

OPPONENT REVIEW

for Professor Appointment Procedure

APPLICANT NAME: **DR. HAB. INŽ. ELŽBIETA SZYCHTA**

FIELD OF APPOINTMENT: **5.2.11 ELECTRICAL POWER ENGINEERING**

OPPONENT: **PROF. ING. PETR CHLEBIŠ, CSC.**

WORKPLACE OF THE OPPONENT: **VŠB- TECHNICAL UNIVERSITY OF OSTRAVA,
FACULTY OF ELECTRICAL ENGINEERING
AND COMPUTER SCIENCE,
DEPARTMENT OF ELECTRONICS**

Opponent review is processed on the basis of the request of the Dean of the Faculty of Electrical Engineering, University of Žilina in Žilina, reference No. KOR/12781/2012/Mgr. Pirniková from 4.12.2012, for the development of opponent review I received in accordance with the relevant decree:

- Curriculum vitae of the applicant
- The performance criteria for the professor appointment procedure at the Faculty of Electrical Engineering, University of Žilina in Žilina
- An overview of the pedagogical activities at the university and an overview of the results achieved in this activity
- An overview of the research work
- Thesis of the inaugural lectures

For the preparation of the report, I also used the available international databases of scientific and scientific-research works, partly I reflected also knowledge based on the personal meeting on the professional conferences.

The review is processed in the sections according to the requirements sent within the aforementioned request of the Dean of EF ZU in Žilina in accordance with the Decree of Ministry of Education, Science, Research and Sport of the Slovak Republic No. 6/2005 on the acquisition of science-pedagogical titles of associate professor and professor.

SCIENTIFIC ERUDITION OF THE APPLICANT

Mrs. Elžbieta Sychta was habilitated in 2007 at the University of Žilina in Žilina as an associate professor for the field of Electrical power engineering. Since 2007 she has been working continuously at the Politechnika Radomska im. Kazimierza Pułaskiego, since 2008 as an associate professor and the Dean of the Faculty of Transport and Electrical Engineering, and since May 2012 as a head of the Department of Electrical Engineering and Energy. Despite of the considerable workload of her functional responsibilities, Mrs. Elžbieta Sychta devoted to scientific and research work, particularly in the area of controlling and diagnostics of the railway transport systems, controlling of the water pumping systems,

including the drive control and recently in the field of power electronics, specifically resonant converters for DC/DC converters and induction heating. The high intensity of the scientific work is demonstrated by the involvement of the applicant to a number of projects – international – TEMPUS, as well as a number of projects (32) of innovative and engineering character in Poland. Her scientific expertise is also confirmed by the series of citations of the technical articles and contributions.

PUBLISHING ACTIVITIES

Publishing activities of Mrs. Elżbieta Szychta are very wide. In the list of publishing activities are listed articles in magazines, contributions to scientific conferences, and also the authorship or co-authorship of higher education textbooks and script.

One of the most important publications is a monograph named Multiresonant DC/DC ZVS Converters. This monograph is focused to the field of soft switching semiconductor devices and follows the significant global trends towards the development of transducers with high efficiency at high switching frequencies.

Publications are documented not only by the large number of scientific publications (43 in magazines, 56 in proceedings of the conferences, 22 of them in proceedings of international conferences), but also a total of 18 publications listed in WoS. In addition, there are publications registered in the databases of the IEEE, Springer, Scopus. Foreign contributions to conferences are oriented primarily to Lithuania, Germany, Bulgaria, Russia and Slovakia. However, there are also significant contributions to reputable conferences in Poland (e.g. TRANSCOMP, Zakopane, International Conference on Power Electronics and Motion Control Conference, Poznan, International Conference Transport Telematics System, Katowice-Ustroń).

The list of publications shows that in the period since habilitation in 2007 the candidate showed intense publication activity focused on the presentation of the results of her work in the field of perspective research directions (soft switching, resonant converter, railway systems modeling and their security) and on the presentation of the results of her development and engineering works. It can be stated, that all publishing and its content definitely fits into the field of the appointment procedure, i.e. Electrical Power Engineering.

THE RESPONSE TO THE WORK OF THE APPLICANT, THE APPRECIATION OF DOMESTIC AND FOREIGN SCIENTIFIC COMMUNITY

Mrs. Elżbieta Szychta is known personality in the field of electrical engineering, especially in the area of new approaches for the railway electrical engineering, power semiconductor technology and techniques of the resonant converters. Whereas I'm concerned with the technique of soft switching semiconductor transducers (ZVS, ZCS) in the long term, I was faced with applicant's publications quite frequently.

As already mentioned, the candidate has fairly extensive publications activities. Therefore it is understandable that the response to these publications involve a total of 64 citations, of which 24 citations in international scientific databases. A considerable part of her publishing activity is connected with the participation at the conferences of all professional levels. Candidate is very active in many committees of international conferences and symposia. Mrs. Szychta is a member of the Polish Academy of Sciences; committee of the Transport Committee, since 2012 she has been serving as a president of the Association of Polish

Electricians, Department of Transport. Nowadays, she is working also in a number of other organizations of electrical engineering, whose list is given in the materials on the appointments procedure. As can be seen from these materials, the formal requirements of the Faculty of Electrical Engineering for the candidate's recognition are often exceeded twice.

All the information demonstrate, that the applicant is very well known and respected personality in the field electrical engineering, both within Poland and in the international scale.

TEACHING ACTIVITIES AND DIDACTIC SKILLS

The attached curriculum vitae shows that the candidate had devoted all her previous professional life to pedagogical work. From this biography is also evident the lifelong effort of improving the work of higher education teachers. Developed from the younger assistant professor in 1981 to the successful associate professor in recent years, she taught 19 courses during her career, of which 6 courses newly introduced, or significantly modernized, and currently guarantees 4 fields of study, or their specialization.

In the course of her professional work she led a total of 178 diploma and bachelor theses, which also shows the great interest in the pedagogical work. The doctoral dissertation already finished under her leadership one student, the second student is assumed to finish doctoral studies this year.

Mrs. Elżbieta Szychta had served two terms as Vice-Dean of the Faculty of Transport and since 2008 has worked as the Dean of the Faculty of Transport and Electrical Engineering. Such positions cannot be hold without the teaching skills and capabilities to understand and communicate with the students.

During her educational performance she has released 3 university textbooks in book form, and 3 higher education textbooks.

The candidate had submitted thesis of inaugural lecture named "Properties of Electrical Systems for Induction Heating in Railway Transport", which with its expert content fits within the issue of the field electrical power engineering.

On the basis of the summary of all available knowledge of pedagogical activities of the applicant can be concluded that Mrs. Elżbieta Schychta is very capable teaching personality, which has already demonstrated pedagogical skills on the level of professor in the past years.

ORGANIZATIONAL SKILLS, ABILITY TO TEAM LEADERSHIP

According to previous managerial and organizational work of the applicant

- in the management of the Faculty of Transport and Electrical Engineering as the Dean, or. Vice-Dean,
- in the management of the project TEMPUS and other grant projects,
- in the management of more than 40 engineering projects of the practice,
- by the work in organizational committees of scientific conferences,
- as a Head of the Department,

are organizational and managerial capabilities of the applicant fully demonstrated. Such a range of organizational work fully meets the conditions for further work of the university professor.

THE FINAL EVALUATION

On the basis of the guidelines referred to the nomination letter from the Dean of the Faculty of Electrical Engineering, University of Žilina in Žilina to professor appointment procedure, dr. hab. inž. Elžbieta Szychta in the field of Electrical Power Engineering, I can state:

1. The applicant complies with and in a number of points exceeds significantly the conditions of Criteria for professor appointment procedure at the Faculty of Electrical Engineering, University of Žilina in Žilina in all points and monitored areas.
2. Since the habilitation in 2007 the scientific activities of the applicant have demonstrated high scientific erudition, which is in the international scientific community supported by the significant response both in the area of publications, so by engaging the applicant in scientific and research activities in the framework of the projects. This activity constitutes sufficient preconditions to further scientific development of the applicant.
3. Applicant's pedagogical activities have demonstrated the great conditions for the further development of the pedagogical work of the corresponding level of the university professor.
4. Applicant's organizational work has demonstrated the ability to conduct and manage both research and teaching teams, which gives preconditions for the further development in the scientific and research work.

Given the above, I consider that the action of the applicant in all monitored areas meets the requirements for the appointment of a professor in the field of Power Electrical Engineering, therefore,

I recommend

the Inaugural Comitee to submit to Scientific Council of the Faculty of Electrical Engineering, University of Žilina in Žilina a proposal for the appointment of

dr. hab.inž. Elžbieta Szychta

professor in the field of study 5.2.11 Electrical Power Engineering.



prof. Ing. Petr Chlebiš, CSc.
VŠB-Technical University of Ostrava
Faculty of Electrical Engineering and Computer Science,
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Ostrava, 18.1.2013