The specific features of technical translation in construction and engineering

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ABSTRACT

Technical translation in construction and engineering is a crucial aspect of international cooperation, ensuring effective communication between specialists from different linguistic backgrounds. The accuracy and consistency of translated technical documents are essential for the successful execution of engineering projects, compliance with international standards, and the prevention of critical misunderstandings. This study explores the specific features of technical translation in construction and engineering, highlighting key challenges such as terminological consistency, linguistic complexity, and contextual adaptation. The research employs descriptive, linguistic, and comparative analysis methods to examine translation processes and propose effective strategies for overcoming common difficulties. The findings suggest that technical translation requires specialized knowledge, adherence to standardized terminology, and the use of appropriate translation techniques, such as transliteration, adaptation, and semantic equivalence. The study also emphasizes the role of modern translation tools and artificial intelligence in enhancing the efficiency and accuracy of technical translations.

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Qurilish va muhandislik sohasidagi texnik tarjimaning o'ziga xosligi

ANNOTATSIYA

Kalit so'zlar:
texnik tarjima,
qurilish terminologiyasi,
muhandislik tarjimasi,
lingvistik muammolar,
tarjima strategiyalari,
xalqaro standartlar,
sun'iy intellekt va tarjima.

Qurilish va muhandislik sohasidagi texnik tarjima xalqaro hamkorlikning muhim tarkibiy qismi bo'lib, turli tillarda so'zlashuvchi mutaxassislar o'rtasida samarali muloqotni ta'minlaydi. Texnik hujjatlarning aniqligi va izchilligi muhandislik loyihalarining muvaffaqiyatli amalga oshirilishi, xalqaro standartlarga muvofiqlik va muhim tushunmovchiliklarning oldini olish uchun zarurdir. Ushbu tadqiqot qurilish va muhandislik sohasidagi texnik tarjimaning o'ziga xos xususiyatlarini o'rganadi, terminologik izchillik, lingvistik murakkablik va kontekstual moslashuv kabi asosiy muammolarni yoritib beradi. Tadqiqotda tavsifiy, lingvistik va komparativ tahlil usullari qo'llanilib, tarjima jarayonlari o'rganiladi va umumiy qiyinchiliklarni bartaraf etish bo'yicha samarali strategiyalar taklif etiladi. Natijalar shuni ko'rsatadiki, texnik tarjima maxsus bilim, standartlashtirilgan terminologiyaga rioya qilish va mos tarjima usullaridan, masalan, transliteratsiya, moslashtirish va semantik ekvivalentlikdan foydalanishni talab qiladi. Tadqiqot, shuningdek, zamonaviy tarjima vositalari va sun'iy intellektning texnik tarjima sifatini oshirishdagi rolini ta'kidlaydi.

Уникальность технического перевода в сфере строительства и инжиниринга

АННОТАЦИЯ

Ключевые слова:
технический перевод,
строительная
терминология,
инженерный перевод,
лингвистические
проблемы,
переводческие стратегии,
международные
стандарты,
искусственный интеллект
в переводе.

Технический перевод в области строительства и инженерии является важной составляющей международного сотрудничества, обеспечивающей эффективное взаимодействие между специалистами, говорящими на разных языках. Точность и последовательность перевода технической документации необходимы для успешной реализации инженерных проектов, соответствия международным стандартам и предотвращения критических недоразумений. Данное исследование рассматривает особенности технического перевода в строительной и инженерной сферах, выявляя основные проблемы, такие как терминологическая согласованность, языковая сложность и контекстная адаптация. В исследовании применяются описательный, лингвистический и сравнительный методы анализа, изучаются процессы перевода и предлагаются эффективные стратегии для устранения распространённых трудностей. Результаты показывают,

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что технический перевод требует специализированных знаний, соблюдения стандартизированной терминологии и применения соответствующих переводческих техник, таких как транслитерация, адаптация и семантическая эквивалентность. Исследование также подчёркивает роль современных переводческих инструментов и искусственного интеллекта в повышении качества технического перевода.

INTRODUCTION

Technical translation plays a crucial role in the construction and engineering sectors, where precision, accuracy, and adherence to industry-specific terminology are essential. In a rapidly globalizing world, international cooperation in construction and engineering projects necessitates effective communication between specialists from different linguistic backgrounds. Accurate translation of technical documentation, including engineering specifications, construction manuals, and regulatory standards, is essential to ensure compliance with international norms and prevent critical misunderstandings [1, 2].

The increasing complexity of construction projects, the emergence of new materials and technologies, and the integration of digital tools into engineering design and execution further highlight the need for high-quality technical translations. Translation errors can lead to significant consequences, including structural failures, financial losses, and legal disputes [3]. Therefore, technical translators working in the construction and engineering fields must possess not only linguistic proficiency but also specialized knowledge of engineering and architectural terminology.

This study aims to analyze the specific features of technical translation in construction and engineering, identifying challenges in translating industry-specific terminology and discussing strategies to improve translation accuracy. The main objectives of this study include:

• Examining the process of translating technical terminology in construction and engineering.

• Analyzing linguistic and contextual challenges encountered in technical translation.

• Proposing practical translation strategies based on real-world examples.

To achieve these objectives, the study employs descriptive, linguistic, and comparative analysis methods. By examining construction-related documents, standard regulations, and translated texts, this research provides insights into the complexities of technical translation in this field and suggests methods to improve translation quality.

LITERATURE REVIEW

The study of technical translation in construction and engineering has received increasing attention in translation studies and applied linguistics. Several researchers have examined the challenges of translating technical terminology, the role of standardization, and the impact of cultural and linguistic differences in the translation process.

Technical translation differs from general translation due to its emphasis on precision, consistency, and domain-specific terminology. Unlike literary translation, where creativity and flexibility are valued, technical translation requires strict adherence to established terminologies and a clear, objective style [4]. In construction and

engineering, translated documents must maintain the exact meaning of the original text while ensuring that terms align with internationally recognized standards, such as those provided by ISO, ASTM, and Eurocode [5].

One of the major challenges in technical translation is the presence of polysemy and synonymy in technical terms. Some terms may have multiple meanings depending on the context, which can lead to confusion or incorrect translations [6]. For instance, the English term *beam* may refer to a load-bearing structural element in construction or a directional light source in physics. Without proper contextual knowledge, a translator may misinterpret such terms, leading to potential engineering errors.

Another challenge is the lack of direct equivalents in the target language. Some technical terms may not have a one-to-one correspondence in different languages, requiring the translator to use transliteration, adaptation, or descriptive translation [7]. Additionally, the grammatical and syntactic structure of technical texts in different languages can vary significantly. For example, English technical texts often use passive voice, while Uzbek and Russian technical texts tend to prefer active structures, which can create difficulties in maintaining natural readability and coherence [8].

To address these challenges, standardization plays a crucial role in technical translation. The use of international glossaries and standardized terminology databases helps maintain consistency and accuracy across translated documents [9]. Organizations such as the International Organization for Standardization (ISO) and the American Society for Testing and Materials (ASTM) have developed guidelines for technical documentation in construction and engineering, which serve as reference materials for translators [10].

Recent advancements in machine translation and artificial intelligence (AI) have introduced new tools for technical translation. Neural machine translation (NMT) systems, such as Google Translate, DeepL, and AI-assisted CAT (Computer-Assisted Translation) tools, have improved the efficiency and accuracy of technical translations [11]. However, AI-based translation still struggles with context-specific terminology and requires human post-editing to ensure quality and correctness, especially in highly technical fields like engineering [12-17].

Previous research highlights that technical translation in construction and engineering is a complex process requiring a combination of linguistic expertise and domain-specific knowledge. Key challenges include terminological consistency, syntactic variations, and the need for standardization. While AI and machine translation tools offer potential improvements, human expertise remains essential for ensuring accuracy. This study builds on existing research by analyzing real-world examples of technical translation in construction and proposing practical strategies for improving translation quality.

METHODS

This study employs a combination of descriptive analysis, comparative analysis, and experimental methods to examine the specific features of technical translation in construction and engineering. These methods allow for a systematic and comprehensive evaluation of translation practices in this specialized field.

This study uses three main methods to analyze technical translation in construction and engineering: descriptive analysis, comparative analysis, and experimental method. These methods help understand the challenges in translating technical terms and find effective solutions.

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Descriptive analysis is used to study technical texts in construction and engineering. This helps identify common linguistic patterns, terminology structures, and the accuracy of translations. By analyzing how technical terms are used in real documents, this method provides insights into how translations can be improved.

Comparative analysis compares construction and engineering terms in English, Uzbek, and Russian. This method helps find differences and similarities between languages, identify translation difficulties, and determine how well terms match in different languages.

The experimental method is used to evaluate the quality of technical translations. Translated documents are analyzed to check their accuracy, consistency, and readability. This helps determine the best strategies for improving translation quality in the construction and engineering field.

The study is based on different sources, including international standards and regulatory documents like ISO, Eurocode, and ASTM. These documents help ensure that translated texts follow international rules and use the correct terminology. Another important source is technical documentation from real construction projects, such as engineering specifications, construction manuals, and design blueprints. These provide practical examples of how technical terms are used. Additionally, technical dictionaries and terminological databases are used to check and standardize translated terms.

By using these methods and sources, this study aims to improve the quality of technical translation in construction and engineering. It helps identify common challenges and offers solutions to make translations more accurate and reliable.

RESULTS AND DISCUSSION

Main Characteristics of Technical Translation in Construction and Engineering

Technical translation in the construction and engineering fields must meet high standards of precision, clarity, and consistency. One of the primary characteristics of technical texts is their informative and precise nature. Unlike general texts, construction-related documents contain highly specialized terms that must be accurately conveyed without ambiguity. Misinterpretations in technical translation can lead to critical errors, such as structural failures or non-compliance with international standards.

Another key aspect is terminology standardization. In construction and engineering, technical terms follow established guidelines set by international organizations such as ISO, ASTM, and Eurocode. The table below provides a comparative overview of commonly used construction terms in English, Uzbek, and Russian.

Table 1.

Construction Terminology Equivalents

English Term	Uzbek Equivalent	Russian Equivalent
Load-bearing wall	Yuk koʻtaruvchi devor	Несущая стена
Reinforced concrete	Temir-beton	Железобетон
Foundation	Asos/fundament	Фундамент
Beam	Nurlar	Балка
Column	Ustun	Колонна

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Additionally, grammatical and syntactic structures in technical texts follow a highly formalized and concise format. English technical documents often use passive voice, such as *"The beam is supported by the column."* In contrast, Uzbek and Russian texts prefer active structures. This difference necessitates careful adaptation during translation to maintain both readability and technical precision.

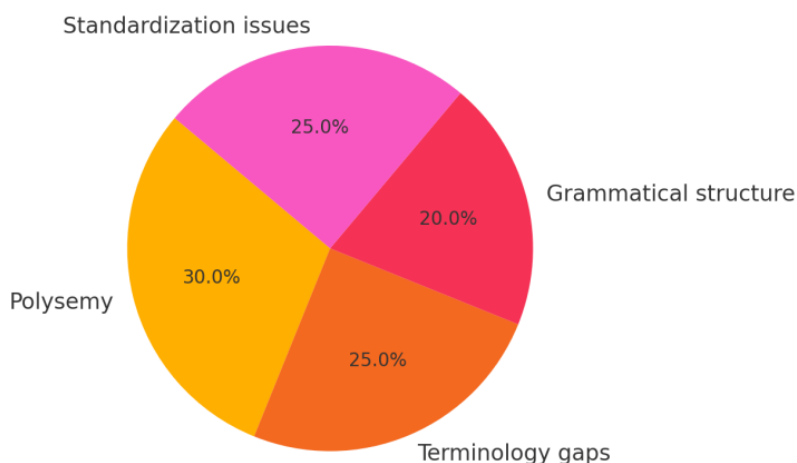**Challenges in Translating Construction Terminology**

Technical translation in construction and engineering encounters multiple challenges, including synonymy and polysemy, the absence of equivalent terms, and the development of construction terminology in Uzbek.

One of the most significant issues is polysemy and synonymy, where a single word can have multiple meanings. For example, the English term *joint* can refer to a structural connection or a mechanical linkage, requiring contextual awareness to select the appropriate translation.

Another challenge is terminology gaps, where an exact equivalent for a technical term does not exist in the target language. In such cases, translators rely on strategies such as transliteration, calque (literal translation), or descriptive translation. For example, the term *reinforced concrete* may be translated into Uzbek as *mustahkamlangan beton* or *temir-beton*, depending on the context.

Furthermore, the development of Uzbek construction terminology remains an ongoing process. Many technical terms in Uzbek are borrowed from Russian or English, leading to inconsistencies in usage. Some translators use direct loanwords, while others attempt to develop new Uzbek equivalents. Standardization efforts are crucial to ensuring uniformity and accuracy in technical translations.

The following pie chart illustrates the distribution of translation challenges encountered in construction terminology.

Figure 1. Distribution of Translation Challenges in Construction Terminology

Strategies for Technical Translation

Translating technical texts in the construction and engineering fields requires specialized approaches to ensure accuracy, clarity, and consistency. Due to the complexity of technical terminology and differences in language structures, translators

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must apply appropriate strategies to maintain the integrity of the original meaning while making the text understandable for the target audience. Some of the most effective strategies in technical translation include lexical-semantic equivalence, transcription, and pragmatic adaptation.

Lexical-Semantic Equivalence

One of the most important translation strategies is lexical-semantic equivalence, which ensures that the translated term conveys the same functional meaning as the original. Unlike word-for-word translation, which may lead to misunderstandings, this method focuses on finding precise equivalents that correctly reflect the technical concept.

For example, the English term *load-bearing wall* cannot be translated word-for-word into Uzbek or Russian without losing its technical meaning. Instead, a functionally accurate equivalent, such as *yuk ko'taruvchi devor* in Uzbek or *несущая стена* in Russian, is used. This strategy is particularly important in construction and engineering, where technical terms must be consistent with industry standards and professional usage.

Transcription

Another commonly used strategy in technical translation is transcription, which involves phonetic adaptation or direct borrowing of foreign terms when no equivalent exists in the target language. This method is particularly useful for modern construction and engineering terms that have no established translation or are widely used in their original form.

For instance, the English term *prefabricated structure* may not have an exact equivalent in Uzbek. Instead of creating a completely new term, translators often transliterate the word to maintain clarity. In Uzbek, this term is frequently adapted as *prefabrik tuzilma*, reflecting the original pronunciation while making it accessible to the target audience. Similarly, in Russian, it may be transliterated as *префабрикованная конструкция*.

Transcription is especially useful in cases where creating a new translated term might lead to confusion or when a borrowed term is already widely understood in the target language. This approach helps maintain uniformity across technical documents and aligns with international industry standards.

Pragmatic Adaptation

Technical translation must also consider pragmatic adaptation, which involves modifying sentence structures and terminology to improve readability while maintaining technical accuracy. Different languages have distinct grammatical rules, and a direct translation may not always produce a natural-sounding text.

For example, English technical writing frequently uses passive voice (e.g., "The foundation is reinforced with steel bars"), whereas Uzbek and Russian technical texts typically prefer active constructions. A direct translation of this sentence might sound unnatural in Uzbek or Russian, so translators must restructure it to follow the conventions of the target language while preserving the technical meaning. In Uzbek, this could be rewritten as "Fundament po'lat armatura bilan mustahkamlanadi," making it more natural and understandable.

Pragmatic adaptation also applies to units of measurement, abbreviations, and formatting styles, which often differ between languages. For example, English documents commonly use imperial measurements (feet, inches), whereas Uzbek and Russian technical texts use the metric system (meters, centimetres). Translators must ensure that units are converted correctly to avoid technical errors.

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In summary, technical translation in construction and engineering requires a careful balance between semantic accuracy, phonetic adaptation, and structural adjustments. By applying lexical-semantic equivalence, transcription, and pragmatic adaptation, translators can ensure that technical documents are both precise and easily understandable for professionals in the field. These strategies help maintain consistency, prevent misinterpretations, and align translated materials with international industry standards.

The table below outlines key translation strategies used in technical translation.

Table 2.

Technical Translation Strategies

Strategy	Description
Lexical-Semantic Equivalence	Ensuring the translated term has the same functional meaning.
Transcription	Using phonetic or direct borrowing when no equivalent exists.
Pragmatic Adaptation	Adjusting sentence structure and terminology for readability.

By implementing these strategies, technical translators can enhance the accuracy, consistency, and readability of construction-related texts. Ensuring a balance between linguistic adaptation and technical precision is essential for effective translation in the construction and engineering fields.

CONCLUSION

Technical translation in construction and engineering has specific lexical, syntactic, and semantic characteristics that distinguish it from other types of translation. Due to the highly specialized nature of construction terminology, translations must be accurate, consistent, and clear to ensure that the original meaning is fully preserved. Any misinterpretation or inaccuracy in translation can lead to serious consequences, such as construction errors, legal issues, or safety risks.

One of the key aspects of technical translation is the standardization of terminology. In the construction and engineering fields, various international standards, such as ISO, Eurocode, and ASTM, regulate the use of technical terms. To maintain consistency across multilingual documents, it is crucial to adhere to these standardized terminologies. The lack of standardization can confuse professionals working on international projects, making accurate and consistent terminology an essential factor in technical translation.

A translator working in the field of construction and engineering must have not only strong linguistic knowledge but also a deep understanding of engineering terminology. Unlike general translation, technical translation requires familiarity with industry-specific concepts, measurements, and materials. A translator with insufficient technical knowledge may struggle to convey complex engineering terms accurately. Therefore, continuous learning and collaboration with engineering specialists can help translators improve the quality of their work.

In the future, artificial intelligence (AI) and automated translation systems are expected to enhance the efficiency of technical translation. AI-powered translation tools are already being developed to assist translators by providing machine-generated

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translations with post-editing capabilities. However, while AI can improve efficiency, it cannot still fully understand complex technical contexts. Therefore, human expertise will continue to play a critical role in ensuring the accuracy and reliability of technical translations.

In conclusion, technical translation in construction and engineering requires precision, domain-specific knowledge, and adherence to standardized terminology. As technology advances, the integration of AI in translation processes may further improve efficiency, but human translators will remain essential for maintaining accuracy and context in technical documents.

REFERENCES:
1. Snell-Hornby, M. (2006). The Turns of Translation Studies: New Paradigms or Shifting Viewpoints? John Benjamins Publishing.
2. Newmark, P. (1988). A Textbook of Translation. Prentice Hall.
3. Schäffner, C. (1998). Translation and Norms. Multilingual Matters.
4. Vinay, J.P., & Darbelnet, J. (1995). Comparative Stylistics of French and English: A Methodology for Translation. John Benjamins Publishing.
5. International Organization for Standardization (ISO). ISO 17100:2015 – Translation Services – Requirements for Translation Services.
6. Baker, M. (1992). In Other Words: A Coursebook on Translation. Routledge.
7. Gile, D. (2009). Basic Concepts and Models for Interpreter and Translator Training. John Benjamins Publishing.
8. House, J. (2015). Translation Quality Assessment: Past and Present. Routledge.
9. Bowker, L., & Pearson, J. (2002). Working with Specialized Language: A Practical Guide to Using Corpora. Routledge.
10. American Society for Testing and Materials (ASTM). ASTM E2575-07 – Standard Guide for Quality Assurance in Translation.
11. Koehn, P. (2017). Neural Machine Translation. Cambridge University Press.
12. Pym, A. (2010). Exploring Translation Theories. Routledge.
13. Нишонов, У. И. (2019). Применение метода проектных работ на уроках русского языка и литературы в нефилологических вузах. Вопросы науки и образования, (18 (65)), 42-45.
14. Нишонов, У. И. (2020). Особенности перевода технических текстов. Вестник науки и образования, (14-2 (92)), 46-48.
15. Ibragimovich, N. U. (2021). Translation hypothesis specifics and problems of translation of scientific and technical multi component terms. ACADEMICIA: An International Multidisciplinary Research Journal, 11(4), 1359-1363.
16. Нажмиддинова, М., & Нишонов, У. (2023, October). Стили и грамматические особенности переводоведения. In Conference on Digital Innovation:" Modern Problems and Solutions".
17. Нишонов, У. (2023). Проблемы перевода научных текстов в современном мире глобализации. In Fergana State University Conference (pp. 133-133).