50th Anniversary of the Faculty of Electrical and Computer Engineering, Rzeszów University of Technology

Deans foreword

In 2015 celebrated the 50th anniversary of the Faculty of Electrical and Computer Engineering, Ignacy Łukasiewicz Rzeszów University of Technology. The first students began their education at the Faculty of Electrical Engineering in 1965 that is less than two years after the establishment of the First Degree Engineering School in Rzeszów. In the fifty years of the history of our Faculty we have educated almost eleven thousand graduates who have successfully found employment, occupying responsible positions in business companies and public administration. Many of them have chosen a career in science achieving significant successes, including at our Faculty. The high level of education was confirmed by the Polish Accreditation Commission, which granted a positive assessment of the Faculty as an institution. We make every effort to ensure to still be seen as a leader in the region and a significant unit in the Polish education system in the fields of electrical engineering, computer science, electronics and telecommunications, power engineering, automation control and robotics. Currently, 121 university teachers work at the Faculty. They teach more than 2,800 undergraduate and graduate students. The Faculty Council is authorized to confer a D.Sc. degree in technical sciences in the discipline of electrical engineering and authorized to confer doctoral degrees in electrical engineering and computer science disciplines. Moreover, there are doctoral studies in both disciplines. To celebrate the anniversary, a series of scientific peer meetings and accompanying events were planned. A solemn joint meeting of the Faculty Council and the Economic Council (June 17th 2015) was a unique occasion to remind ourselves of the history and many achieved successes of the Faculty in the areas of education, research and collaboration with companies. We will remember with affection, those who have gone and those without whom the Faculty would not have achieved its unique position. In this paper we are presenting a short story of our Faculty; the presented information was collected and edited by Prof., Ph.D., D.Sc., Eng. Kazimierz Buczek, who for many years was a Faculty Dean.

Faculty Dean
Introduction

The story presented in this paper is the fifty year history of the Faculty of Electrical and Computer Engineering at Rzeszów University of Technology. This celebration is called the Golden Jubilee and it is believed that half a century of the university’s activity is a very good reason to reflect on past times. Despite the fact that we present many information about specific conditions and events of our Faculty history (such as building names, street locations, previous names of other faculties, historic local events, persons, etc.) we believe that it is very important and valuable to show and remind everyone, of those who were true participants of this history and all the important places and events that had minor or major influences on everything that happened during the last fifty years. The presented elaboration is an attempt to show how the history of our Faculty was created, especially in the memory of those who were responsible for the development of this university unit.

History: from the beginning to nowadays

The beginning of education at a university level in Rzeszów dates back to 1951. At the Cracow University of Technology, Faculty of Mechanical Engineering a decision was made to create in Rzeszów the Evening Vocational School. Initially it was carried out only in the field of mechanical engineering. Classes were given in the system of evening school and were directed to workers, mainly from the factory Wytwórnia Sprzętu Komunikacyjnego WSK “PZL” in Rzeszów. This provided the foundation for the beginning of the establishment of the First Degree Engineering School (Wyższa Szkoła Inżynierska, WSI) in 1963 with two faculties: the Faculty of Mechanical Engineering and the Faculty of Overall Technical Engineering (Ogólnotechniczny). The first, new technical school at the university level started its working in the former House of the Young Worker (Dom Młodego Robotnika, see Fig. 1) on Maria Curie-
Skłodowska Street. School had two departments: Mechanical and Overall Technical with two study fields: mechanics and electrical engineering.

The study field of electrical engineering at the Faculty of Overall Technical Engineering was actually the beginning of the creation of the Faculty of Electrical Engineering. The study program for students of electrical engineering consisted of many classes related to the mechanical profile. Among them there were: geometry, technical mechanics, strength of materials, metals technology. Learning at the Faculty of Overall Technical Engineering lasted 4 semesters. After this period, electrical engineering students were already continuing their education at the Faculty of Electrical Engineering until the end of their four-year engineering degree. The Faculty of Electrical Engineering was established in 1965. Its main organizer and first Dean was Dr. Eng. Jerzy Sozański.

The first or second semester of the study at the Faculty of Overall Technical Engineering covered a general technical industrial practice, implemented generally in WSK “PZL-Rzeszów”. In addition to an internship during this semester, students also had classes in several subjects such as: mathematics, physics and economics. Full-time study at both faculties lasted of a total 4 years and included approximately 4,600 hours of classes organized and carried out from
Monday to Saturday inclusive. In addition, the fall semester began on September 1st, and each of 8 semesters lasted 16 weeks. One of the elements of the 8th semester was a monthly graduation practice. There were two forms of classes. The first was an auditorium class in groups of 25-30 people that replaced lectures and exercises. The second form was project or laboratory classes in groups of 12-15 students. The engineering dissertation defense took place in June and was composed of two parts including the final examination and the thesis defense followed by a lecture on carried research or engineering tasks.

Holiday breaks included a one month internship as well as two month military training, so the WSI students only had one month of break to rest. Initially, the teaching staff was formed by a team of several electrical engineers; the team had only 3 teachers (Dr. Sozański, MA Dyszyński, MA Skarbowski). In 1966 the first academic teacher with a habilitation degree (prof. Zygmunt Bajorek) was hired. In the same year, Associate Professor Zygmunt Bajorek became the new dean of the Faculty.

In this period the most academic staff of the Faculty came mainly from the Academy of Mining and Metallurgy in Krakow (AGH) and industry. Experts from the industry had many years of training and appropriate professional practice.

In 1966 a part-time study in electrical engineering was started and the first alumni of this study received their diplomas in 1970. Since 1968 full-time students were already admitted directly to the Faculty of Electrical Engineering. A semester practice was replaced by workshop classes. After 1968, a monthly labor work practice was entered into the education process of all students. The WSI teachers with a PhD degree could apply for the title (position) of assistant professor (docent), which gave them independence, including the ability to supervise the doctoral dissertations. The degree of assistant professor was approved by the Central Committee of Scientific Titles and Degrees (Centralna Komisja ds. Tytulów i Stopni Naukowych).

In the sixties of the twentieth century, after the establishment of an independent technical academic institution in Rzeszów, the construction of new building facilities began – in the first instance for a growing number of students of mechanics. Building C was chosen to serve this purpose. The location of the university units and faculties was subject to frequent changes in those years.

In 1964, building C began to be used by the Faculty of Mechanical Engineering (see Figs. 2 and 3), then in 1965 a western part of the building A. In 1967 the construction of the building B was finished, and then in 1969 a connector between buildings B and C for the Faculty of Electrical Engineering and the eastern part of the building A. The building at Maria Sklodowska-Curie Street (currently building D), in which the Evening School of Engineering started, was transferred to the WSI Military Study.

Despite putting into service several new objects for educational purposes, in terms of location, the period between the late 60s and early 70s was a very difficult time for the University and the Faculty because, in 1966, the Faculty of Municipal Engineering (now the Faculty of Civil Engineering, the Engineering Environment and Architecture) was started and a year later (in 1967) the Faculty of Chemical Technology (now the Faculty of Chemistry) was started as well. Now it is very hard to imagine, but the first laboratories of the Faculty of Chemistry were
held on the lower ground floor of building A, and right next door, in the rooms A1 and A2, the library was located.

The education at the Faculty was modified at the beginning of the 70s. In 1973 a uniform stationary (daily) 9-semester master’s degree studies were introduced. Classes began on October 1st and each semester consisted of 15 weeks. Since then the basic forms of classes were: classical lectures, auditorium classes, laboratory exercises and projects in small groups. After the introduction of uniform master’s degree studies in the first year of study, the workshops on mechanics and electrical engineering were compulsory. In addition, students obtained the opportunity to choose a specialization. In the field of electrical engineering there were: processing and the use of electric energy, construction of mechanical and electrical devices, automation and metrology. The faculties were transformed into institutes. The exception was the Faculty of Mechanical Engineering, which remained a faculty with two institutes. The Faculty of Electrical Engineering was replaced by the Institute of Electrical Engineering consisting of various departments (Department of Electronics and Automation Control, Department of Electrical Engineering, Department of Electrical Machines, Department of Electrical Metrology, Department of Electrical Devices). The Institute of Electrical Engineering had rights to carry out full-time master degree studies and part-time engineering degree studies. In 1974 the First Degree Engineering School was transformed into Ignacy Łukasiewicz Rzeszow University of Technology.

In the 70’s the first Faculty teachers obtained a doctoral degree in technical sciences. At the end of this period, doctors of science were also among the first graduates of the Faculty. In the 70’s, faculty and university premises increased significantly, buildings: E (for the Institute of Aviation), F (for the library and publishing), H (for the Faculty of Chemistry), K (for the Faculty of Civil and Environmental Engineering), and then building L for the Faculty of Mechanical En-
Fig. 4. University site plan
gineering and Aviation were successively put into operation (see Figs. 3 and 4). Thanks to these the Faculty of Electrical Engineering has gained new premises: the Department of Electronics and Automation Control was moved to the 3rd floor of building A, the Department of Electrical Measurements was moved to the third floor of building B, the Department of Electrical Engineering Fundamentals to the 2nd floor of building B, the Department of Electrical Machines to the ground floor of building B. The first floor of building B was left for the Dean of the Faculty’s office, and the connector between buildings B while C and the western part of the lower ground floor of building A, for the Department of Electrical Devices.

At the turn of the 70’s and 80’s the duration of the master’s degree study was extended to 10 semesters. Beside this, faculties were able to create, to a limited extent, study plans, according to their own capabilities and concepts. In 1980 a five-day-week of study was introduced. Faculty developed new curricula and syllabi for one study direction – electrical engineering. Insufficient faculty staff (in terms of academic degrees and titles) did not allow for the opening of new directions at that time. In 1981, the Institute of Electrical Engineering was transformed into the Faculty of Electrical Engineering, comprising the Institute of Electrical Engineering which consists of: theoretical electrical engineering, electrical devices, electrical machines and electrodynamics, and the Institute of Automation Control and Measurements consisting of: electronics, automation control, electrical and electronic metrology.

In 1981 the Department of Electronics and Automation Control was divided into three independent units: Department of Electronic Systems, Department of Automation Control and Department of Electronics Fundamentals. This was possible due to the rules and the necessary number of professors (Doctors of Science).

In 1982 the University Centre for Electronic Computing Technology was established and the Department of Automation Control took care of it. This Centre was the foundation for the development of computer engineering at the Faculty.

In the 80’s the Faculty ceased the recruitment of part-time students; it was resumed in 1989. For two decades, in the years 1970-1990, the number of students was practically not changed. For the first year of full-time studies about 80-100 students were accepted. The transformation of the political system in Poland began in 1989. Democratic transitions initiated by the elections of 4 June 1989 led to significant changes in the functioning of high university education. Universities obtained autonomy including the possibility to make democratic choices regarding the election of higher academic authorities at universities and faculties, to determine their own plans and programs for students, to create their own plans for scientific research. In this year the Rzeszów University of Technology abandoned a three-level organization structure (there are no institutes since that moment). After this change, the Faculty of Electrical Engineering consisted of 8 Departments (Department of Electronic Systems was also established). Regulations at this time allowed for the employment of a person with no habilitation as the chief of a department.

In 1990 Polish law on university education was changed. It allowed for the employment of doctors with habilitation as associate professors. The Rector has applied and the Senate voted a resolution on the appointment of all assistant professors for the position of associate professor. Previously, this possibility was only at the discretion of Ministry.
In the period of 1991-1996 a large increase of associate professors at the Faculty was recorded. Eight people received this degree, then they received the position of associate professors of Rzeszów University of Technology. Almost at the same time three professors from the Kielce University of Technology, two of the Lviv Polytechnic and two from the University of Kiev were hired. In 1993, the Faculty filed an application for permission to carry out the study in the field of electronics. Unfortunately, this proposal was not accepted by Ministry.

At the beginning of the 90’s a significant increase in the number of recruited students was noted. In 1991, the Faculty accepted about 360 full-time study candidates (having only one field of study – electrical engineering), one year later approx. 540 students were accepted and this trend continued in subsequent years. The Faculty of Electrical Engineering offered students four specializations: processing and use of electrical energy, automation control and information technology, electronic devices, metrology and measurement systems. These specialties later gave a basis to rise new study directions. It should be noted that this trend is also very common for many universities nowadays.

In 1991 the Department of Electronics Fundamentals was divided, creating a new, additional structure – the Department of Digital Systems and the Department of Automation Control, which was changed into the Department of Automation Control and Computer Engineering. This clearly emphasized the developmental direction of the Faculty, especially in the field of computer science. In 1995, the Faculty submitted an application for the possibility of the study in the field of computer science. The request was approved by the Ministry of Education and since 1996 the Faculty began recruiting and teaching students in this direction at an engineering level, and since 1997 at master’s level. The Faculty offered two specializations for full-time and part-time study: computer and network systems and information systems.

In 1999, the Faculty was given rights to lead doctoral theses in the discipline of electrical engineering, and in 2000 changed its name to the Faculty of Electrical and Computer Engineering. Renaming the Faculty caused other departments to change their names too: the Department of Theoretical Electrical Engineering was changed into the Department of Electrical and Computer Engineering Fundamentals, the Department of Electronic Systems into the Department of Electronic and Telecommunication Systems, the Department of Digital Systems into the Department of Distributed Systems.

The development of departments resulted in a high demand for work rooms, laboratories and classrooms, as well as the expanding areas of the administration rooms. The Rzeszów University of Technology has two main localizations: the first one on Wincentego Pola Street, and the second on Powstańców Warszawy Street (see Fig. 4). The second localization allows for development of many important university buildings. In the complex at Powstańców Warszawy Street a new building S was built, and then the building P was expanded. Most theory classes (lectures, exercises) were conducted in these buildings. Lecture hall B2, which was rebuilt, was given for the use of the Faculty Council (now room B107). In the mid-90s, 18 professors and associate professors participated in the meetings of the Council and the Board consisted of 35 people in total.

In 2005, the Faculty obtained permission to carry out first degree studies in the field of electronics and telecommunication and two years later permission to lead master’s degree studies in
these directions. Thanks to this, the Faculty education offer was expanded by additional study specialties: electronic devices, telecommunications and electronic, measurement systems and diagnostics.

The first decade of the twenty-first century brought new growth of highly qualified teachers and scientifically developed stuff, especially among doctors of technical sciences and professors with academic titles. The Faculty also had a significant scientific base. Thanks to this and the Faculty efforts the Central Committee of Scientific Titles and Degrees, on the occasion of 45th anniversary of its existence, granted the Faculty the right to confer postdoctoral degrees in the discipline of electrical engineering. So far, the Council of the Faculty of Electrical and Computer Engineering conducted 6 habilitation defenses and one conduct with regards to awarding the title of professor.

A very important moment for the Faculty was the achievement of rights to confer the degree of doctor of technical sciences in the discipline of computer science in 2012. This was mainly possible due to a significant number of the Faculty’s staff with academic titles. Four of them obtained their degree thanks to the Council of the Faculty Electrical and Computer Engineering. This was very important, because in the autumn of 2014 five professors finished their work at the University, because of retirement.

By keeping the number of employees with the title of professor and a habilitation degree above the number of 24, the Faculty received permission to conduct second degree studies in power engineering.

In the 50-year history of the Faculty there were 18 teams of faculty deans and 5 people working as dean’s office chiefs.

Faculty now

In the year 2015 the Faculty students have a possibility to study five directions with 13 specialties. Since the establishment of the Faculty in 1965, till September 30, 2015 we promoted almost 11 000 alumni. The Faculty has had the possibility of carrying out the third degree study in two disciplines: electrical engineering (since 2011) and computer science (since 2013). The Faculty also has postgraduate studies. In the end of the 90s several specialties for postgraduate studies were proposed, for computer science: security of information systems, computer engineering in companies, Internet technologies and for electrical engineering: electronic devices to improve power quality in the traditional and renewable energy. Currently, the most popular are the studies in the field of Internet technologies.

Students of the Faculty develop their interests in scientific circles. The Faculty has 11 operating research groups. The results of the work done by the students are: publications, organizing of interesting events of a scientific nature (Polish Robot Competition ROBO--motion or IT Academic Day conference) and participation in Polish and international competitions, like the Imagine Cup programming contest.

The Faculty has been cooperating with foreign universities and institutions for many years. Currently, this cooperation mostly focuses on Europe (14 countries) and the United States of
America. In Poland the Faculty collaborates with almost all universities and many industrial companies, economic and administrative institutions.

In 2012, the Faculty appointed a special Economic Council, which members are mostly representatives of the local business community. It is a consultative and advisory body for the management of the Faculty and it expresses opinions on the launch of new fields of study and specializations of particular importance for the local market, expresses an opinion on the research activities in the context of the needs of the region, etc.

A significant improvement of the Faculty rooms was achieved after moving the university administration from building A and the Main Library from building F (both units were transferred to the newly constructed building V at Powstańców Warszawy Street, see Fig. 4). After completing renovation work in buildings A, B and partly in building F, the Faculty of Electrical and Computer Engineering will have an usable area of approx. 6500 m² (including 17 rooms for theoretical lectures and exercises). The classrooms are located in these buildings (complex at W. Pola Street) and can accommodate: 180 students – 1 room, 90 students – 3 rooms, 45 students – 7 rooms, and 30 students – 6 rooms. At this time the owned housing facilities can be considered as satisfactory.

After the Polish accession to the European Union in 2004 a new perspective of the University and Faculty development has appeared especially in the field of scientific and research equipment. Almost all the Faculty laboratories enriched with new equipment for a total amount of tens of millions of dollars.
The Faculty laboratories are equipped with modern research and scientific devices that allow
to carry out the work that in general is in close correlation with the themes of doctoral theses, the
topics of doctoral studies and the main directions of research at the Faculty. Among them there
are: the quality and reliability of electricity supply, electromagnetic compatibility, high voltage
technology and lightning protection, electrical machines and drive systems, lighting technol-
ogy, power electronic systems for high speed low energy engines, design and applications of
information and control systems, processing and statistical analysis of data in the measurement
of physical quantities, electronic measurement, control systems for industry and medicine diag-
nostic, radio technology to identify objects RFID, microelectronics, electric transport and low-
frequency noise in materials and electronic components, applications of the concept of complex
systems in intelligent power networks and modeling of computer systems and networks.

In the development of the Faculty a great role of the laboratories should be emphasized:
cryogenic, Electromagnetic Compatibility (EMC) and a testing range of lightning protection in
Huta Poręba. There is preparatory work for the creation a European Research Laboratory for
New Materials ELA-MAT Podkarpackie, near Rzeszów, whose main organizer is one of the
Faculty professors, Lesław Karpiński. This will be a unique type of research laboratory in Eu-
rope, extremely important for the development of the region and the energy industry. Currently
at the Faculty operate 48 research laboratories and 30 teaching laboratories.

The Faculty of Electrical and Computer Engineering has the possibility to:
● confer the postdoctoral degree (habilitation) in the discipline of electrical engineering;
● confer the degree of doctor of technical science in the disciplines of electrical engineering
and computer science;
● conduct third degree studies (PhD) in the fields of electrical engineering and computer sci-
cence;
● conduct second degree studies in the fields: electrical engineering, computer engineering,
electronics and telecommunications, power engineering;
● conduct first degree studies in the fields: electrical engineering, computer engineering, elec-
tronics and telecommunications, power engineering, automation control and robotics.

Currently, the Faculty employs 121 academic teachers (including 9 full professors and 17
with a habilitation degree, 1 researcher, 8 senior lectures), 29 employees of support staff (techni-
cians and technical-engineering) and 8 employees in dean's office. In total, the Faculty employs
167 people. The academic staff, technicians and research assistants are divided into seven de-
partments (Control and Computer Engineering; Electrical and Computer Engineering Funda-
mentals; Power Electronics, Power Engineering and Complex Systems; Electrodynamics and
Electrical Machine Systems; Metrology and Diagnostic Systems, Electronics Fundamentals;
Electronic and Telecommunication Systems) and the Laboratory of Acoustics.

Kazimierz Buczek
Grzegorz Masłowski
Dominik Strzałka