousand pieces) exceeds their output in the same period in 2021 (705.3 thousand pieces). The share of anoraks, windbreakers, windbreakers and similar items for men or boys is 73.5%, 644.8 thousand pieces were produced. such clothes, significantly more, by 26.8% (136.3 thousand pieces) than in the previous period. The share of anoraks, windbreakers, windbreakers and similar items for women or girls is 26.4%, 231.8 thousand pieces were produced. of this clothing, which is 17.8% (35 thousand pieces) more than their output of the previous period. The main volume of production of anoraks, windbreakers, windbreakers and similar

products made of textile materials - 85% (745 thousand pieces) was produced in two federal districts: Central and Southern. The largest output of these types of clothing, 50.5% (442.5 thousand pieces) was produced in the Southern District. In the Central District, 34.5% (302.5 thousand pieces) of such clothes were produced. Thus, despite numerous sanctions, the output of outerwear made of textile materials in the 1st half of 2022 increased by 8.8% (by 524.7 thousand pieces), compared to the same period in 2021, and amounted to 6460, 5 thousand pieces. An increase in output is observed for most types of outerwear made of textile materials: coats and short coats, jackets, suits and sets, jackets and blazers, jackets and blazers, anoraks, windbreakers, windbreakers and similar products. Reduced release: cloaks, cloaks with hoods and overalls with bibs and brace. The largest share in the production of outerwear made of textile materials, about 35% (2242.6 thousand pieces), falls on suits and sets. More than half of the production of suits and sets, about 51% (1142.8 thousand pieces), produced in the Central Federal District. Data characterizing the production volumes of light clothing made from textile materials in physical terms in the 1st half of 2022, compared with the 1st half of 2021, are shown in Table 7.

Table 7

Products, county	1st half		
	2022	2021	2022 in % to 2021
Trousers, breeches and shorts made of textile materials, except for knitted or crocheted, thousand pieces	6500.6	6578.4	98.8
Trousers for men or boys, thousand pieces	3057.5	2892	105.7
Breeches and shorts for men or for boys, thousand pieces	61.2	78.1	78.4
Trousers for women or girls, thousand pieces	3294.5	3537.6	93.1
Breeches and shorts for women or for girls, thousand	87.4	70.7	123.6
Shirts for men or boys, of textile materials, except for knitted or crocheted, thous.	952	823	115.7
Women's or girls' dresses of textile materials, except knitted or crocheted, thous.	2121.5	2358.6	89.9
Women's or girls' skirts and culottes, of textile materials, except knitted or crocheted, thous.	986	1021.3	96.5
Blouses, shirts and sweatshirts for women or girls, made of textile materials, except knitted or crocheted, thous.	1182.9	1454.5	81.3

In the 1st half of 2022, the output of light clothing made of textile materials amounted to 11,743 thousand pieces, i.e., it decreased by 4.0% (by 492.8 thousand pieces), compared to the same period in

2021 (12,235.8 thousand pieces). Domestic companies and firms produce a different range of light clothing from textile materials. The distribution of light clothing made from textile materials by main

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types, produced in the 1st half of 2022, is shown in the figure – 55% (55.3%) are trousers, breeches and shorts. 6500.6 thousand pieces of such clothes were produced, or 1.2% (77.9 thousand pieces) less

compared to the same period in 2021 (6578.5 thousand pieces). Of this group of clothes, the largest share is 50.

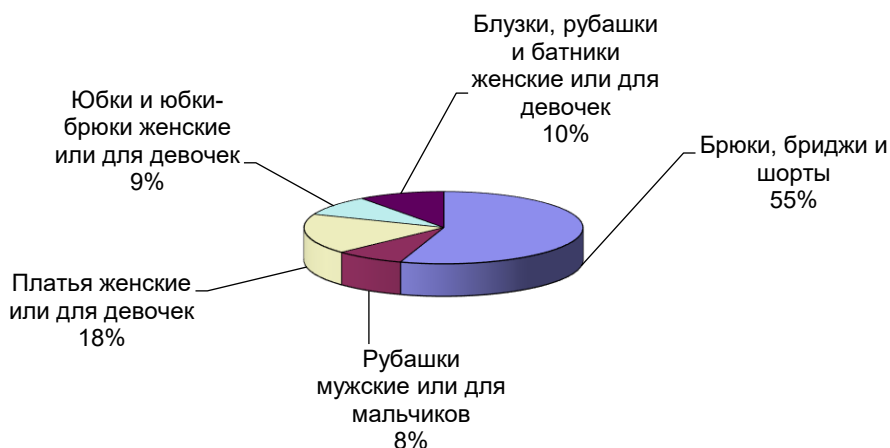


Figure 9. Distribution of light clothing made of textile materials by main types in the 1st half of 2022

For girls, of which 3294.5 thousand units were produced, which is 6.9% (243.1 thousand units) less than in the 1st half of 2021 (3537.6 thousand units). The next position in this group, with a share of 47%, is occupied by trousers for men or boys, the output of which is 3057.5 thousand pieces, which exceeds their output of the previous period by 5.7% (165.5 thousand pieces). The share of breeches and shorts for women or girls is small, 1.3% (87.4 thousand pieces), but their output increased significantly - by 23.6% (16.7 thousand pieces) and amounted to 87.4 thousand things. Also a small share, about 1%, of men's or boys' breeches and shorts, the production of which decreased significantly, by 21.6% (16.9 thousand pieces), to 61.2 thousand pieces. The main production of trousers, breeches and shorts made of textile materials, about 80%, was produced in two federal districts: the Southern and Central. The largest output of these types of clothing, 60%, or 3897.3 thousand pieces. Produced in the Southern Region. About 20% (1274 thousand pieces) of such clothes were produced in the Central District. The share of men's or boys' shirts made of textile materials accounts for 8% (8.1%). In the 1st half of 2022, 952 thousand units were produced. shirts, which is 15.7% (129 thousand pieces) more compared to the same period in 2021. A slightly larger share, 18%, is women's or girls' dresses, of which 2121.5 thousand pieces were produced, or 10.1% (237.1 thousand pieces) less than in the previous period. The main volume of production of dresses, about 83%, was produced in three federal districts: Central, Volga and Southern. 42% (890.3 thousand pieces) were produced in the Central District, about 23% (479.2 thousand pieces) in the Volga District, and about 18% (378.8 thousand

pieces) of dresses in the Southern District. proportion of skirts, about 9% of women's or girls' skirts and trousers, 986 thousand pieces were produced, there is a decrease in the production of these types of clothing by 3.5% (35.3 thousand pieces). Blouses, shirts and sweatshirts for women or girls make up 10% of the output of light clothing made from textile materials. The production of such types of clothing decreased by 18.7% (271.6 thousand pieces) and amounted to 1182.9 thousand pieces. Thus, in contrast to the production of outerwear made from textile materials, which increased in the 1st half of 2022, the production of light clothing made from textile materials decreased by 4% (by 492.8 thousand pieces), compared to the same period in 2021., and amounted to 11743 thousand pieces. A decrease in output is observed for almost all groups of light clothing, with the exception of men's or boys' shirts, the production of which increased by 15.7%. In the production of light clothing made of textile materials, more than half, 55%, are trousers, breeches and shorts. In this clothing group, an increase in production is observed for men's or boys' trousers, women's or girls' breeches and shorts, and a decline in women's or girls' trousers, men's or boys' breeches and shorts. The largest volume of production of trousers, breeches and shorts made of textile materials, 60% (3897.3 thousand pieces), was produced in the Southern Federal District. The heat flux density of the foot is 10 W/m², the mass flux density of the moisture released by the foot is 0.02 ((kg/(m² h)) on which curve 1 - for bottom packs used non-porous waterproof rubber as the sole, and curve 2 - for the bottom pack, when the material used as the sole was made by nanotechnology and has the ability to ventilate, i.e. to the exchange of air in the intra-shoe

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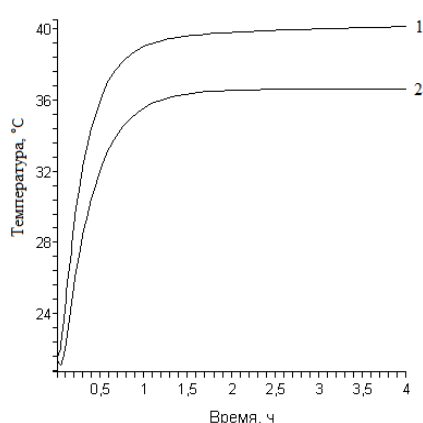
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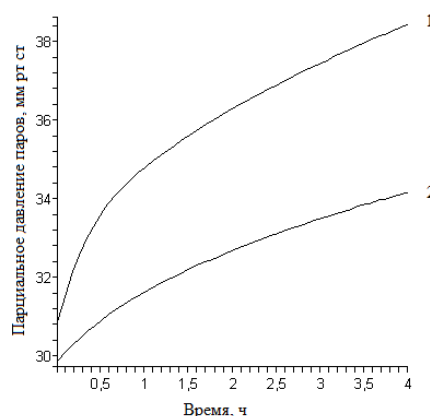
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space. Thus, the development of a software product for the formation of comfortable conditions for a person when he is in a climatic environment with an elevated temperature for the first time will allow for a reasonable choice of a package of materials for a suit in order to implement these same comfort conditions and significantly improve working conditions for a person in extreme conditions. If the software for substantiating the choice of packages of materials for clothing and footwear when creating comfortable conditions for a person in climatic zones with a low temperature is due to the control over the decrease in

temperature inside the suit space to 21 C0 for the foot and to 31 C0 for the human body, which were are incorporated into the developed software with a reasonable choice of a package of materials taking into account thermal and physical characteristics, then when developing software for a reasonable choice of packages of materials for a person located in climatic zones with elevated temperatures, the problem was solved differently, namely, based on the need to control the prevention of an increase human body temperature.



a



b

Picture 10. Feature inside shoe space:

***a*- temperature**

***b*- partial vapor pressure**

This is due to the fact that an increase of 0.3-0.5 C0 already creates discomfort for a person, and with an increase of more than 1 C0, this excludes him from being in these conditions. Therefore, packages of materials and a suit made of them must guarantee the fulfillment of these requirements for a person during the entire time he is in these conditions.

The software developed by the authors solves this problem and creates the prerequisites for a reasonable choice of a package of materials based on the obtained thermophysical characteristics on the stands and devices described in communication 2. Therefore, the availability of modern tools for determining the thermophysical characteristics and packages of materials and the developed software guarantee manufacturers reliability to make a suit that creates comfortable conditions during the entire time they are on duty. The entire list of works offered to the reader should not mislead him that there is no need for experimental wear. Of course not. Experienced wear in real conditions confirms the validity of the conclusions drawn or rejects them. But the availability of highly efficient methods for studying the thermophysical properties of materials and software

for a reasonable choice of packages of materials significantly reduces the cost of developing and manufacturing workwear for working military personnel both for low temperature conditions and for low temperature conditions. But what is also very important, the formation of requirements for materials on the possibility of their use for the production of workwear is also in demand by the developers of the materials themselves, including the use of nanotechnology, and all this together will solve the problem of protecting military personnel from the effects of external negative conditions.

To select the optimal power, the authors have developed software that allows manufacturers, based on an innovative technological process using universal and multifunctional equipment, to produce the entire range of footwear at minimum, average and maximum costs, which creates the basis for varying the price niche, including through a gradual increase in the share of domestic components in the production of a suit for civil servants with a significant reduction in the cost of its manufacture. At the same time, it was justified to choose exactly those criteria that have the greatest impact on the cost of finished products as criteria for a reasonable

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choice of the optimal power when forming the algorithm, namely:

- load factor of workers, %;
- labor productivity of one worker, a pair;
- wage losses per unit of output, rub.;
- specific reduced costs per 100 pairs of shoes, rub.

Of the four criteria given, in our opinion, the main ones are the labor productivity of 1 worker and the specific reduced costs.

Labor productivity of 1 worker is the most important labor indicator. All the main indicators of production efficiency and all labor indicators depend to one degree or another on the level and dynamics of labor productivity: production, number of employees, wages, etc.

To increase labor productivity, the introduction of new equipment and technology, extensive mechanization of labor-intensive work, automation of production processes, advanced training of workers and employees, especially when introducing innovative technological processes based on universal and multifunctional equipment, are of paramount importance.

Specific reduced costs - an indicator of the comparative economic efficiency of capital investments, used when choosing the best of the options for solving technological problems.

Reduced costs - the sum of current costs, taken into account in the cost of production, and one-time capital

investments, the comparability of which with current costs is achieved by multiplying them by the standard coefficient of efficiency of capital investments. Tables 9 and 10 show optimal power calculations for the range from 300 to 900 pairs for men's and women's shoes for the entire shoe range. An analysis of the obtained characteristics for three variants of a given technological process in the manufacture of the entire assortment of shoes confirmed the effectiveness of the software product for evaluating the proposed innovative technological process using universal and multifunctional equipment. So, with a range of 300 - 900 pairs, the best according to the specified criteria is the output of 889 pairs (for men) and 847 pairs (for women). If the production areas proposed by the regional and municipal authorities of two districts - the Southern Federal District and the North Caucasus Federal District, according to the standard indicators, do not allow the calculated production volumes to be realized, then in this case the option of the optimal capacity is selected that is acceptable, for example, the production volume of 556 pairs, which corresponds to the standard indicators for the proposed production areas and is characterized by the best values of the indicated criteria, which form the cost of the entire range of footwear. The authors have developed summary technological processes for assembling the blank of the shoe upper and for assembling shoes, respectively, for 12 models of men's and 12 models of women's shoes.

Table 8. Calculation of optimal power with a range of 300-900 pairs using men's shoes as an example

Power	Type of equipment	Optimal power, steam per shift	Labor productivity of 1 worker, steam	Worker load factor, %	Wage losses per unit of output, rub	Specific reduced costs per 100 pairs of shoes, rub.
300-500	one	500	28.09	61.39	13.68	6735.36
500-700	one	556	27.73	69.14	9.83	6404.71
700-900	one	889	28.09	77.20	6.42	5236.17
300-500	2	500	28.09	61.39	13.68	6728.68
500-700	2	556	27.91	68.70	9.97	6083.28
700-900	2	889	28.09	77.20	6.42	5240.72
300-500	3	500	28.09	61.39	13.68	7533.95
500-700	3	700	28.12	67.28	10.56	6734.02
700-900	3	889	28.09	77.20	6.42	5876.59

To assess the effectiveness of the production activities of a shoe enterprise, it is necessary to

analyze the annual results of the enterprise for the production of men's and women's footwear assortment

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Table 9. Calculation of optimal power with a range of 300-900 pairs using women's shoes as an example

Power options	Type of equipment	Optimal power, steam per shift	Performance labor of 1 worker, couples	Worker load factor, %	Wage losses per unit of output, rub	Specific reduced costs per 100 pairs of shoes, rub.
300-500	1	500	27.73	62.18	13.40	6980.5
500-700	1	700	27.73	69.14	9.83	6277.43
700-900	1	847	27.73	74.50	7.54	5673.49
300-500	2	500	24.45	63.90	14.11	7630.92
500-700	2	556	27.73	69.14	9.83	6404.71
700-900	2	812	25.64	75.40	7.77	6060.55
300-500	3	500	27.00	61.74	14.02	7827.12
500-700	3	556	29.32	68.21	9.71	6607.65
700-900	3	847	27.00	74.70	7.66	6341.05

These calculations indicate that with 100% of the sale of men's and women's shoes in the specified period of time, not only the costs of production and sale of products are covered, but there is also a profit in the amount of 3697.4 thousand rubles. This indicates the effective operation of the enterprise, as well as the correct marketing and assortment policy. Product profitability is 14.9%.

Shoe enterprises should focus on both external (consumer enterprises, competition, market conditions, etc.) and internal factors, such as sales volume, profitability, covering basic costs, etc. However, it is impossible to take into account and foresee all situations that may arise. when selling light industry products, i.e. some costume models at a certain stage are no longer in demand.

Thus, the regions on whose territory the territories of advanced socio-economic development are organized, including light industry enterprises, become leaders in economic development, determine the competitiveness of the economy of these regions, and provide social protection to the population of these regions.

Conclusion

The purpose of developing the Strategy is to propose a set of strategic directions, measures and steps aimed at reversing the negative trends in the economy and social sphere of the regions of the Russian Federation and entering a sustainable trajectory of socio-economic development, which is based on a model of accelerated economic growth and strengthening the economic base of the Russian Federation for subsequent improvement of the quality of life and well-being of the inhabitants of these regions.

The mission (strategic goal) of the socio-economic development of the regions of the Russian Federation is the growth of the true well-being of the inhabitants of the regions of the Russian Federation, the creation of opportunities for their self-realization by outstripping the rate of creation of new high-tech

and knowledge-intensive jobs compared to other regions of Russia, an increase in the level and quality of life, access to social and cultural benefits.

The concept of true well-being comes from the assumption that today the content of the concepts of "development" and "progress" has acquired a new meaning. Development is becoming human-oriented (humanistic) and environmentally-oriented, based on investments in human capital, innovative sectors of the economy, and the preservation of ecosystems. This means an increase in the subjective feeling of personal happiness, including not only the level of income, but also non-economic indicators, including the value of leisure, eco-system services, and the quality of work.

Genuine well-being is assessed by an expanded set of indicators that characterize the quality of human life from all sides (opportunities for self-realization, wealth inequality and other indicators of inclusive economic growth, subjective happiness, quality of the urban environment, environmental indicators, healthy life expectancy, indicators of human development, development of democratic institutions and public participation, etc.). At the same time, not only economic (level of income, volume of production and investment), but also social, environmental, spatial and managerial (institutional) components are taken into account. Economic development not only does not contradict the conservation of nature ("industrialization at any cost"), but also leads to a reduction in social disproportions,

the goal for the period up to 2026 (first stage) is to ensure rapid economic growth and development of the social sphere of the regions of the Russian Federation at a rate higher than the national average based on strengthening the economic base, stimulating entrepreneurial initiative, sustainable spatial development and improving the efficiency of state and municipal government. At the first stage, due to outstripping growth rates, basic conditions will be created for entering the trajectory of sustainable development;

the goal for the period 2027 - 2030 (second

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stage) is the formation of a new model for the development of the Russian Arctic, based on the principles of sustainable development, including through the implementation of the provisions of Decree of the President of the Russian Federation dated May 7, 2018 No. 204 "On national goals and strategic objectives for the development of the Russian Federation for the period up to 2030". At the second stage, due to investments in the human capital sectors, ecology, and industrial renewal, a new model of sustainable long-term development of the regions of the Russian Federation will be formed, which implies the harmonious development of the economic, social and environmental components;

the goal for the period 2031-2035 (stage three) is to increase the true well-being of people and their subjective sense of happiness through the scaling up of the sustainable development model, the transition to a fundamentally new quality of economic growth, in which social, economic and environmental development complement each other, the introduction of best practices environmentally-oriented and human-oriented development.

Thus, by 2035, the Strategy is designed to realize the existing human potential of the population of the regions of the Russian Federation, increase opportunities for self-realization, ensuring an increase in the level and quality of life, access to social and cultural benefits, creating an environment of equal opportunities for everyone. This will create conditions for the implementation of a catch-up development model (with growth rates higher than the average Russian ones) with access to a model of sustainable long-term development by 2027.

The implementation of the Strategy will make it possible to make a consistent transition from the old industrial model of extensive economic growth at the expense of natural resources to a sustainable development model that balances economic, environmental and social components. The new development model will be based on the concentration of added value in the region, the development of innovations and human potential, the implementation of a smart specialization policy for certain territories, the greening of industry, and the creation of a new quality of business and management institutions. The implementation of the Strategy will contribute to strengthening the status of the regions of the Russian Federation.

In the Strategy for the Spatial Development of Russia until 2035, the regions of the Russian Federation are considered as geostrategic, which are essential for ensuring the territorial integrity of the country and the security of the state. The regions of the Russian Federation are included in the list of geostrategic territories as regions bordering the countries of the European Union, with a level of economic development below the Russian average. Among the main directions of development of the

regions of the Russian Federation, those that are focused on realizing the potential of the border geographical position of the Russian Federation as promising large economic centers stand out. In accordance with the Strategy for the Spatial Development of Russia, this Strategy defines measures to strengthen effective specialization through the development of the timber industry, mining, fishing and fish farming, engineering and tourism.

The regions of the Russian Federation in the long term are positioned as pilot regions of the Russian Federation for the implementation of the global sustainable development agenda for the period up to 2035 at the regional levels in Russia. This agenda was adopted on September 25, 2020 by the UN member states, including Russia.

Within the framework of the Strategy, by 2035 the regions of the Russian Federation are considered as special regions with territories with a unique specialization at the national and regional levels. At the same time, the regions themselves already perform or are potentially capable of performing several functions at once ("development through diversity") at the national level: an innovative industrial center, a scientific and educational center, a transport and logistics center, a digital economy center, a tourist center, a territory of cooperation and interactions, areas of sustainable development.

The Strategy identifies 7 equivalent and interrelated strategic areas focused on the formation of human potential, the creation of new incentives to live and work in the regions of the Russian Federation, and 50 main tasks for moving forward in each of them. At the same time, some of the activities can be implemented at the regional and municipal levels.

Within the framework of the strategic direction "Infrastructure for Life", the main directions of infrastructure development are set as a necessary condition for the development of the economy and the social sphere. The strategic direction "Development of the economy and entrepreneurship" defines measures to strengthen key competitive and promising sectors of the economy of the regions of the Russian Federation. Within the framework of the strategic direction "Development of tourism and the hospitality industry", the unique tourist and cultural opportunities of the regions of the Russian Federation are separately disclosed. The strategic direction "Sustainable Spatial Development" is aimed at realizing the unique spatial potential of the Russian Federation. The strategic direction "Improving environmental sustainability and security" sets the values of sustainable development, green economy in order to pass on to future generations the opportunities we have today. The strategic direction "Human Capital and the Social Sphere" is aimed at the development of science and education, health care, and social support for people. The multiplication of human potential is the biggest

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task, a necessary condition for retaining the population, solving problems in the field of industrial development of these regions. Finally, the strategic direction "Effective Governance: Tools for Implementation" sets the vector in the field of creating a modern development management system, introducing advanced practices of public participation, and new instruments of tax, budget and investment policy. social support for people. The multiplication of human potential is the biggest task, a necessary condition for retaining the population, solving problems in the field of industrial development of these regions. Finally, the strategic direction "Effective Governance: Tools for Implementation" sets the vector in the field of creating a modern development management system, introducing advanced practices of public participation, and new instruments of tax, budget and investment policy. social support for people. The

multiplication of human potential is the biggest task, a necessary condition for retaining the population, solving problems in the field of industrial development of these regions. Finally, the strategic direction "Effective Governance: Tools for Implementation" sets the vector in the field of creating a modern development management system, introducing advanced practices of public participation, and new instruments of tax, budget and investment policy.

The system of 7 strategic directions is linked to 7 long-term strategic goals and is generally aimed at creating conditions for the integrated development of human potential and securing the population of the regions of the Russian Federation through providing basic needs in education, healthcare, infrastructure, a favorable environment, jobs, including highly qualified, concomitant development of services and institutions (Table 10).

Table 10. Priority areas and strategic goals of the Strategy

Strategic Direction	Strategic goal
Infrastructure for life	Improvement of transport, engineering, housing and communal infrastructure as a necessary condition for the development of the economy and the social sphere
Development of the economy and entrepreneurship	creating new jobs, increasing investment attractiveness, pursuing a cluster policy, developing traditional industries and services, creating conditions for the development of new industrial clusters
Development of tourism and hospitality industry	preservation of the cultural and historical heritage of the population of the regions of the Russian Federation, the creation of a modern hospitality industry in the regions of the Russian Federation
Sustainable spatial development	expanding international cooperation, pursuing a balanced spatial policy aimed at strengthening the economies of municipal and regional entities of the Russian Federation, creating a comfortable urban environment, introducing new technologies
Enhancing environmental sustainability and safety	implementation of the value system of sustainable development, green economy, ensuring the reproduction of a healthy population, as well as the growth of life expectancy and quality by solving environmental problems to pass on to future generations for subsequent multiplication of the opportunities that the regions have at the moment
social development	ensuring a high quality of life for the population by increasing the availability of high-quality social services, the implementation of spiritual and cultural development, interethnic harmony
Effective Governance: Implementation Tools	creation of a modern development management system, introduction of advanced practices of public participation, new instruments of tax, budget and investment policy

The strategy takes into account the provisions of the Decree of the President of the Russian Federation dated May 7, 2018 No. 204 “On the national goals and strategic objectives of the development of the Russian

Federation for the period up to 2035”, including within the framework of individual national projects and programs (Table 11).

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Table 11. Priority areas and strategic goals of the Strategy, compliance with the May Decree of the President of the Russian Federation

Priority areas	National projects and key quantitative targets of the May Decree	Federal projects in which the participation of the population of the regions of the Russian Federation is expected
Development of human capital and social sphere	<p>national project "Demographic Development": increase in healthy life expectancy up to 67 years; an increase in the total fertility rate to 1.7; an increase in the proportion of citizens leading a healthy lifestyle, as well as an increase to 55% of the proportion of citizens systematically engaged in physical culture and sports; national project "Health": reduction in mortality of the working-age population (up to 350 cases per 100 thousand population), mortality from diseases of the circulatory system (up to 450 cases per 100 thousand population), mortality from neoplasms, including malignant (up to 185 cases per 100 thousand population), infant mortality (up to 4.5 cases per 1 thousand born children); ensuring coverage of all citizens with preventive medical examinations at least once a year; ensuring optimal accessibility for the population of medical organizations providing primary health care; optimization of the work of medical organizations providing primary health care, reducing the waiting time in line when citizens apply to these medical organizations, simplifying the procedure for making an appointment with a doctor;</p> <p>the national project "Education": ensuring the global competitiveness of Russian education, the entry of the Russian Federation into the top 10 countries in the world in terms of the quality of general education; national project in the field of science: ensuring the presence</p>	<p>"Demography" (P):</p> <ol style="list-style-type: none"> 1) "Financial support for families at the birth of children"; "Establishment of a nursery - promotion of women's employment"; "Older generation"; "Strengthening public health"; "New physical culture of the population"; <p>"Health" (N):</p> <p>"Development of the primary health care system";</p> <p>"The fight against cardiovascular diseases";</p> <p>"Fight against oncological diseases";</p> <ol style="list-style-type: none"> 1) "Child development healthcare, including the creation of a modern infrastructure for providing medical care for children"; 2) "Provision of medical organizations of the system health care qualified personnel"; 3) "Creation of a single digital circuit in healthcare based on a unified state information system health care (EGISZ)"; 4) "Development of export of medical services"; <p>"Education" (E):</p> <ol style="list-style-type: none"> 1) "Modern School"; 2) "Success of every child"; 3) "Modernparents"; 4) "Digital School"; 5) "Teacher of the Future"; 6) "Young professionals"; 7) "New Opportunities for Everyone"; 8) "Social activity"; 9) "Improving the competitiveness of Russian higher education"; <p>"Science" (S):</p> <ol style="list-style-type: none"> 1) "Creation of a network of leading research centers and world-class centers"; 2) "Creation advanced research infrastructure"; 3) "Generation of fundamental scientific knowledge"; 4) "Creation of scientific and educational centers and cooperation with organizations

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	<p>the Russian Federation among the five leading countries of the world carrying out research and development; ensuring the attractiveness of work in the Russian Federation for Russian and foreign leading scientists and young promising researchers; outpacing increase in domestic spending on research and development; national program in the field of culture: There are no specific target indicators in the May decree</p>	<p>operating in the real sector of the economy"; 5) "Digital technologies in science"; "Culture" (A): 1) "Cultural environment"; 2) "Creative people"; 3) "Digital Culture"</p>
<p>Development of economy and entrepreneurship; development of tourism and hospitality industry</p>	<p>national program in the field of increasing labor productivity and supporting employment: growth in labor productivity in medium and large basic non-primary sectors of the economy at least 5 percent per year; involvement in implementation of the specified national program at least 10 constituent entities of the Russian Federation annually; involvement in the implementation of the specified national program of at least 10 thousand medium and large enterprises of the basic non-primary sectors of the economy; national project in the field of development of small and medium-sized businesses and support for individual entrepreneurial initiatives: increase in the number of people employed in the small and medium entrepreneurship, including individual entrepreneurs, up to 25 million people</p>	<p>"Productivity and Employment Support" (L): 1) "Systemic measures to increase labor productivity"; 2) "Implementation of measures to increase labor productivity and expert support for enterprises in non-primary industries"; 3) "Employment support: employment, training, infrastructure development"; "Small and medium business and support for individual entrepreneurial initiative" (I): 1) "Improving the conditions for doing business activities"; 2) "Creation of a digital platform for supporting production and marketing activities of small and medium-sized entities entrepreneurship"; 3) "Improvement procurement systems carried out by the largest customers from small and medium-sized businesses"; 4) "Expanding access of SMEs to financial support, including concessional financing"; 5) "Creation of a system of acceleration of subjects of small and medium entrepreneurship"; 6) "Modernization of the exporter support system –subjects of small and medium business"; 7) "Creation of a support system for farmers and development of rural cooperation"; 8) "Promotion of Entrepreneurship"</p>

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<p>Infrastructure for life, sustainable spatial development; international relations</p>	<p>national project in the field of housing and urban environment: providing affordable housing for middle-income families; increase in housing construction to at least 120 million square meters per year; drastic increase comfort of the urban environment, increasing the index of urban environment quality by 30 percent; increase in the share of citizens participating in solving issues of urban environment development, up to 30 percent; ensuring a sustainable reduction in the uninhabitable housing stock; national project for creation of safe and high-quality roads: increase in the share of regional roads that meet regulatory requirements in their total length of at least than up to 50 percent; reduction in the share of highways of federal and regional significance, operating in overload mode, in their total length by 10 percent compared to 2020; reduction in the number of places of concentration of road traffic accidents (dangerous sections) on the road network by half compared to 2020; a 3.5-fold reduction in deaths from road traffic accidents compared to since 2017 - to the level not exceeding four people per 100 thousand of the population (by 2035 - the desire for zero mortality). national program in the field of development of international cooperation and export: formation of global competitive non-primary sectors, the total share of exports of goods (works, services) of which will be at least 20 percent of the country's gross domestic product; achieving the volume of exports (in value terms) of non-commodity non-energy goods in the amount of 250 billion US dollars per year, including engineering products - 60 billion US dollars per year and agricultural products - 45 billion US dollars per year, as well as the volume of exports of services rendered in the amount of 100 billion US dollars per year;</p>	<p>"Housing and Urban Environment" (F): 1) "Housing"; 2) "Formation of a comfortable urban environment"; 3) "Ensuring a sustainable reduction in the uninhabitable housing stock"; "Safe and quality roads" (R): 1) "Road network"; 2) "System-wide measures for the development of the road sector"; "International cooperation and export" (T): 1) "Industrial export"; 2) "Export of agricultural products"; 3) "Logistics international trade"; 4) "Export of services"; 5) "Systemic measures to promote international cooperation and export"</p>
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	formation of an effective system of division of labor and industrial cooperation within the framework of the Eurasian Economic Union in order to increase the volume of trade between the member states of the union by at least one and a half times and ensure the growth of the volume of accumulated mutual investments by one and a half times	
Enhancing environmental sustainability and safety	national project "Ecology": liquidation of all unauthorized landfills identified as of January 1, 2021 within city boundaries; cardinal decrease in the level of atmospheric air pollution in large industrial centers; improving the quality of drinking water for the population; ecological improvement of water bodies; conservation of biological diversity, including through the creation at least 24 new protected areas	"Ecology" (G): 1) "Clean country"; 2) "Construction of facilities for sorting and processing MSW"; 3) "Drinking water"; 4) "Forest Conservation"
Effective Governance: Implementation Tools	National program "Digital Economy of the Russian Federation": increase in internal costs for the development of the digital economy through all sources at least three times compared to 2021; creation of a sustainable and secure information and telecommunications infrastructure; use of predominantly domestic software	"Digital Economy" (D): 1) "Regulatory regulation of the digital environment"; 2) "Information infrastructure"; 3) "Personnel for the digital economy"; 4) "Information safety"; 5) "Digital Technologies"; 6) "Digital public administration"

The implementation of the Strategy is designed to respond to the main demographic challenge of the long-term development of the regions of the Russian Federation. In conditions of rather high mobility of the population, people choose to live in those regions where they can realize their potential. The answer to this should be an appeal to the needs and capabilities of every resident of the Russian Federation and positioning the state as an assistant, the role of civil society in governance should be radically changed, mechanisms for effective feedback from residents should be established. Therefore, at the center of the Strategy are people and their well-being.

Our country is the only one in the world that has proved that nothing depends on the climatic zone if there is a developed industry and infrastructure. We offer our own solution to a whole range of problems, the most optimal, in our opinion, namely: in the future and existing cities of the regions of the Russian Federation, the creation of light industry enterprises, which is due not only to their location on the railway track, which is not unimportant, but also to their advantage the location near large rivers of the regions

of the Russian Federation that go to the ocean, which will automatically provoke a sharp increase in not only cargo traffic, but also the opportunity, if necessary, at minimal cost to implement an industrial policy to provide these regions with demanded and import-substituting products, that is, it will be gold for light industry, allowing to produce cheap, unique and other goods such as shoes, belts, bags and other things made of fish skin, fur coats and clothes made of deer skins and so on. Thus, light industry products will be in demand not only in our country, but also abroad. It is strange not to take advantage of such a treasure when everything can not only pay off, but also become an economic superiority in the field of light industry over leading economic powers like China and the United States, since none of them has such a potential as Russia.

But this is in the future, but for now, we propose to start small based on our analytical work, that is, if everything is done wisely, then this will not only be our version of the development of events, but will become a reality and provoke the effective development of the regions of the Russian Federation.

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SOI: [1.1/TAS](#) DOI: [10.15863/TAS](#)

International Scientific Journal Theoretical & Applied Science

p-ISSN: 2308-4944 (print) e-ISSN: 2409-0085 (online)

Year: 2022 Issue: 10 Volume: 114

Published: 21.10.2022 <http://T-Science.org>

Issue

Article



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THE ROLE OF TRANSPORT INFRASTRUCTURE IN THE ECONOMY OF THE REPUBLIC OF KARAKALPAKSTAN IN THE CONDITIONS OF ECONOMIC GLOBALIZATION

Abstract: The article considers the role of transport infrastructure in the economy of the Republic of Karakalpakstan in the context of economic globalization. The problems of development of the transport industry in the Republic are identified.

Key words: transport and infrastructure, road transport, railway communication system and rail transportation, market of cargo transportation and transport and logistics services.

Language: Russian

Citation: Aytbaev, A. Q., Ibragimova, N. B., & Pirlepesova, I. F. (2022). The role of transport infrastructure in the economy of the Republic of Karakalpakstan in the conditions of economic globalization. *ISJ Theoretical & Applied Science*, 10 (114), 276-280.

Soi: <http://s-o-i.org/1.1/TAS-10-114-40> **Doi:**  <https://dx.doi.org/10.15863/TAS.2022.10.114.40>

Scopus ASCC: 1408.

РОЛЬ ТРАНСПОРТНОЙ ИНФРАСТРУКТУРЫ В ЭКОНОМИКЕ РЕСПУБЛИКИ КАРАКАЛПАКСТАН В УСЛОВИЯХ ГЛОБАЛИЗАЦИИ ЭКОНОМИКИ

Аннотация: В статье рассмотрены роль транспортной инфраструктуры в экономике Республики Каракалпакстан в условиях глобализации экономики. Определены проблемы развития транспортной отрасли в Республике.

Ключевые слова: транспорт и инфраструктура, автомобильный транспорт, система железнодорожного сообщения и железнодорожные перевозки, рынок грузоперевозок и транспортно-логистических услуг.

Введение

Транспорт и инфраструктура играют важную роль в экономике Узбекистана. Проведение открытой экономической политики требует выхода на новые рынки. Узбекистан стремится диверсифицировать свой экспорт. Помимо традиционных рынков, таких как Центральная Азия и Россия, страна увеличивает поставки в

Китай, страны Европы и Турцию. В том числе Транспортная система Республики Каракалпакстан (РК) представлена всеми видами транспорта: автомобильным, железнодорожным, воздушным, внутренним водным, трубопроводным, сетью автомобильных и железных дорог. В г. Нукусе функционирует

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международный аэропорт, отвечающий современным требованиям.

География во многом определяет возможности стран к развитию. В мире насчитывается более сорока государств, не имеющих прямого доступа к морским перевозкам, тем самым отрезанных от наиболее дешевого вида транспортных путей. И их торговые отношения во многом зависят от уровня развитости, транзитных возможностей и открытости стран-соседей, а главное — от политической воли. Особое значение придается этому вопросу и в Узбекистане.

Основная часть.

Система автомобильно-дорожного сообщения.

Протяженность автомобильных дорог и магистралей в РК составляет 11061 тыс. км, включая автомагистрали международного, республиканского, регионального значения. Через территорию республики проходит национальная автотрасса, построенная по международным стандартам, с выходом на соседние страны (Россия и Казахстан). Следует отметить, что уровень развития автомобильных дорог в РК более чем в 4 раза отстает от средних показателей по стране. В отдельных районах (за исключением Шуманайского, Чимбайского, Нукусского) недостаточно развиты автомобильные дороги из-за отдаленности и труднодоступности сельских территорий. Роль автомобильных перевозок будет со временем увеличиваться, поскольку они являются более быстрыми и надежными, а так же связаны с более низким уровнем риска утраты или повреждения отдельных видов грузов. Так, для ряда скоропортящихся продуктов и срочных товаров автоперевозки являются единственным реальным способом транспортировки. В силу этого, автомобильный транспорт является предпочтительным средством перевозки сельскохозяйственной продукции, текстильных изделий и других несырьевых товаров, вывозимых из Республики Каракалпакстан. Большинство автомобильных дорог нуждается в реконструкции и реабилитации по стандарту европейских автомобильных дорог E-40, как это было сделано на примере автодороги Кунград-Бейнеу. Имеется потребность в реализации проекта реконструкции автомобильной дороги Бейнеу — Акжигит — Нукус совместно с Казахстаном, что позволит увеличить среднюю скорость движения с 50 до 100 км/ч и грузопоток - с одной до 6 тысяч автомобилей в сутки. Бейнеу сегодня — главная точка, через которую проходят железнодорожный и автомобильные пути. Реконструкция дороги «Бейнеу-Акжигит-Нукус» позволит открыть коридор к прикаспийским странам, странам Средней Азии, к России и Европе, поскольку

участок дороги входит в состав международного транзитно-транспортного коридора «Ташкент – Самарканд – Бухара – Нукус – Бейнеу – Атырау - Астрахань», с выходом в Прикаспийский регион и страны Европейского Союза. Требуется также открытие новых регулярных международных маршрутов по перевозке пассажиров, что могло бы стимулировать развитие туризма.

Плохое состояние дорог приводит к снижению скорости передвижения и ускоряет физический износ автомобильного парка. В конечном итоге, это ведет к удлинению сроков выполнения транспортировки и срывам поставок. Большая часть межхозяйственных сельских автомобильных дорог, улиц городов, городских поселков, кишлаков и аулов не отвечает установленным требованиям качества и безопасности движения. Дорожные организации районов и городов не на должном уровне оснащены дорожно-ремонтной техникой, материально-сырьевыми ресурсами, ежегодно выделяемые средства недостаточны для обеспечения надлежащего содержания и качественного выполнения работ по ремонту межхозяйственных сельских автомобильных дорог, улиц городов, городских поселков, кишлаков и аулов. Финансирование мероприятий по строительству, реконструкции, ремонту, оснащению и эксплуатации автомобильных дорог общего пользования в соответствии с утвержденными расходами в отдельных случаях оказывается несвоевременным. Оснащение улично-дорожной сети техническими средствами регулирования дорожного движения и системами сбора информации о транспортных потоках, подключенных к интеллектуальным транспортным системам, обеспечивающим управление наземным общественным транспортом, практически отсутствует. Качество образования и подготовка профессиональных кадров в целом для отрасли на базе Ташкентского института по проектированию, строительству и эксплуатации автомобильных дорог и профильных профессиональных колледжей пока остаётся низким, а объёмы подготовки специалистов с высшим образованием не покрывают потребности отрасли в таких специалистах.

Таким образом, требуется совершенствование технологической и технической базы строительства и содержания автомобильных дорог, а также ускоренное развитие объектов придорожной инфраструктуры в рамках государственно-частного партнерства. Правительством страны предпринимаются системные меры по совершенствованию системы управления дорожным хозяйством.

Территориальная дорожно-эксплуатационная организация ГАК «Узавтойул»

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в Республике Каракалпакстан была преобразована в территориальное главное управление Государственного комитета Республики Узбекистан по автомобильным дорогам, при котором были созданы инжиниринговая компания «Служба заказчика региональных дорог», способствующая повышению качества проектных и дорожно-строительных работ, а также специализированные предприятия по ремонту региональных автомобильных дорог.

«Система железнодорожного сообщения и железнодорожные перевозки».

Протяжённость железных дорог в РК составила 845,3 км. Железнодорожные пути в РК пригодны для эксплуатации грузовых поездов со скоростью 100 км/час. Железная дорога Ташкент – Учкудук – Нукус проходит через территорию ряда сельских районов. Во избежание простоев на пограничном и таможенном контроле на территории Туркменистана, в Узбекистане была построена железнодорожная линия Нукус–Мискен–Учкудук–Бухара.

Вместе с тем, требуются строительство отдельных участков дорог или реконструкция старых в рамках программ международных организаций, позволяющих набирать скорость до 160 км/час. Железнодорожную инфраструктуру региона необходимо развивать, чтобы мощности были рассчитаны на гораздо более значительные объёмы перевозок. Парк локомотивов и вагонов, а также прочие элементы технической базы регионального отделения ГАЖК «Узбекистон темир йуллари» в РК требуют модернизации. Подвижной состав железных дорог РК характеризуется высокой степенью морального и физического износа.

В республике не имеется также междугородного электрического транспорта (пассажирских электропоездов, связывающих города региона). Роль железнодорожных перевозок в перевозке таких грузов, как стройматериалы, нефтепродукты, полезные ископаемые будет со временем увеличиваться.

Также выявлено, что не практикуется широкое использование специализированных стандартных прямоугольных контейнеров для перевозки товаров, которые должны загружаться в такие контейнеры на заводе или на складе и транспортироваться в этих контейнерах до пунктов отгрузки, где они грузятся непосредственно на борт судна или автотранспортного средства, говоря иначе, не развита система контейнеризации. Как показывает международная практика, стоимость перевозки 1 тонны груза в направлении международных

портов крупнотоннажным контейнером в среднем на 10-12% дешевле, чем вагонная перевозка. Это является одной из причин высоких тарифов на грузоперевозки. Так, сравнительный анализ стоимости перевозки 1 стандартного вагона на 1 км., (загрузка 60 т., текстильная продукция) на расстояние до 500 км показывает, что местные производители платят железнодорожникам 5,15 долл. В Казахстане этот показатель составляет 0,93 долл., в Киргизии – 2,65 долл., в Таджикистане – 6,83 долл., в Туркменистане – 2,65 долл. За перевозку на расстояние от 500 до 1000 км. грузоотправители в Узбекистане платят 2,51 долл., в Казахстане – 0,68 долл., в Туркмении – 2,60 долл.¹ Другой причиной является монопольное установление цен на грузоперевозки ГАЖК «Узбекистон темир йуллари» при не транспарентности формирования себестоимости железнодорожных грузоперевозок. Таким образом, тарифная политика ГАЖК «Узбекистон темир йуллари» не основана на установлении сбалансированного тарифа, основанного на нормативных эксплуатационных издержках и рентабельности, достаточной для обновления и поддержания в технически исправном состоянии подвижного состава и оказания качественных услуг по перевозке пассажиров, багажа и грузов.

Другой проблемой является недостаточная интеграция сети железных дорог РК в систему мировых железных дорог.

Рынок грузоперевозок и транспортно-логистических услуг.

При установлении тарифов на услуги грузовых автомобильных перевозок учитываются три основных показателя: себестоимость предоставления услуги; средняя цена на рынке транспортных услуг; платежеспособность потребителя. Объёмы транспортировки грузов на автотранспорте в 2012-2020 гг. выросли почти в два раза, а грузооборот почти в 2,5 раза, но в последние два года наблюдается стагнация по данному показателю в силу роста цен на грузоперевозки и неразвитости транспортно-логистической инфраструктуры. Поэтому первостепенной является задача снижения стоимости автомобильных грузоперевозок, где сравнительно высоки тарифы на грузоперевозки.

По экспертным оценкам, средний возраст автотранспортных средств, используемых местными грузоперевозчиками, составляет 10-12 лет, причём около половины парка автотранспортных средств эксплуатируется свыше 10 лет, т.е. все они почти полностью изношены и подлежат списанию. Устаревший автопарк, приводит к повышению потребления

¹ Оценки ЦЭИ, 2015 г.

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топлива и увеличению себестоимости грузоперевозок. Так, расход топлива грузовых автомобилей на 100 км пути в Узбекистане составляет 39-41 л., в ЕС – 32-34 л. Более того, большинство автотранспортных средств не отвечают международным стандартам Евро-4, связанных с допустимой нагрузкой на ось и экологическими ограничениями, и, в результате этого, не допускаются к работе в Европе. Современные международные стандарты проектирования и строительства магистральных автомобильных дорог предусматривают осевую нагрузку транспортного средства до 13 тонн. В РК на сегодняшний день более половины дорог международного значения рассчитаны на осевую нагрузку транспортного средства не более 10 тонн. Поэтому, сегодня имеющиеся в РК автотранспортные средства не способны конкурировать на международном рынке и его операторы не могут соперничать с операторами из Казахстана, России и других стран. Кроме того, стоимость седельного тягача, производимого заводом СП ООО «MAN-Auto Uzbekistan», намного выше стоимости аналогичного тягача, производимого в Европейских странах. Например, если стоимость седельного тягача, производимого в Узбекистане, составляет 517,4 млн. сум или 129,8 тыс. долл. США, то в Германии стоимость нового аналогичного тягача, отвечающего стандарту Евро-6, составляет в среднем 72-82 тыс. долл. США. Однако высокие пошлины на импортную продукцию препятствуют их закупке за рубежом. В настоящее время потребность автоперевозчиков Каракалпакстана в большегрузных автотранспортных средствах, отвечающих требованиям высокого экологического стандарта, в среднем составляет около 100 ед. в год. Существующий сегодня фискальный режим не стимулирует инвестиции в развитие сектора грузовых перевозок. В виду высоких импортных таможенных пошлин и акцизных налогов, стоимость приобретения грузовой автомашины иностранного производства в Узбекистане обходится примерно в 150.000 Евро за единицу. Так, при импорте в Узбекистан современного автопоезда европейского производства, общая сумма платежей (таможенная пошлина, НДС, акциз, сбор в Дорожный фонд и т.п.) составляет 110-146% от таможенной стоимости товара. Банки и другие финансовые институты, предлагают высокие процентные ставки с коротким сроком погашения кредитов. Указанные факторы негативно влияют на обновление парка автотранспортных средств национальных автоперевозчиков. Немногие узбекские компании могут позволить себе вкладывать крупные средства в автотранспортный бизнес. Системы финансирования проектов, направленных на развитие автотранспортной отрасли также не

развиты. Отсутствует механизм финансирования проектов по созданию транспортно-логистических центров, внедрению информационно-коммуникационных технологий, обновлению подвижного состава в рамках государственно-частного партнерства. По этой причине отрасль грузоперевозок в регионе, как и в целом по Узбекистану находится на невысокой стадии развития. Из-за отсутствия соответствующих логистических центров по обработке, упаковке и их хранению большая часть сельхозпродукции становится неконкурентной на внешних рынках.

В РК пока нет примеров действующих универсальных логистических центров, оказывающих полный комплекс логистических услуг по перевозке, переработке, хранению и предоставлению услуг предпродажного сервиса для розничной торговли, а также международных ЛЦ по предоставлению широкого спектра услуг от таможенного оформления до складирования и сертификации товаров. В настоящее время, местные транспортные компании, не имеют сертификации ISO 9001:2008 и являются неконкурентоспособными перед иностранными компаниями поставщиками транспортных и логистических услуг. В силу этого, иностранные клиенты предпочитают пользоваться услугами иностранных перевозчиков и экспедиторов, несмотря на более высокую стоимость таких услуг, поскольку они предоставляют широкий спектр услуг и более надежны. В Узбекистане активно действуют различные транспортно-экспедиторские компании из России, Казахстана, Германии, Швейцарии, Кореи и Китая.

Анализ структуры экономического развития РК показывает, что в связи с улучшением и развитием транспортной инфраструктуры, увеличением объемов транзита и региональной торговли, рынок логистических услуг в регионе в ближайшие годы будет расти ускоренными темпами. В регионе сформировался устойчивый спрос на увеличение спектра услуг по организации перевозок товаров – это организация интермодальных перевозок, доставка по принципу «от двери до двери», таможенная очистка, расфасовка, упаковка, хранение, товаров и т.д. В связи с этим, возникла необходимость в институциональном развитии логистической отрасли в регионе, повышении качества предоставляемых услуг в области промышленной, торговой, информационной, транспортной, складской, управленческой и других видов логистики.

Выводы.

В заключении можно сказать, что несмотря на финансовые трудности, сложную экономическую ситуацию в республике с первых

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лет независимости на реформу транспортной системы были выделены огромные средства.

В целом, за годы независимости для развития транспорта и коммуникационной системы была сделана большая работа стратегического развития. В республике обеспечена

самостоятельность транспорта и создана национальная система, связывающая все регионы республики между собой. Созданная в стране эффективная транспортная система служит фактором для развития внешнеэкономических связей и интеграции с другими странами.

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SOI: [1.1/TAS](#) DOI: [10.15863/TAS](#)

International Scientific Journal Theoretical & Applied Science

p-ISSN: 2308-4944 (print) e-ISSN: 2409-0085 (online)

Year: 2022 Issue: 10 Volume: 114

Published: 21.10.2022 <http://T-Science.org>

Issue

Article



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BUDGETING IN THE MANAGEMENT OF CURRENT ASSETS OF ENTERPRISES FOR THE PRODUCTION OF BUILDING MATERIALS

Abstract: *The fundamental changes taking place in the economy of the Republic of Uzbekistan require a revision in the spirit of socio-economic creativity of finance, economic theory, budget process, analysis of the implementation of the rights and obligations of the budget and their development.*

Key words: *Current assets, budget forecasting, stages of the organization of the budget system, the structure of the consolidated budget in the management of current assets.*

Language: English

Citation: Nurmanov, U. A. (2022). Budgeting in the management of current assets of enterprises for the production of building materials. *ISJ Theoretical & Applied Science*, 10 (114), 281-285.

Soi: <http://s-o-i.org/1.1/TAS-10-114-41> **Doi:**  <https://dx.doi.org/10.15863/TAS.2022.10.114.41>

Scopus ASCC: 2000.

Introduction

In the Republic, the need arises for radical reform of the budget system, development in accordance with international standards, the use of new mechanisms for determining the budget prospect.

Purpose of the study – In particular, when presenting the annual budget to legislative bodies in Western countries, macroeconomic and macroeconomic assessments and proposals should also be referenced.

Also in Germany "the annual budget is approved by the Bundestag on the basis of a medium-term five-year financial plan. The first year is the current budget year, the next budget is formed on the basis of the second year, the next three years is a planned period that optimally forecasts the budget area in terms of time. Time financial planning techniques have a "sliding" description" [11].

In France, "the complex of the process of structuring a multi-year budget on the basis of prognoses is practically absent and, nevertheless, regulated through laws that provide for a long period of government spending, such as defense and financing of territories at sea" [11].

In Canada, "budget estimates of prospects are carried out through a special structure that manages the financial policies and expenses of the state. In the process of creating multi-year budgets, the principle

of "from bottom to bottom" is supplemented by operational planning based on the principle of "from bottom to top", which serves to clarify strategic goals and provides a detailed review on each cost item" [12].

Japanada " the permanent approach of the state budget development based on the yillika budget based on amalga amalgilada. While the state budgeting of troops continued to make decisions of kilins, the reserve has a financial fund account Acta revilyady. I.e. the Japanese state budget financing bashkarishda chegaraviy-regulatory regime " [13].

Shukurjon held a reception in Belgilai and the assistance of the yillik of the country's budget, acting in accordance with the etib of kelinmokdown.

Zhumladan, Australia"the state budget budget of Ilaba Jaraenida finance ministers of each Kelgus uch yillik as a collective council " [14].

Currently, the Russian Federal Budget is one of the main activities. Russian federalism has brought to the fore both "financing budgeting" and socio-economic development, targeting effective budgeting by George etish, as well as conducting training on international financing for a long time.as a result of monitoring of major and controversial issues of Samaritan Etish as a federation of Bir, a number of institutions and the budget-Solik reformer Amga Oshirib kelinmokda".

In the country, budget-teaser reforms, state

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budgeting in accordance with regulatory legal acts, budgeting by belgilashning Yang and the creation of mechanisms to improve the situation. Due to budgeting, professional development is required. Economics and public sector economics during reforms, as well as a number of relevant studies related to improvement: bashkaruv reform sector, budgeting and risk management, budgeting updates, budgeting reforms, budgeting sectors of the economy.

The degree of study of the subject.

Foreign researchers on budget forecasting issues Gloria A. According to grizle and William Earley Clay's views, "in most developed states, local government bodies are not profitable at this link due to the fact that they are faced with difficulties in using econometric models in forecasting state budget revenues. In most cases, budget revenues are projected based on an easier analysis trend at the local level and expectations" [1].

Russian economist M.Romanov believes that " the creation of future financial plans and the reflection of the concept of financial policy during the development of a particular society is called financial forecasting. The purpose of financial forecasting is to determine the sources of isolation and formation of Real opportunities of financial resources in the long term" [2].

From The Economist scientists of Uzbekistan Sh.Tashmatov expressed the following on this topic, that is, " the development of forecast indicators of the development of the economy of our country for the next period is of high importance in determining the strategic tasks of the state for the long and medium term, as well as the development of forecasts for the coming period of tax revenues, which plays an important role in

Y.Feyzullaev, I.Azizova believes that " there are four main ways to prongnozize budget revenues. These are: expert forecasting, deterministic forecasts, forecasting based on the analysis of time series, econometric forecasting" [4].

An urgent issue is the implementation of a number of reforms for the introduction of medium-term planning of the state budget in the country, while being able to form elements of a new style of budgeting.

In this regard, A.Islamgulav, Sh.Rajjabbaev, O.One of the elements that arises with the introduction of a new method of budgeting, which Pardaev gave the following feedback on this topic, is medium-term planning. In this case, the state budget is drawn up for three years, which also covers the forecasting of medium-term prospects from planning for the previous year. The first year is strictly planned, and the next two years will consist of forecast indicators, which imply the achievement of results from socio-economic development in the medium term. In doing so, the three-year state budget plan is revised for each

year and has a "sliding" character, that is, the second year state budget plan is considered to draw up a strict plan when it is time to approve it, and appropriate amendments are made" [5].

If, through the concept of planning, the obligatory determination of "distribution of resources and production volumes in the form of a downward hierarchical administrative structure" is understood in English – speaking countries, when forecasting is called - "a systematic method of assessing the future results of economic indicators in a way based on the analysis of the result of observations of previous cases." So, when planning indicators, reflecting the organizational and centralized system for determining indicators, forecasting has a predictive character, demonstrating an approach to it through scientific and analytical methods. Without having a directive position, forecasting will appear as indicative, and it will have a guiding significance" [6].

In the context of globalization of the economy, budget management is one of the most effective and relevant indicators of the management of an economic entity. The need and feasibility of using budgeting on the basis of operational financial planning of the activities of economic entities is confirmed by many years of experience in developed countries. Its importance is growing even more due to the complication of economic relations between economic entities, the possibility of choosing alternative methods for solving problems.

There are different interpretations of the term "budgeting", which expressed the following views:

I.According to Efimenko, "budgeting considers the organization's production and economic activities as a procedure for coordinating the entry and exit of assets involved" [7].

At the same time, to date, there is no single methodology for introducing a budgeting system at construction materials production enterprises, which is associated with the specificity of the production of building materials, belonging to various industries, the specifics of activities and the duration of the operational cycle.

"In each individual enterprise, budgeting can achieve its goals as a management technology and use its own tools" [8].

V.Ternovikh and A.As noted by Plyakina, " integrative structures are characterized by the fact that the activities of each of the participants in the integration are interconnected with others. In such enterprises with a multidisciplinary complex, structure, it is a very difficult matter to link all budgets. Consolidated budgets are created by developing joint budgets for several enterprises. Sales and production budgets are developed by subjects by product types. Cost estimates are drawn up by cost elements. Investment budgets are developed in a generalized form and on the objects of capital investments financed by the managing enterprise.

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Thus, the parent company exercises full control over the activities of dependent enterprises through budgets, which describe in detail all aspects of its activities"[9].

"Budgeting as a process of compiling financial plans and estimates applies to various objects: a separate structural unit (budget of a department, workshop, etc.) at the scale of a company or enterprise, a program of a work or management function (budget of business expenses, sales budget, etc.), an individual contract or project, allocated accounting centers (profit centers, cost centers, etc.)" [10].

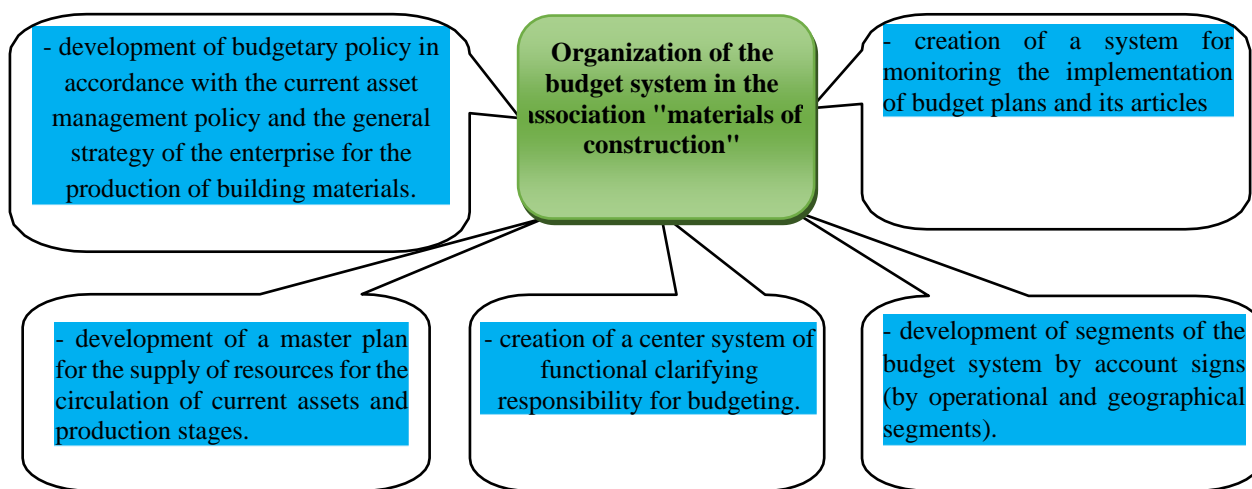
In particular, one of the directions for improving the management of current assets at enterprises for the production of building materials is budgeting. Since even at enterprises for the production of building materials there are no standard methods for organizing a budgetary system, the budget of the association and economic entities within it is presented in the form of a plan for the year in the form of expenses corresponding to its strategic goals. This plan usually includes certain control financial indicators of activities, which are reflected in the approved forms of financial statements. Therefore, the budgeting

system at enterprises for the production of building materials is not without flaws.

We have identified the main stages of the budget process in order to establish a budgetary system in the management of current assets in the complex of the association "uzsanoatkurilishmaterials".

In our opinion, the development of budgetary policy should be carried out in accordance with the current asset management policy. The object of the study is the development of a general strategy of the enterprise for the production of building materials within the association "Uzsanoatkurilishmaterials", which is reflected in the business plan or economic policy (fig.1)

The direction of the general policy determines the promising scale of business processes: that is, timely delivery, production, sale of products, settlements and investments, and, accordingly, the need for current assets, their circulation, the volume of the operational cycle and the planning of timely advance payment. The development of a master plan for the resource supply of the processes of production and circulation of current assets reveals budgetary policies and covers all stages of the activity of an economic entity.



1- image. Stages of the organization of the budget system in the association "uzsanoatkurilishmaterials" ¹

Based on the results of the study, it is desirable that the planned policy on the management of current assets is based on the strategy of an economic entity corresponding to the concept of development of the building materials industry in the country.

This is based on the elements of operation, current and long-term planning. We proposed a method of budgeting for use as the development of a mechanism for managing current assets in accordance

with the policy developed as a result of research for the implementation of operations and current planning.

The object of the study was identified the main stages and the structure of the general budget for the creation of a budgetary system at the enterprises of the Association "Uzsanoatkurilishmaterials" and the production of building materials in its composition.

¹ Муаллиф ишланмаси

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The total budget for the management of current assets was divided into the following two parts:

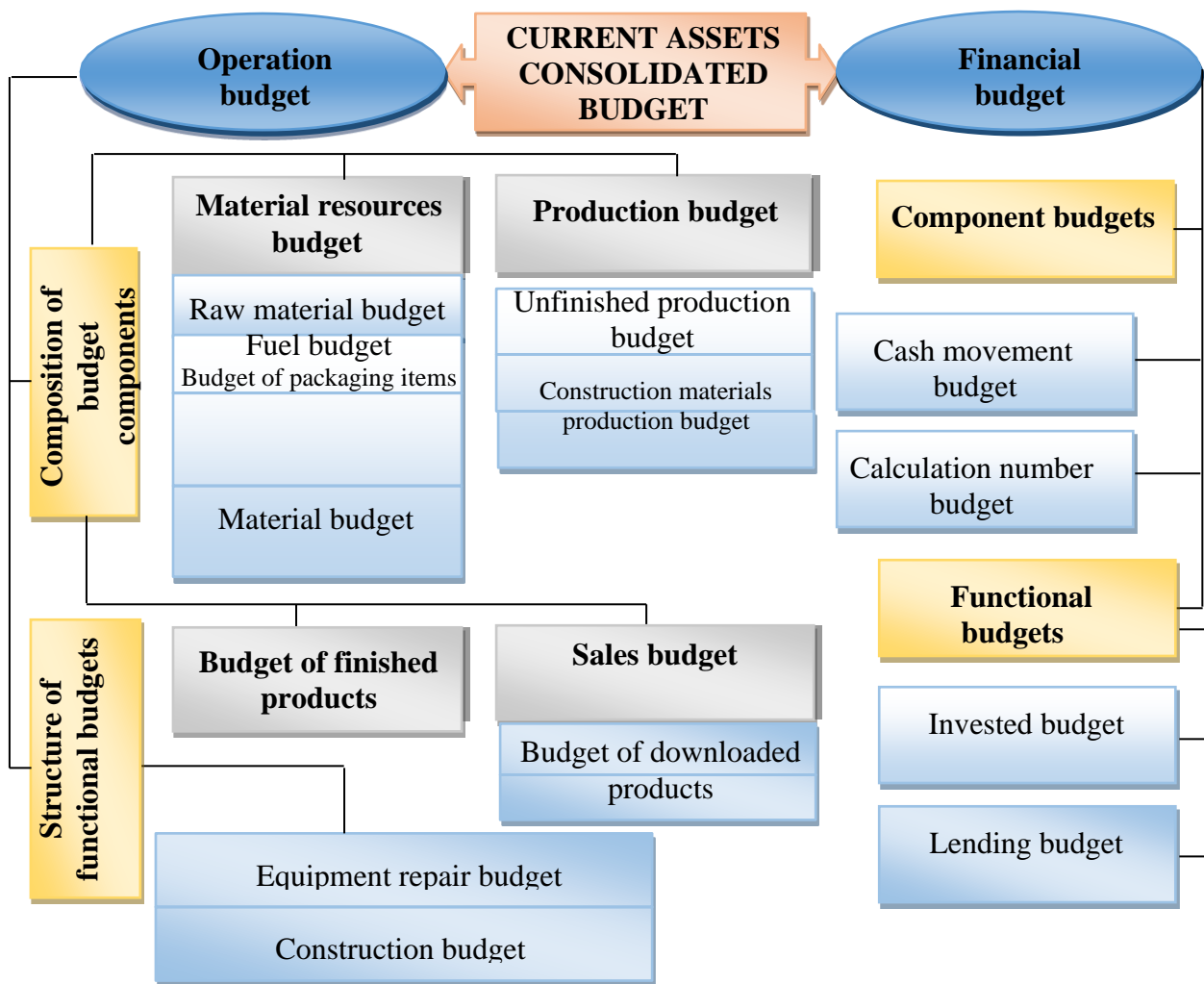
1. Operation budget.
2. Financial budget.

One of the areas of development of the enterprise strategy for the production of building materials is long-term planning, which is necessary for making management decisions. We have proposed a forecast model of the effectiveness of current asset management based on long-term planning of a construction material production enterprise. It provides for trends in forecasting by Criterion indicators of elements of current assets using

automated software, assessment and formation at the stage of their formation and use.

This leads to an increase in the reliability of the forecasts received and the quality of management decisions. At the same time, the structure, forms of structural and financial budgets were developed and proposed in their development.

The operational budget in this picture included the budget of material resources (by types of resources), the budget of production, the budget of commodity-material reserves, the direct costs of materials, the budget of finished products, the budget of sales, etc.



2- picture. The structure of the consolidated budget in the management of current assets of the association "uzsanoatkurilishmaterials"²

The financial budget consists of the cash turnover budget, the funds in the calculations (receivables) and the investment budget. Based on the

goals and objectives of budgeting, the budgetary system can be grouped according to certain criteria, taking into account the specifics of the economic

² Муаллиф ишланмаси

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entity.

Based on the existing developments in the budget system, we proposed to highlight the component as well as groups of functional budgets for each component of the general budget in order to systematize budgets for making management decisions on the regulation of the movement of current assets.

Component budgets are formed for the planning and control of current assets by stages of production and their elements. For example, as part of the operational budget, we identified the following structural budgets: material resource budget (raw materials, fuel and lubricants, components), production budget (unfinished production), finished product Budget (finished product estimate), sales budget (shipped and sold products).

The structural budgets of the financial budget include: the budget of funds and funds in settlements (accounts receivable).

Functional budgets are formed when planning current assets to perform certain functions of the

operational cycle of the building materials production network. As part of the operational budget, structural budgets were proposed. The financial budget in the group of functional budgets is divided into: investment budget, lending, etc.

Conclusions and suggestions.

In conclusion, we can say that the general budget structure, disclosing information on the composition of structural and functional budgets, can be supplemented by types of operational and financial budgets based on the goals of the enterprise for the production of building materials for all stages of the current asset turnover. Part of the operational budget as a structural budget, we have developed a budgetary form for the production stage of the building material production network. When developing budget forms, it is advisable to take into account the period of their preparation. The optimal period of activity for the studied economic entity is recommended to be one month.

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International Scientific Journal
Theoretical & Applied Science

p-ISSN: 2308-4944 (print) e-ISSN: 2409-0085 (online)

Year: 2022 Issue: 10 Volume: 114

Published: 21.10.2022 <http://T-Science.org>

Issue

Article



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HUMORAL FACTORS OF INFLAMMATORY RESPONSE IN PATIENTS WITH TYPE 2 DIABETES MELLITUS, AFTER ENDOVASCULAR REVASCULARIZATION

Abstract: Atherosclerosis is considered as an inflammatory process in the arterial wall, the course of which consists of alternating periods of long remissions. Active attempts are being made to suppress leukocyte migration after coronary stenting by blocking certain chemokines that are key to this process.

The dynamics of proinflammatory markers in the blood after implantation of sirolimus-containing coronary stents in patients with coronary artery disease with type 2 diabetes has been studied.

Summarizing the data obtained, the increase in CRP and IL 6 was due to an early inflammatory response to stenting within 3 days after the procedure, which was subsequently replaced by a longer phase of lowering the concentration of inflammatory markers in the blood. The level of CRP in the groups did not reach the reference values. At the same time, there were differences in the rate of decrease in the concentration of CRP after the initial increase caused by the procedure.

Key words: diabetes, atherosclerosis, coronary heart disease, CRP.

Language: Russian

Citation: Elyasov, M. A., Khojakuliyev, B. G., & Jumaev, Kh. (2022). Humoral factors of inflammatory response in patients with type 2 diabetes mellitus, after endovascular revascularization. *ISJ Theoretical & Applied Science*, 10 (114), 286-291.

Soi: <http://s-o-i.org/1.1/TAS-10-114-42> **Doi:**  <https://dx.doi.org/10.15863/TAS.2022.10.114.42>

Scopus ASCC: 2705.

ГУМОРАЛЬНЫЕ ФАКТОРЫ ВОСПАЛИТЕЛЬНОГО ОТВЕТА У БОЛЬНЫХ САХАРНЫМ ДИАБЕТОМ 2 ТИПА, ПОСЛЕ ЭНДОВАСКУЛЯРНОЙ РЕВАСКУЛЯРИЗАЦИИ

Аннотация: Атеросклероз - рассматривается как воспалительный процесс в артериальной стенке, течение которого состоит из чередования периодов длительных ремиссий. Ведутся активные попытки подавления лейкоцитарной миграции после коронарного стентирования за счет блокады определенных ключевых для этого процесса хемокинов.

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Изучена динамика провоспалительных маркеров в крови после имплантации сиролimus-содержащих коронарных стентов у больных ИБС с СД 2 типа.

Обобщая полученные данные увеличение СРБ и ИЛ 6 обусловлен ранним воспалительным ответом на стентирование в течение 3-х дней после процедуры в дальнейшем сменялся более длительной фазой понижения концентрации воспалительных маркеров в крови. Уровень СРБ в группах не достигал референсных значений. В то же время, отмечены различия в скорости снижения концентрации СРБ после первичного повышения, вызванного проведением процедуры.

Ключевые слова: диабет, атеросклероз, ИБС, СРБ.

Введение

Атеросклероз в настоящее время рассматривается как воспалительный процесс в артериальной стенке, течение которого состоит из чередования периодов длительных ремиссий, когда системные проявления воспалительной активности минимальны, и обострений, когда активация воспаления приводит к росту и деструкции бляшки на местном уровне и повышению концентрации маркеров воспаления в крови. Лейкоцитарная инфильтрация сосудистой стенки является ключевым в определении выраженности воспалительной реакции после травмы и может служить прогностическим фактором в отношении вероятности развития ишемической болезни сердца (ИБС), возникновения осложнений и темпов прогрессирования заболевания [1].

Данные исследования JUPITER свидетельствуют о том, что СРБ может быть независимым ориентиром при определении показаний к терапии статинами. Одним из наиболее распространенных вмешательств при стенозирующем коронарном атеросклерозе стало стентирование коронарных артерий, в ходе которого суженный участок сосуда расширяется за счет баллонной дилатации и в дальнейшем просвет сосуда формируется установленным стентом. На ранних этапах развития метода проведение процедуры было сопряжено с высокой вероятностью развития рестеноза. Кроме того, внедрение коронарных стентов обозначило проблему тромбоза при установке инородного тела в просвет сосуда [2, 3, 4]. Значительную роль в возникновении обоих этих осложнений может играть воспалительная реакция в сосудистой стенке, возникающая в ответ на травму и имплантацию инородного тела [5, 6, 7, 8]. Повышение концентрации маркеров воспалительной реакции в крови в периоперационный период коррелирует с вероятностью развития отсроченных осложнений у пациентов [9, 10, 11].

В настоящее время ведутся активные попытки подавления лейкоцитарной миграции после коронарного стентирования за счет блокады определенных ключевых для этого процесса хемокинов. Долгосрочный эффект такого взаимодействия провоспалительных и

противовоспалительных факторов к настоящему моменту мало изучен.

Цель исследования.

Изучение динамики провоспалительных маркеров в крови после имплантации сиролimus-содержащих коронарных стентов у больных ИБС с СД 2 типа.

Материал и методы.

В исследование были включены 59 больных ИБС с многососудистым поражением КА, которые были разделены на 2 группы. В первую группу вошли 29 больных ИБС без диабета (средний возраст - $62 \pm 11,2$ года), во 2-ю - 30 больных ИБС с сопутствующим СД II типа (средний возраст - $57 \pm 7,5$ лет). В обеих группах преобладали пациенты мужского пола. По количеству женщин группы не различались. Больные 2-й группы чаще имели в анамнезе перенесенный инфаркт миокарда, клинически более тяжелую стенокардию, гемодинамически значимый коронарный атеросклероз. Средний балл по шкале EuroSCORE в 1-й группе составил 3,6, что по сравнению со 2-й группой - 4,2 ($p < 0,01$). Кроме этого, у больных СД был более высокий индекс массы тела, чаще наблюдались артериальная гипертензия и гиперлипидемия.

Из анамнеза у больных 2-й группы продолжительность СД от 1 до 10 лет, (в среднем $7,1 \pm 1,8$ лет), 25 больных (83,3%) принимали антидиабетические препараты, по тяжести течения диабета у 12 (40,0%) больных наблюдалась компенсация, у 11 (36,7%) субкомпенсация и у 7 (23,3%) больных декомпенсация. Среднее значение гликированного гемоглобина до стентирования составило во 2-й группе $7,8 \pm 0,9\%$.

В исследование включались пациенты, у которых стенокардия была обусловлена атеросклеротическим поражением магистральных коронарных артерий, либо боковых ветвей диаметром 2,25 мм и более. Каждый включенный в исследование пациент получал аспирин 100 мг/сут, клопидогрел 75 мг/сут минимум за 3 дня до стентирования и в течение всего периода наблюдения. Каждому пациенту, включенному в исследование, выполнялось стентирование коронарных артерий с имплантацией от 1 до 5 стентов. Концентрацию С-реактивного белка в крови определяли у всех пациентов, включенных

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в исследование методом нефелометрии с использованием нефелометра Behring. Концентрацию в крови провоспалительных цитокинов ФНО α и ИЛ-6 определяли методом твердофазного иммуноферментного анализа с помощью специализированных тест-систем фирмы «Вектор-Бест» (Новосибирск). Образцы венозной крови для проведения клинических анализов и определения концентрации маркеров воспалительной реакции были получены у каждого пациента непосредственно перед проведением вмешательства, через сутки, 3, 7 суток.

Статистический анализ данных проводился с использованием пакета программы STATISTICA 6.0. Для оценки значимости различий средних величин при сравнении между группами

использовали t-критерий Стьюдента для признаков с нормальным распределением. Различия считали достоверными при $p < 0,05$.

Результаты и их обсуждение.

Изменения концентрации СРБ в крови пациентов в различные сроки после коронарного стентирования представлены на рис. 1. На протяжении первой недели после стентирования отмечалось достоверное повышение концентрации СРБ в крови в сравнении с исходным уровнем от 0,9 до 3,3 мг/л (среднем $1,7 \pm 0,2$ мг/л, с максимумом на 3-е сутки после стентирования в среднем $-4,8 \pm 1,1$ мг/л (от 2,2 до 10,1 мг/л) ($p < 0,05$), с последующим снижением на 7 сутки.

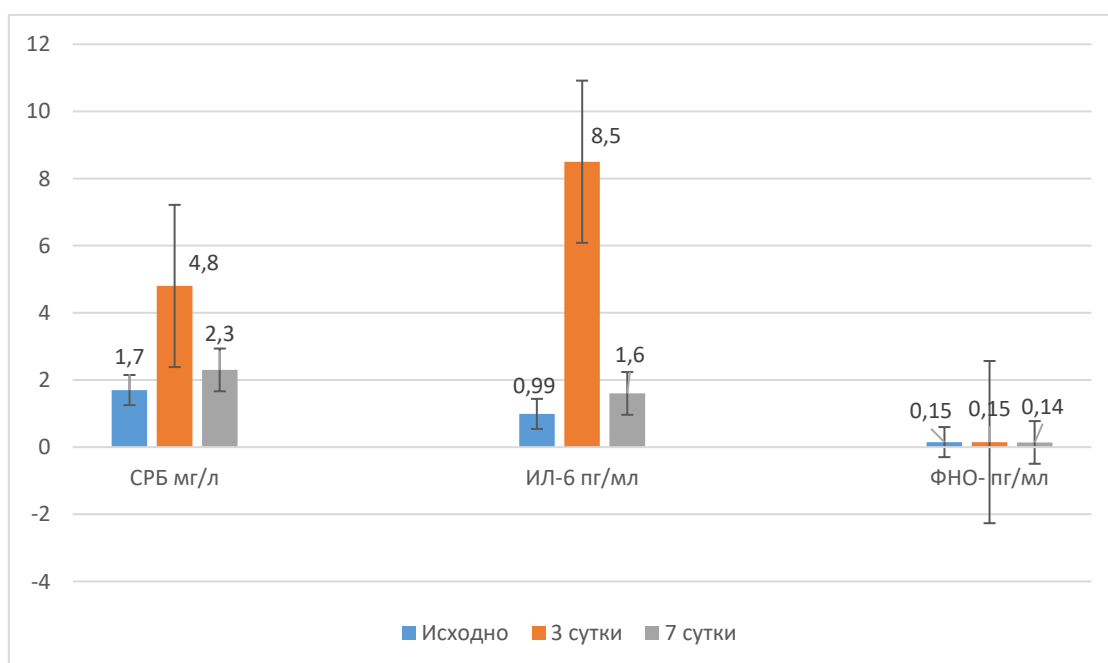


Рис. 1. Динамика цитокинов и СРБ в 1, 3 и 7 сутки после стентирования

По нашим данным повышение концентрации ФНО- α по сравнению с больными без СД не было выявлено, в то же время отмечено повышение ИЛ-6 - в 8,6 раза и СРБ - в 2,8 раз. Вероятно, развитие системного воспалительного ответа обусловлено реакцией на операционный стресс.

При этом можно отметить, что уровень интерлейкина 6 у пациентов ИБС с СД 2 типа исходно в среднем составил $0,99 \pm 0,2$ пг/мл, на 3 сутки значимо повышался до $8,5 \pm 4,8$ пг/мл ($p < 0,01$) и к седьмому дню послеоперационного периода снижался $1,6 \pm 0,6$ пг/мл ($p < 0,001$), но оставался повышенным ($p < 0,01$) в сравнении с дооперационными значениями. Таким образом, ИЛ 6 подтверждает свое значение воспалительного маркера, быстро реагирующего

на стресс, но и сохраняющего свои повышенные значения в течение продолжительного времени, даже в отсутствие триггера. В нашем исследовании интерлейкин 1 β не продемонстрировал своей диагностической значимости. Его уровень в сыворотке крови пациентов не менялся в динамике периоперационного периода. Причем уровень этот был стабильным как у пациентов с осложненным, так и с неосложненным течением системного воспалительного ответа, инициированного оперативным вмешательством. ИЛ 10 в первые сутки был повышен и составил $3,13 \pm 12,5$ пг/мл против исходного $1,14 \pm 0,95$ пг/мл и к 7 суткам уровень возвратился к исходному - $1,14 \pm 1,0$ пг/мл. В нашем исследовании исходный

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дооперационный уровень ИЛ 10 у пациентов с последующим неосложненным и осложненным течением отличался ($p < 0,05$). К исходу первых суток у пациентов обеих групп уровень ИЛ 10 был повышен ($p < 0,01$) относительно исходных значений, однако достоверно не различался. Дальнейшее течение послеоперационного периода характеризовалось продолжающимся снижением показателей уровня цитокина. К седьмым суткам уровень ИЛ 10 в обеих группах не отличался от исходных значений. При этом, так же, как и в предоперационном периоде, уровень анализа у пациентов с осложнениями в послеоперационном периоде достоверно ($p < 0,01$) превышал таковой у пациентов первой группы.

Фактор некроза опухоли альфа является одним из основных провоспалительных цитокинов, участвующих в регуляции иммунного ответа. Кроме этого, ФНО- α ингибирует АКТГ-зависимую (адренкортикотропный гормон) продукцию кортизола, что является важным патогенетическим звеном развития системного воспалительного ответа [16]. Увеличение сывороточного уровня цитокинов связано с дегрануляцией тучных клеток и выходом из них ранее синтезированных молекул. В тоже время известно, что происходит снижение продукции ФНО- α моноцитами, активированными эндотоксином [8], что также является проявлением иммуносупрессии, связанной с системным воспалительным ответом. Тем не менее, в нашем исследовании сывороточный уровень фактора некроза опухоли- α (исходно $0,15 \pm 0,05$ пг/мл, на 3 сутки - $0,15 \pm 0,03$ пг/мл и на 7 сутки - $0,14 \pm 0,07$ пг/мл) оставался стабильным в динамике периоперационного периода. Таким образом, участие в воспалительном ответе на стентирование ФНО- α не продемонстрировал.

Обобщая полученные данные увеличение СРБ и ИЛ 6 обусловлен ранним воспалительным ответом на стентирование в течение 3-х дней

после процедуры в дальнейшем сменялся более длительной фазой понижения концентрации воспалительных маркеров в крови.

Содержание фибриногена и количество лейкоцитов в крови в различные сроки после стентирования демонстрировали общую динамику для маркеров воспаления: вслед за повышением содержания маркера в крови в сравнении с исходным уровнем в раннем (до 7 суток) послеоперационном периоде, отмечалось отсроченное понижение содержания воспалительного маркера в крови в сравнении с исходным уровнем.

Воспаление является типовым патологическим процессом, однако события, связанные с ним, в различных органах имеют отличия. Дисбаланс цитокинов в системном кровотоке, развивающийся при системном воспалительном ответе, является отражением сложной сети разнонаправленных регулирующих сигналов, модулируемых специфическими клетками микроокружения и различающихся в зависимости от компартмента [12, 13]. Одним из важных компонентов системного воспалительного ответа является активность гуморального иммунитета, проявляющаяся выбросом провоспалительных белков и дисбалансом цитокинов. При этом продуцентами цитокинов являются не только клетки иммунной системы, но и клетки других органов и тканей [14]. В то же время еще изучается вклад различных органов и тканей в развитии дисбаланса цитокинов при различных органах и тканей в развитии дисбаланса цитокинов при патологических состояниях.

Нами проанализирована активность провоспалительных цитокинов и СРБ в зависимости от осложнений, возникших при проведении эндоваскулярной реваскуляризации (таблица 1).

Таблица 1. Активность провоспалительных цитокинов и СРБ в зависимости от осложнений

Показатели	Течение	1 сутки	3 суток	7 суток
ИЛ 6, пг/мл	Неосложненный	$1,9 \pm 0,9$	$40,8 \pm 22,9^{***}$	$6,8 \pm 3,1^{**}, ***$
	Осложненный	$1,5 \pm 0,8$	$27,3 \pm 22,2^*, ***$	$2,6 \pm 1,8^{**}, ***$
ИЛ 1 β , пг/мл	Неосложненный	$0,021 \pm 0,015$	$0,021 \pm 0,013$	$0,023 \pm 0,019$
	Осложненный	$0,023 \pm 0,02$	$0,025 \pm 0,023$	$0,024 \pm 0,022$
ИЛ 10, пг/мл	Неосложненный	$1,0 \pm 0,21$	$7,04 \pm 2,1^{***}$	$1,31 \pm 0,4^{**}$
	Осложненный	$2,64 \pm 0,7^*$	$6,73 \pm 1,9^{***}$	$3,49 \pm 1,1^*, **$
ФНО- α , пг/мл	Неосложненный	$0,15 \pm 0,05$	$0,14 \pm 0,02$	$0,13 \pm 0,03$
	Осложненный	$0,15 \pm 0,03$	$0,17 \pm 0,06$	$0,15 \pm 0,04$
СРБ, мг/л	Неосложненный	$2,7 \pm 1,4$	$45,9 \pm 7,3^*, **$	$33,9 \pm 9,1^*, **$
	Осложненный	$3,1 \pm 1,9$	$61,8 \pm 21,7^*$	$46,1 \pm 12,6^{**}$

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Примечание * $p < 0,05$ – достоверность между 1 и 3 сутками; ** $p < 0,01$ – достоверность между 3 и 7 сутками; *** $p < 0,001$ – достоверность между 1 и 7 сутками.

Кроме того, ИЛ 6 стимулирует повышение уровня кортизола, повышение количества циркулирующих нейтрофилов и снижение количества лимфоцитов [14, 15, 17]. Исходный дооперационный уровень интерлейкина 6 у пациентов разных групп не различался и составлял $1,9 \pm 0,9$ пг/мл при неосложненном системным воспалительным ответом и $1,5 \pm 0,8$ пг/мл в случае дальнейшего развития осложненных форм системного воспаления. Традиционно интерлейкин 6 демонстрирует быстрое реагирование на повреждение с достаточно длительным сохранением повышенного уровня в сыворотке крови. В первые сутки послеоперационного периода при отсутствии явных клинических различий отмечалась достоверная ($p < 0,05$) разница уровня ИЛ 6 у пациентов двух групп. При этом у пациентов с неосложненным течением он был выше - $40,8 \pm 22,9$ пг/мл, чем у пациентов с осложненным системным воспалительным ответом - $27,3 \pm 22,3$ пг/мл. К исходу седьмых суток уровень цитокина закономерно снижается. У пациентов с неосложненным системным воспалительным ответом до $6,8 \pm 3,1$ пг/мл, а с осложненным – до $2,6 \pm 1,8$ пг/мл. Характерной

особенностью динамического профиля ИЛ 6 у пациентов разных групп можно считать более слабый ответ одного из основных провоспалительных цитокинов у пациентов с осложненным течением системным воспалительным ответом. По-видимому, сниженное реагирование на операционный стресс и ишемию является одним из патогенетических звеньев перехода системного воспалительного ответа к его осложненным формам.

Исходный уровень СРБ у больных ИБС с СД 2 типа изначально не различался и в среднем составлял $2,7 \pm 1,4$ мг/л при неосложненном течении, и $3,1 \pm 1,9$ мг/л при осложненном. Характерно, как для неосложненного, так и для осложненного на 3 сутки отмечался резкий значимый подъем концентрации СРБ до $45,9 \pm 7,3$ и $61,8 \pm 21,7$ мг/л соответственно ($p < 0,05$). На 7-ые сутки уровень СРБ снижался при неосложненном до $33,9 \pm 9,1$ мг/л, а при осложненном - $46,1 \pm 12,6$ мг/л.

Необходимо отметить, что уровень СРБ в обеих группах не достигал референсных значений. В то же время, мы отметили различия в скорости снижения концентрации СРБ после первичного повышения, вызванного проведением процедуры. По некоторым данным отсутствие нормализации концентрации СРБ до 6 месяцев после проведения стентирования может быть маркером развития рестеноза.

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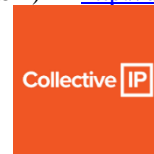
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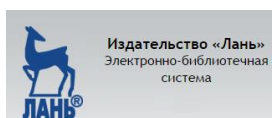
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