

MASTERS' OF SCIENCE ADVANCED ENGLISH PROFESSIONAL STUDIES IN THE FIELD OF ELECTRICAL ENERGETICS AND ENGINEERING

Vasilii V. TIUNOV

**The FSBEI of HPE «The Perm National Research Polytechnic University» (PNRPU)
City of Perm, Russia. E-mail: <tiunov@pstu.ru>, <tiuvas@mail.ru>**

Annotation – The results of development and practical implementation of advanced English training course into a higher school educational process for masters of science in electro-mechanics at the polytechnic university electrical engineering department are introduced.

Key words – *electro-mechanics, professional studies in English, author's advanced training course, didactical features, contents, implementation.*

Introduction

The Electro-mechanics forms the basis of modern energetics and it is in the focus of the widest international attention. So the English language as a subject matter is of a great importance for specialists in electrical engineering and energetics. The masters' program «The Electro-mechanics» is realized in the department of electrical engineering and electro-mechanics of the PNRPU for several years. In this case, the English masters' (magistrants') training carried out for the total work load of 96 hours, including 27 hours of classroom workshops. The necessary vocabulary of English professional terminology: expressions, abbreviations, symbols, measurement units, grammatical forms of constructing the oral speech and written technical texts adopted by IEC standards and regulations is formed by this program.

The education didactical base and principles

As a didactic framework, the system of situational visualization of learning process has been adopted using the original collections of foreign publications and audio-support of 'mother's tongue' records. It was reworked and presented in a clear and very convenient mode of "Karaoke". In addition, the author prepared a fairly comprehensive English-Russian thesaurus for professional dictionary (over 6,500 lexical units, words and phrases on electro-mechanics). On this base a test version of the electronic dictionary has been designed. It takes a little over two megabytes of memory, which is much smaller than the size of the average electronic dictionaries, available at the moment. Structure of the software allows us to add new dictionaries, so there is the possibility of creating a single multi-lingual base

of electro-technical terms in one frame. Moreover, there already exist our first version of trilingual thesaurus (English, German, Russian) on electro-mechanics, which could be supplemented by French and Chinese language (this is the one of the proposals for our dear friends from China).

The main principles of teaching *are to implement the following education provisions:*

- The concise repetition and consolidation of English grammar, using a convenient tabular approach as computer presentations.
- The sequential administration in the educational process of solving a problem of professional orientation of educational material with immersion into environment activities of technical specialists (with elements of role-playing games).
- The systematic implementation of a basic principle of education – a dosed transition from simple to complicated material; from laboring to engineering activity of a specialist.
- The applying methods of systematic studied material repetition before giving new information, which provides the best memorization of the input English-language vocabulary.
- The significant increasing the visibility and visual representability of technical details for each object, using computer's presentations, and discussing each problem's situation with the active participation of students in dialogues with an educator and with each other.
- The high rate of material's new presentations in combination with economical and rational introduction of the specific language units detailing, receiving by students, if necessary, the explanation of educator, who is a specialist in the field of electro-mechanics.

Adaptation of students to solving problems of a foreign language communication in different situations:

-the entry into professional contact and communicative development of this contact in the understandable form for aliens: foreign identification of technical objects, describing their structure, geometry, properties, characteristics of systems' design, etc.; the concise, logical and correct description of the various systems' functioning principles and components of these facilities; properties of materials, used in them, etc., using the basis of international designations, international systems of units and terms of IEC standards and regulations;

-the instructions preparation for safe and correct usage of technical objects and processes; analysis and prevention of possible abnormal and dangerous situations for personnel and equipment is introduced in the course;

-integral description of the basic elements of technique, and, in particular, elements of electromechanical systems with using an appropriate modern English scientific and technical vocabulary is studied on the lessons;

-the usage of terminology, adopted abroad , and methodologies of writing the English-language personal documents (questionnaires, visa applications, various declarations, professional resumes and biographies, etc.) is shown for students;

The methods of teaching

According to the curriculum, there are only practical exercises which are held in different forms: lectures and dialogue form with educator's explanatory, mainly in English only, with a brief, if necessary for learners, explanations in Russian, dialogues between educator and magistrants, magistrants' discussions among themselves and with an educator; magistrants' performing during the course of training tasks, tests in dialogues and monologues form to update the material.

The primary parts of tasks and exercises are visualized, using computers' situational demonstrations that provides substantial intensification of the educational process, and contributes much to a better fixation of the material within the classroom work. An electronic copying of these materials and their audio scripts on students' personal computers allows implementing the process of postgraduates' self-study at home much more effectively (during along all life and all time of engineering activity) .

Independent work of the learners

It is carried out in a planned volume of 69 hours and is working with the electronic and print English-language textbooks, practice skills in reading and listening, in the study individually recommended English-language scientific and technical literature on the profile of research in preparation for the practical exercises with the related exercises. **The result of independent work is to prepare a final qualifying paper and its presentation** in the English electronic and oral forms.

Basic training materials on discipline

1. **Tiunov V.V.** E-learning slide course "English for the future engineers." Based on the textbook of D. Bonami, 1994 (UK), part 1, 2, Perm, PNRPU, 2008.

2. **Tiunov V.V.** E-learning slide course «Technical English». Based on the textbook of D. Bonami, 1994 (UK), part 1, 2, 3, 4, Perm, PNRPU, 2009 (with the application of a newly developed sound supplement in the mode of "Karaoke").
3. **Methodical complex** "English for students, teachers and administrators of technical universities» (ILAN). Edited by **Polyakova T.Y.** Development of the Tempus-project "Innovative programs in a foreign language for technical universities" (Austria, Sweden, Russia) in 4 books, ed. MADI (TU), Moscow, 2009.
4. **Polyakova T.Y., Siniavskaya E.V., Tunkovo O.I., Ulanovskaya E.S.:** English for Engineers:Tutorial. Ed.7-th, rev. M:Higher School, 2009 - 463 p.
5. **Artsinovich N.K.** English Grammar in the tables: a handbook / N.K.Artsinovich - M: Astrel: AST, 2009. - 110c. (In the form of presentations designed to visualize the learning process in classroom and homework).
6. **D. Rizoni.** Principles of Electrical Engineering (in English). Ed.4, rev. - USA, New York, 2004 - 1022s. (As elaborated presentation in form of computer's files).
7. **A. J. Kompton.** Principles of electromagnetism and their application (in English). Ed. Van Nostrand Reinhold, UK, 2008. - 152c.
8. **M.G.Say.** AC machine (in English). 4th ed. Publ. Pitman, London, 1996, in 3 books. (as elaborated presentation files)

Conclusion

Five years' experience of discipline teaching shows a great interest to it of the most part of students. Based on this, we can conclude about the correctness of selected approaches to the implementation of organization and methodical support of educational process. Graduates began much more active using the knowledge of English and linguistic skills in their practical work. They have given a high estimation of the course syllabus and its contents.

The bibliography

1. **Tiunov V.V.** The new ESP-course of training for masters in electro-mechanics «Professional English» // Electro-mechanics, Electro-technology, Electrical Materials and Components (ICEEE – 2012) Proceedings of the XIV International Conference, Crimea, Alushta, 23-29 of September, 2012 / Ministry of Education and Science of Russia, ..., Scientific research. Univ MEI [etc.], 2012. p. 346-348.

