

UDC 811.111'255.2

DOI <https://doi.org/10.52726/as.humanities/2023.1.12>

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LEXICO-SEMANTIC CHARACTERISTICS OF THE ENGLISH TERMS OF THE PROFESSIONAL LANGUAGE OF POWER ENGINEERS (TRANSLATION ASPECT)

In the rapidly evolving field of power engineering, effective communication and collaboration among professionals across the globe are vital for addressing the world's energy challenges. This article presents an in-depth analysis of the lexico-semantic characteristics of English terms in the special language of power engineers, with a focus on the translation aspect. Our research explores specialized vocabulary, semantic relations, contextual dependence, technical concepts, idiomatic expressions, standardization, regional variations, and the multidisciplinary nature of the field, highlighting the complexities and nuances associated with translating technical terminology in this domain.

We identify several challenges faced by translators, such as ambiguity, neologisms, culture-specific terms, abbreviations, and the need for a strong grasp of the underlying technical concepts. To address these challenges, we propose strategies for enhancing the translation process, including employing subject-matter experts, encouraging collaborative translation, managing terminology, and pursuing continuous professional development.

By providing a comprehensive analysis of the lexico-semantic characteristics of power engineering terms and offering practical strategies for translators, our research contributes to bridging linguistic barriers in the field, fostering a greater understanding of the unique linguistic landscape, and promoting more effective global collaboration. The prospects for further research in this area are promising, with potential investigations into comparative analysis, machine translation, language evolution, domain-specific training, cross-disciplinary collaboration, and cultural and regional factors. In pursuing these avenues, we can continue to enhance our understanding of the lexico-semantic characteristics of power engineering terms and support the global pursuit of clean, reliable, and sustainable energy solutions for the future.

Key words: lexico-semantic characteristics, technical terminology, semantic relations, contextual dependence, idiomatic expressions, terminology management.

Introduction. In today's increasingly interconnected world, the field of power engineering plays a critical role in powering our lives, from the generation and transmission of electricity to

its distribution and consumption. As global collaboration in this domain expands, the need for clear and effective communication among professionals becomes paramount. In this article,

we delve into the lexico-semantic characteristics of English terms used in the special language of power engineers, with a particular focus on the translation aspect.

We will explore the intricacies of technical jargon, common terminologies, and the underlying semantics that govern the language used by power engineers. Furthermore, we will examine the challenges faced by translators in conveying the precise meaning of these specialized terms across various languages and cultures. By providing a comprehensive analysis, we aim to equip both power engineering professionals and linguists with a deeper understanding of the unique linguistic landscape of this vital field, ultimately fostering more effective communication and collaboration on a global scale.

Analysis of previous studies. The analysis of previous scientific studies related to the lexico-semantic characteristics of English terms in the special language of power engineers and their translation reveals a rich body of research that has informed and inspired our work. [Murphy & Pym] Here, we discuss the contributions of most notable scientists whose findings have significantly impacted our understanding of this field:

Brian Mossop's research on revising and editing for translators has emphasized the importance of understanding the specialized language in technical domains, including power engineering. His work has highlighted the need for both linguistic and technical proficiency in translation to ensure accuracy and clarity.

Sue-Ellen Wright's studies in the field of terminology management have provided valuable insights into the systematic organization and standardization of terms in specialized domains. Her work has informed our approach to managing power engineering terminology for more efficient translation processes. [Wright : 536–548]

Ingrid Meyer's research in specialized translation, particularly in scientific and technical domains, has demonstrated the importance of understanding the lexico-semantic characteristics of terms and the contextual factors that affect their translation. Her work has informed our exploration of the contextual dependence of power engineering terminology.

Mona Baker's extensive research in translation studies, including her work on corpus-based approaches, has shown the value of using large-

scale, representative data sets to analyse specialized language. Her methodology has influenced our approach to examining power engineering terminology and identifying patterns and challenges in translation. [Baker]

Peter Newmark's seminal work on translation methods has provided a valuable framework for understanding the various strategies employed by translators in tackling technical terminology. His insights have guided our recommendations for strategies to enhance the translation process in the field of power engineering.

Daniel Gile's research in translation process analysis and his development of the Effort Model have provided valuable insights into the cognitive aspects of translation, particularly in technical domains such as power engineering. His work has informed our understanding of the challenges faced by translators when dealing with specialized terminology and has guided our recommendations for strategies to improve translation processes and facilitate more effective communication in the field. [Gile]

Maria Teresa Cabre Castellvi. Cabre's research in the field of terminology theory and its application to specialized languages has contributed significantly to the understanding of the lexico-semantic characteristics of terms in various domains, including power engineering. Her work has informed our approach to analysing the semantic features of power engineering terms and their relationships with one another. [Cabre Castellvi]

These scientists' contributions have laid the foundation for our research and have shaped our understanding of the complexities and nuances associated with translating technical terminology in the special language of power engineers. By building on their insights, our work aims to further advance the field and promote more effective communication and collaboration among power engineering professionals worldwide.

Presentation of the main material of the research. To provide a comprehensive analysis of the lexico-semantic characteristics of the English terms used in the special language of power engineers, our research methodology involved a systematic examination of various sources, including textbooks, scientific articles, technical documentation, and online resources. This analysis allowed us to identify patterns, challenges, and nuances

associated with the translation of power engineering terminology.

1. Terminology Classification.

In our analysis, we categorized power engineering terms into several thematic groups, such as electrical generation, transmission, distribution, and consumption. This classification facilitated a better understanding of the semantic relationships between terms and their role in the field of power engineering.

2. Semantic Features.

We explored the semantic features of power engineering terms, identifying common patterns and unique characteristics. We found that many terms possess multiple meanings or connotations, depending on their context, which can create challenges for translators. Additionally, we observed a high degree of technical specificity and interdependence among terms, making it essential for translators to have a strong grasp of the underlying concepts.

3. Translation Challenges.

Our research revealed that translating power engineering terms is a complex task, as it requires not only linguistic expertise but also a deep understanding of the field's technical concepts. Some of the challenges identified include:

- Ambiguity: Terms with multiple meanings can lead to confusion if not translated accurately, impacting the overall clarity of the translated text.

- Neologisms: New terms and concepts are constantly emerging in the field of power engineering, making it necessary for translators to stay up-to-date with the latest developments.

- Culture-specific terms: Some terms may be unique to a specific cultural or geographical context, necessitating careful adaptation during translation.

- Abbreviations and acronyms: Power engineering relies heavily on abbreviations and acronyms, which can be challenging to translate without losing their intended meaning.

4. Strategies for Effective Translation.

To overcome these challenges, we proposed several strategies to enhance the translation process:

- Employing subject-matter experts: Translators with a background in power engineering can better understand the technical nuances and provide more accurate translations.

- Collaborative translation: Encouraging collaboration between translators and power engineering professionals can ensure that translations are both linguistically accurate and technically sound.

- Terminology management: Developing and maintaining a comprehensive glossary of power engineering terms can serve as a valuable resource for translators, enabling them to work more efficiently and accurately.

- Continuous professional development: Translators should regularly update their knowledge of the power engineering field, participating in industry conferences, workshops, and online forums to stay informed about new concepts and terminologies.

Through this in-depth analysis, we have shed light on the lexico-semantic characteristics of English terms in the special language of power engineers and the challenges associated with their translation. By adopting the strategies proposed, translators and power engineering professionals can work together to foster more effective communication and collaboration in this rapidly evolving field. [Chen & Wang]

In this section, we present the main material of our research on the lexico-semantic characteristics of English terms in the special language of power engineers, focusing on translation aspects. We discuss the key findings from our analysis, highlighting the various factors that contribute to the complexity of translating power engineering terminology.

1. Specialized Vocabulary.

Power engineering employs a highly specialized vocabulary that reflects the technical nature of the field. Our research identified several core areas of terminology, including:

- Generation: Terms related to the production of electricity, such as power plants, turbines, generators, and renewable energy sources.

- Transmission: Terminology associated with the transportation of electricity over long distances, including high-voltage lines, transformers, substations, and grid systems.

- Distribution: Terms related to the delivery of electricity to end-users, such as distribution lines, circuit breakers, switchgear, and metering.

- Consumption: Terminology connected to the utilization of electricity, including load

management, demand response, energy efficiency, and smart grids.

2. Semantic Relations.

In the context of power engineering, many terms exhibit semantic relations, such as synonymy, antonymy, hyponymy, and meronymy. Understanding these relationships is crucial for translators, as it helps to ensure the accuracy and clarity of translated texts. [Stepanova : 387-392] For instance, recognizing that *alternating current* (AC) and *direct current* (DC) are antonyms allows translators to avoid potential misunderstandings in their work.

3. Contextual Dependence.

Our research revealed that the meaning of power engineering terms often depends on the context in which they are used. For example, the term *load* can refer to the amount of electricity being consumed at a specific point in time, the total demand on an electrical system, or the electrical device consuming the power. This contextual dependence can pose challenges for translators, as they must discern the intended meaning in each instance to ensure accurate scientific translation.

4. Technical Concepts and Principles.

A thorough understanding of the technical concepts and principles that underpin power engineering is essential for accurate translation. Our research highlighted several key areas where this knowledge is particularly important, such as:

- Electrical circuits and components: Translators must be familiar with the functioning of various electrical elements, including resistors, capacitors, inductors, and transformers.

- Power system analysis: Knowledge of concepts like load flow, fault analysis, and stability is necessary for understanding and translating complex power engineering terminology.

- Control and protection: Understanding the principles of control systems and protective devices, such as relays and circuit breakers, is critical for accurate translation in this domain.

5. Idiomatic Expressions and Collocations

Our research also delved into the presence of idiomatic expressions and collocations in the special language of power engineers. These linguistic constructs, which involve the combination of terms that form a specific meaning when used together, can pose unique challenges for translators. For example, phrases like *step up transformer*, *load*

shedding, and *power factor correction* may require specialized knowledge and understanding of the field to be accurately translated.

6. Standardization and International Terminology.

In an effort to facilitate global communication and collaboration, power engineering has seen the development of standardized terminology and international guidelines. Organizations such as the International Electrotechnical Commission (IEC) and the Institute of Electrical and Electronics Engineers (IEEE) play a crucial role in establishing and maintaining these standards. Translators must be familiar with these standardized terms and the associated guidelines to ensure their translations align with internationally accepted nomenclature.

7. Regional Variations and Dialects.

The global nature of the power engineering field also gives rise to regional variations and dialects in technical terminology. These differences may manifest in the form of alternative spellings, word choices, or phrasings.

Here are a few examples of regional variations and dialects in power engineering terminology:

Spelling Variations: Some terms may have different spellings in American and British English. For example, *meter* (American English) vs. *metre* (British English) when referring to a measuring device, or *gauge* (American English) vs. *gage* (British English) when referring to a device that measures pressure, temperature, or electrical parameters.

Word Choice: Different regions may use distinct terms to describe the same concept. For example, *ground* (American English) and *earth* (British English) both refer to the electrical connection to the earth for safety purposes. Another example is *line* (American English) vs. *cable* (British English) when referring to the conductor used for electrical transmission and distribution.

Phrasings: Regional variations may also be found in the phrasing of certain terms. For example, *power outage* (American English) and *power cut* (British English) both describe a temporary loss of electricity supply. Similarly, *switchyard* (American English) and *switching station* (British English) refer to the same facility used for connecting and disconnecting electrical circuits in a power system.

Terminology specific to a region: In some cases, technical terms may be specific to a particular

region due to historical, technological, or regulatory reasons. For instance, the term *balancing authority* is specific to North America and refers to an entity responsible for maintaining the balance between electricity supply and demand within a defined area. In contrast, the term *distribution network operator* (DNO) is commonly used in the UK to describe the company responsible for the operation and maintenance of the electricity distribution network.

These examples demonstrate the importance of being aware of regional variations and dialects in power engineering terminology when translating technical texts. By recognizing and accommodating these differences, translators can ensure that their work is relevant and comprehensible to the target audience, fostering more effective communication among power engineering professionals worldwide. Translators must be conscious about these variations and adapt their translations accordingly to ensure that their work is relevant and comprehensible to the target audience.

8. Multidisciplinary Nature

Power engineering is inherently multidisciplinary, intersecting with fields such as electronics, computer science, and mechanical engineering. As a result, translators may encounter terminology from these related disciplines when working with power engineering texts. Familiarity with the broader context of these interdisciplinary terms is essential to provide accurate translations that accurately convey the intended meaning.

By presenting this main material, our research offers valuable insights into the lexico-semantic characteristics of English terms in the special language of power engineers. By taking into account the specialized vocabulary, semantic relations, contextual dependence, and technical concepts, translators can enhance their understanding of this field and improve the accuracy and clarity of their translations, facilitating more effective communication and collaboration among power engineering professionals worldwide.

By examining additional aspects, our research further emphasizes the complexity of the special language of power engineers and the various factors that translators must consider when working with this technical terminology. Through a comprehensive understanding of these lexico-semantic characteristics and a commitment to continuous learning, translators can help bridge communica-

tion gaps and promote collaboration among power engineering professionals across the globe. [Ibrahimova : 398–404]

Conclusions. In conclusion, our research on the lexico-semantic characteristics of English terms in the special language of power engineers has provided valuable insights into the complexities and nuances associated with translating technical terminology in this rapidly evolving field. By examining various aspects, such as specialized vocabulary, semantic relations, contextual dependence, technical concepts, idiomatic expressions, standardization, regional variations, and the multidisciplinary nature of the field, we have highlighted the challenges faced by translators and proposed strategies for enhancing the translation process.

To foster effective communication and collaboration among power engineering professionals worldwide, it is crucial for translators to have a deep understanding of the field's technical concepts, stay up-to-date with new developments, and be familiar with international standards and regional variations. By employing subject-matter experts, encouraging collaborative translation, managing terminology, and pursuing continuous professional development, we can ensure more accurate and consistent translations of power engineering texts across languages and cultures.

Ultimately, this research contributes to bridging linguistic barriers in the power engineering domain, fostering a greater understanding of the unique linguistic landscape and promoting more effective global collaboration. As the demand for clean, reliable, and sustainable energy continues to grow, the ability to communicate and collaborate efficiently across borders becomes ever more critical to addressing the world's energy challenges and realizing our shared goals for a brighter, more sustainable future.

The prospects for further research in the field of lexico-semantic characteristics of English terms in the special language of power engineers are both promising and essential, given the rapid advancements and increasing global collaboration in this domain. As our research has laid the groundwork for understanding the complexities of translating power engineering terminology, there are several areas where future investigations could contribute to the ongoing development of this field:

Comparative Analysis: A comparative analysis of power engineering terminology across different languages could provide valuable insights into the similarities and differences in the lexico-semantic structures, enabling more effective cross-linguistic communication and translation.

Machine Translation: With the continuous advancements in machine translation and artificial intelligence, exploring the efficacy and limitations of these technologies in translating power engineering texts could pave the way for more efficient and accurate translation processes, while also identifying areas where human expertise remains indispensable.

Language Evolution: Monitoring the ongoing evolution of power engineering terminology, particularly in response to emerging technologies and innovations, will be crucial for maintaining up-to-date resources for translators and professionals in the field.

Domain-specific Training: Developing and evaluating domain-specific training programs for translators to enhance their knowledge and skills in power engineering could lead to more accurate

translations and improved communication among professionals in the industry.

Cross-disciplinary Collaboration: Investigating the intersection of power engineering with other related disciplines, such as renewable energy, smart grids, and energy storage, could offer a broader perspective on the linguistic landscape and translation challenges in these increasingly interconnected fields.

Cultural and Regional Factors: Further research into the impact of cultural and regional factors on power engineering terminology and translation practices could help address potential communication barriers and promote a more inclusive understanding of the global power engineering community.

By pursuing these prospects for further research, we can build upon the foundation established in this study and continue to enhance our understanding of the lexico-semantic characteristics of power engineering terms. In doing so, we contribute to fostering more effective communication and collaboration among professionals in this vital field, ultimately supporting the global pursuit of clean, reliable, and sustainable energy solutions for the future.

REFERENCES

1. Baker, M. (2011). *In other words: A coursebook on translation*. Routledge.
2. Cabré Castellví, M. T. (1999). *Terminology: Theory, methods, and applications*. John Benjamins Publishing Company.
3. Chen, Y., & Wang, D. (2020). Challenges and strategies in translating technical terms in electrical engineering: A case study on Chinese-English translation. *Journal of Language Teaching and Research*, 11(5), 811–817. <https://doi.org/10.17507/jltr.1105.12>
4. Gile, D. (1995). *Basic concepts and models for interpreter and translator training*. John Benjamins Publishing Company.
5. Ibrahimova, L., Nykyporets, S., Derun, V., & Herasymenko, N. (2021). Some special features of the work on foreign language professional texts in technical higher education institution. *Grail of Science*. № 11. C. 398–404. <https://doi.org/10.36074/grail-of-science.24.12.2021.072>
6. Murphy, K., & Pym, A. (2021). A survey of translators on translation and post-editing in the energy field. *The Interpreter and Translator Trainer*, 15(2), 186–204. <https://doi.org/10.1080/1750399X.2021.1883817>
7. Stepanova, I., Ibrahimova, L., Nykyporets, S., & Derun, V. (2021). Working with foreign language texts on a specialty in non-linguistic higher education institutions. *Grail of science*. № 10. C. 387–392. <https://doi.org/10.36074/grail-of-science.19.11.2021.077>
8. Wright, S.-E. (2020). Leveraging terminology management in the age of artificial intelligence: Challenges and opportunities. *Perspectives: Studies in Translation Theory and Practice*, 28(4), 536–548. <https://doi.org/10.1080/0907676X.2020.1731562>

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**ЛЕКСИКО-СЕМАНТИЧНІ ХАРАКТЕРИСТИКИ АНГЛІЙСЬКИХ ТЕРМІНІВ
ФАХОВОЇ МОВИ ЕНЕРГЕТИКІВ (ПЕРЕКЛАДАЦЬКИЙ АСПЕКТ)**

У галузі енергетики, яка швидко розвивається, ефективно спілкування та співпраця між професіоналами в усьому світі є життєво важливими для вирішення світових енергетичних проблем. У статті представлено поглиблений аналіз лексико-семантичних характеристик англійських термінів спеціальної мови енергетиків із акцентом на перекладацькому аспекті. Наше дослідження вивчає спеціальну лексику, семантичні зв'язки, контекстну залежність, технічні концепції, ідіоматичні вирази, стандартизацію, регіональні варіації та міждисциплінарний характер галузі, підкреслюючи складності та нюанси, пов'язані з перекладом технічної термінології в цій галузі.

Ми визначаємо кілька проблем, з якими стикаються перекладачі, як-от двозначність, неологізми, культурно-специфічні терміни, аббревіатури та необхідність чіткого розуміння основних технічних концепцій. Щоб подолати ці виклики, ми пропонуємо стратегії вдосконалення процесу перекладу, зокрема залучення експертів-фахівців, сприяння співпраці при перекладі, управління термінологією та безперервний професійний розвиток.

Надаючи всеосяжний аналіз лексико-семантичних характеристик енергетичних термінів і пропонуючи практичні стратегії для перекладачів, наше дослідження сприяє подоланню лінгвістичних бар'єрів у галузі, сприяє кращому розумінню унікального лінгвістичного ландшафту та сприяє більш ефективній глобальній співпраці. Перспективи подальших досліджень у цій галузі багатообіцяють, з потенційними дослідженнями порівняльного аналізу, машинного перекладу, еволюції мови, спеціалізованого навчання, міждисциплінарної співпраці та культурних і регіональних факторів. Вивчаючи ці напрямки, ми можемо продовжувати поглиблювати наше розуміння лексико-семантичних характеристик енергетичних термінів і підтримувати глобальне прагнення до чистих, надійних і сталих енергетичних рішень для майбутнього.

Ключові слова: лексико-семантичні характеристики, технічна термінологія, семантичні відношення, контекстна залежність, ідіоматичні вирази, управління термінологією.