

THE ROLE OF PROFESSIONAL ENGLISH FOR ENGINEERING STUDENTS

Vinnitsia National Technical University

Abstract

This paper considers the importance of learning technical English by specialists of engineering specialties. Modern manufacturing is characterized with high-precision equipment that may be operated by highly skilled experts. The manufacturers of the equipment are using international languages, primarily English to introduce it all over the world. Therefore technical English is needed to operate and maintain machines and equipment. The paper presents examples of terms that are used by manufacturers, equipment adjusters and engineers.

Keywords: *engineering English, professional skills, industry-specific terminology, professional competence, professional communication.*

International economic cooperation requires engineers to possess strong English proficiency necessary for professional communication. English for specific purposes and especially technical English is essential for engineers to be able to participate in international projects, study the latest technologies, adopt advanced industry experience, understand new technical descriptions since many multinational companies use it in technical documentation and manuals [3].

Teaching and learning technical English is an urgent challenge for technical specialties mainly because of specialized vocabulary. It is not enough for a modern engineer to have only knowledge of engineering and manufacturing technology. A necessary condition for professional activity is the ability to work correctly with English-language technical information. A qualified specialist in engineering specialties has to study the works of foreign authors, usually in the original language, since it is not always possible to find a translation, or the quality of the translation is questionable.

As of today Ukraine is oriented towards integration into the European economic and technological environment, which determines its active participation in international manufacturing processes. In these conditions, the engineering industry operates in an environment of manufacturing globalization, international cooperation and widespread implementation of imported technological solutions. A significant part of Ukrainian enterprises operates production lines and technological equipment of leading European and Asian companies, in particular German, Italian, Japanese etc.

Under such circumstances the proficiency in technical English is necessary to ensure efficient professional activity of engineers, since it is the official or working language of international technical documentation, software, standards, and professional communication of most global equipment manufacturers.

Overcoming the language barrier will significantly facilitate the procedure for exchanging information between representatives of different countries. At the same time, learning a professionally oriented foreign language develops the speech and general culture of the individual [2].

Professionally focused foreign language study combines core language proficiency with specialized subject knowledge to meet specific vocational needs, such as reading technical literature and professional communication. It requires integrating vocabulary, industry-specific terminology and case studies to bridge the gap between language learning and career-specific skill development.

The study of industry-specific terminology is necessary for future engineers for theoretical and practical mastering the professionally oriented terminology, research of trends and directions of development of modern technologies and ensuring effective communication in the professional sphere, which, in turn, will contribute to the enrichment of the level of professional competence of the future specialist. In addition, perfect command of professionally oriented vocabulary will contribute to the development of a terminological dictionary, the ability to accurately, logically and consistently express the own opinion, prove and defend ideas with arguments, systematize acquired knowledge, etc [1,2]. On the other hand, learning a technical foreign language allows students to correctly interpret specialized terminology, since a literal translation of technical concepts without taking into account industry peculiarities leads usually to distortion of the content of instructions, errors in equipment setup, and disruption of the technological process.

It is necessary to pay attention to the fact that trends in maintaining technical documentation in modern conditions are determined by the processes of standardization, unification and digitalization, which leads to increased requirements for the accuracy of terminology and professional language competence of specialists.

Knowledge of modern principles of compiling and designing technical documentation is useful for future specialists, as they ensure the accuracy of professional communication, minimize the risk of errors in production processes, and promote effective interaction with international partners. The use of professionally oriented text materials in professionally oriented foreign language classes contributes to the development of terminological vocabulary in a certain field of knowledge, improves its general culture and stimulates further professional development and study of a foreign language at a more professional level.

The study of literary sources, combined with personal experience and critical analysis, forms a comprehensive approach to understanding complex topics, enabling researchers to connect theoretical knowledge with practical insights. The main tasks of teachers of a professionally oriented foreign language is to promptly familiarize students with professional literature, relevant dictionaries and reference books, and to direct them to independent language learning. It allows to train a specialist able to clearly and competently express his thoughts in a foreign language, analyze professional phenomena and problems in both the national and international scientific and technical environment.

In our research we consider the machine building industry that operates in conditions of globalization of production, international cooperation and active introduction of imported technological solutions. Most large Ukrainian food industry enterprises use production lines of leading European and Asian companies. Using the example of the large confectionery production company "Roshen", it can be noted that the technological processes of forming, casting, wrapping, filling and packaging of products are implemented on equipment built by German, Italian and Japanese manufacturers (WinklerundDünnebier, LoeschPack, Bosch, Syntegon, Somic, Schubert, Ishida). Ukrainian equipment is presented much less and mostly concerns auxiliary systems, for example, the horizontal packaging machine Flow-pack BG-250BSF. Thus, the use of imported equipment involves the use of original technical documentation, software, service instructions and technological regulations, which are provided mainly in the English language. Therefore, it is not enough for a modern engineer to have only knowledge of engineering and production technology. A necessary condition for professional activity is the ability to work correctly with English-language technical information.

The problem of interpreting specialized terminology requires special attention. Here are some examples of typical differences between the direct translation and professionally correct interpretation of the specialized terminology.

№	Professional term	Inappropriate translation	Correct translation
1	Металургійне машинобудування(галузь важкого машинобудування, що виробляє обладнання для металургійних заводів (доменні печі, прокатні стани, ливарні машини))	Metallurgical car construction	Metallurgical mechanical engineering
2	strength	сила	Міцність (здатність ущільненої суміші не руйнуватися під тиском металу)
3	non-stickiness	нелипкість	Непригарність (здатність суміші не вступати в хімічну взаємодію з металом)
4	propertytechnical	технічне майно	Технологічні властивості (це комплекс фізико-хімічних властивостей цих матеріалів)
5	machiningprocessing	механічна обробка	Оброблюваність різанням (здатність матеріалу до стружкоутворення за заданих шорсткості, точності та якості оброблених поверхонь)
6	workpiece, flank, billet	заготовка, бік, болванка	Заготовка (предмет праці, з якого зміною форми, розмірів, властивостей поверхні і (або) матеріалу виготовляють деталь)
7	yield, flow	врожайність,потік	Рідкоплинність (це здатність металів та сплавів плинути у розплавленому стані по каналах

			ливарної форми, заповнювати її порожнечу і чітко відтворювати контури виливка)
8	Temporary moulding	тимчасове формування	Разові форми (призначені для виготовлення лише одного виливка, тому що їх руйнують після затверднення металу)
9	flow-hole	проточний отвір	Газові раковини (пузирі газів у тілі виливка)
10	Кокіль	Kokil	metalmould (металева багаторазова форма, в яку рідкий метал заливається вільним струменем під атмосферним тиском)

The examples given demonstrate that understanding of only general English is insufficient for the professional activity of an engineer. It is necessary to possess precisely the technical vocabulary of the industry and understand the technological context of its use.

In this regard, the English language must be considered as a component of the professional training of a modern engineer in the mechanical engineering industry.

In practical terms we consider three possible approaches to help solve the problem of understanding specialized terminology and documentation. The first, and at first glance obvious one is to involve a professional translator. This approach partially removes the language barrier, but does not eliminate the fundamental problem - the lack of a deep understanding of the technological process.

Technical text is characterized by a high level of terminological richness, precision of formulations and dependence of the meaning of the term on the production context. The same term in different types of equipment can have different functional content. A translator who is not a specialist in a specific field of mechanical engineering or food technology mainly focuses on dictionary equivalents, which increases the risk of inaccuracies.

At the same time the involvement of a translator creates an additional dependence of the production process on an external specialist. In situations requiring rapid decision-making, the lack of direct understanding of the text by the engineer can slow down the production process.

Although there are translators with technical specialization, finding them is difficult, and their constant involvement is economically inexpedient. Thus, this approach does not solve the problem systematically.

Another way is to use specialized terminological dictionaries and reference sources. However, this approach also has a number of disadvantages. A significant part of available technical dictionaries give a direct or so called “mechanical” translation from English into Ukrainian. In the current conditions of the active functioning of the Ukrainian language in the technical sphere, the use of such sources is methodologically and practically limited. As a result, many terms that do not correspond to real professional usage. The dictionary by its nature provides a generalized equivalent of a word, while technical terminology is often determined by the context of its application. For example, the meaning of a term may vary depending on the type of equipment, the stage of the technological process, or the functional purpose of the unit. Thus, using dictionaries without a deep understanding of the technology does not guarantee the accuracy in interpretation. A dictionary translation may be formally correct but functionally incorrect in a specific production situation.

Considering the above we may conclude that the most effective and systematic approach is to teach future engineers to independently work with English-language technical documentation. This is not only about the knowledge of general English, but also about mastering the industry terminology, understanding the structure of technical instructions, ability to analyze standards and regulations, ability to correlate the text of the documentation with the real technological process.

REFERENCES

1. Chernovalyuk, I. (2022). Professionally oriented language training foreign higher education acquires. *Teaching Languages at Higher Educational Establishments at the Present Stage. InterSubject Relations*, (41), 82-99. <https://doi.org/10.26565/2073-4379-2022-41-05>
2. Simon Bong. *The impact of the English for Universities Project on ESP and EMI in Ukrainian higher education. Final Report*. 2019. https://www.britishcouncil.org.ua/sites/default/files/efu_impact_report_.pdf
3. Béatrice Dupuy and Muriel Grosbois. *Language learning and professionalization in higher education: pathways to preparing learners and teachers in/for the 21st century* <https://files.eric.ed.gov/fulltext/ED608931.pdf>

Matsipura Oleksandr I. – *student of the faculty mechanical engineering and Transport.*