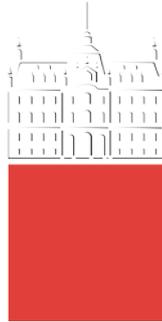


University of *Ljubljana*  
Faculty *of Electrical Engineering*



# **ANNUAL REPORT 2013**

## **BUSINESS REPORT**

### **INCLUDING QUALITY REPORT AND ACCOUNTING REPORT**



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## 1. INTRODUCTION

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The present report consists of a presentation and a performance report for each individual area of activity of the Faculty of Electrical Engineering, University of Ljubljana, in 2013, together with a quality report. The Annual Report also comprises an assessment of operation by the internal public finance control and an accounting report.

Besides the general recession in the country and worldwide, the previous year was also marked by numerous new laws and measures resulting in reduced funding of teaching and scientific research activities. This made the work of the Faculty considerably more difficult, but we nevertheless managed to close the business year in line with the planned objectives, thanks partly to operating restrictions and austerity, as well as to the very good teaching and scientific research results of the Faculty's permanent staff, its associates and students, as cited in this Annual Report.

We provided creative input in the drafting of the new University 2012-2020 strategy. We were successful in winning new scientific research projects and in implementing existing projects. We made every effort to ensure that our teaching work was of the highest quality. We staged numerous promotional/educational events, seminars and workshops for our external partners and future students, thus fostering the reputation and profile of the Faculty among the public.

In addition to being an outcome of the efforts of the teaching and research staff, the credit for the Faculty's good results undoubtedly also belongs to the professional staff of the Secretariat, who provided high-quality administrative and technical support for the core activity of the Faculty.

The Annual Report has been drafted in compliance with the Public Finance Act (OJ RS, No. 79/99 et seq.), the Accounting Act (OJ RS, No. 23/99, et seq.), the Rules on Drafting Annual Reports for the Budget, Budget Spending Units and other Entities of Public Law (OJ RS, No. 115/02, et seq.), the Instructions on Preparing the Annual Financial Statement of State and Municipalities' Budgets and on the Methodology for Preparing a Report on the Achieved Goals and Results of Direct and Indirect Budget Users (OJ RS, No. et seq.) and the regulation.

In 2013, the Faculty of Electrical Engineering, University of Ljubljana, conducted its work in accordance with the planned objectives, as is evident from the performance indicators annexed to this report.



*Officials UL FEE: Vice-dean for Research Assoc. Prof. Dr. Tadej Kotnik, Vice-dean for Financial Affairs Assoc. Prof. Dr. David Nedeljković, Secretary General Mag. Maja Slovenc, Dean Prof. Dr. Igor Papič, Vice-dean for Education Prof. Dr. Gregor Dolinar*

## 2. MISSION AND VISION

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### *Mission of the University of Ljubljana, Faculty of Electrical Engineering*

The University of Ljubljana, Faculty of Electrical Engineering, fosters basic, applied and development research, and strives for excellence and the highest possible quality, as well as meeting the highest ethical standards, in all fields of science and technology. In all of these areas, it is engaged in strengthening national identity, particularly by developing Slovenian technical terminology.

Based on its own research efforts, as well as on national and international research achievements, it educates critically thinking top scientists and experts capable of managing sustainable development while taking into account the European tradition of Enlightenment and humanism, as well as human rights. The Faculty pays special attention to talent development.

The Faculty encourages interdisciplinary and multidisciplinary study. Its achievements in the fields of science and technology are exchanged with other universities and scientific research institutions. In this way, the Faculty contributes its share to the Slovenian and world treasury of knowledge and, in turn, passes on this knowledge to students and other users.

The Faculty cooperates with manufacturing and service companies in the public and private sectors, as well as government bodies, local communities and civil society. In so doing, it promotes the use of its research and educational achievements and contributes to societal development. By actively responding to the developments in its environment, it acts as the critical conscience of society.

The mission of the Faculty of Electrical Engineering of the University of Ljubljana is to carry out accredited study programmes in the field of electrical engineering and scientific research work, and to successfully transfer knowledge into practice. We produce the best experts in electrical engineering and implement innovative scientific research programmes and projects in Slovenia and abroad.

The Faculty of Electrical Engineering of the University of Ljubljana builds its academic excellence through outstanding theoretical and empirical research work, the extensive publishing of scientific and professional articles, and the successful transfer of research results to the educational process and practice.

The Faculty of Electrical Engineering of the University of Ljubljana bases its research activities, education and public service, as well as the relationships between its members, on the principles of the University of Ljubljana mission statement (Source: UL Strategy 2012-2020), namely:

- to foster basic, applied and development research, and to strive for excellence and the highest possible quality;
- to meet the highest ethical criteria in all fields of science;
- to strengthen national identity, particularly by developing Slovenian technical terminology;
- to educate critically thinking top scientists and experts based on our own research efforts as well as on national and international research achievements, devoting special attention to talent development;
- to exchange its scientific achievements with other universities and scientific research institutions;
- to work with manufacturing and service companies in the public and private sectors, as well as government bodies, local communities and civil society;
- to promote the applied use of its research and educational achievements, thus making a contribution towards societal development;
- to actively respond to the developments in its environment, and to act as the critical conscience of society.

## ***Vision of the University of Ljubljana, Faculty of Electrical Engineering***

Our vision is to achieve excellent results in electrical engineering education, to exchange achievements in the field of science with other universities and scientific research institutions, to achieve resounding recognition of scientific research work nationally and internationally, and to cooperate even better with businesses, the government and local communities as well as with other civil society institutions, in a desire to contribute to the greatest possible level to social and scientific research development and progress in Slovenia.

Our vision of the future includes the introduction of numerous new IT-assisted forms of lifelong learning and training, enabling an even more intensive transfer of knowledge into practice, as well as the implementation of remote learning.

At the FEE, we will continue striving to improve our scientific and teaching excellence and to raise our international profile even further.

### 3. PRESENTATION OF THE FACULTY OF ELECTRICAL ENGINEERING

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#### 3.1 Organisation

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The Faculty of Electrical Engineering of the University of Ljubljana (hereafter: the Faculty), established by the Republic of Slovenia, is a top-notch education as well as science and research institution exercising its mandate in accordance with the Higher Education Act, the Decree on the Reorganisation of the University of Ljubljana, and the University of Ljubljana Statutes. The Faculty is a full member of the University of Ljubljana.

Faculty activities are carried out in organisational units and sub-units.  
The organisational units of the Faculty include:

- departments
- laboratories
- the Secretariat

**Departments** are autonomous organisational units of the teaching, research and development processes carried out at the Faculty. They bring together several related fields of study and expertise. The department is a form of professional cooperation and coordination between Faculty teachers, scientific researchers and Faculty associates in one or several fields at all levels of education carried out at the Faculty. Within each department, there are autonomous organisational units – laboratories – where teaching, research, development and professional work is carried out. There are a total of nine departments at the Faculty.

**Laboratories** are autonomous organisational units within departments, established to carry out teaching, research, development, professional and consultancy processes. Laboratories are individual cost centres. Laboratories can link up into centres in order to increase their R&D and consultancy competence in broader R&D fields. However, these centres never take over the basic mission of the laboratories, instead complementing this mission and building on the synergies created. Laboratory staff can also team up to form research teams, programme teams, centres of excellence, centres of competence and other organisational forms required by external institutions, with the aim of more efficient R&D work and funding acquisition. There are a total of 33 laboratories at the Faculty.

**The Secretariat** is an autonomous organisational unit performing administrative and professional technical tasks in the implementation of the National Higher Education Programme, as well as scientific research and development work at the Faculty. It consists of the following sub-units:

- the Study Affairs Department providing administrative support for teaching at the Faculty;
- the Research Department, providing administrative support for the management of scientific research projects;
- the Finance and Accounting Department;
- the Information and Communication Technology Department;
- the Library;
- the General Affairs Department, which comprises:
  - the Dean's Office,
  - the Human Resource Service,
  - the Publishing Unit,
  - the Technical Maintenance Service,
  - the Safety at Work and Fire Safety Service.

### 3.2 Faculty management

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The Faculty is managed in accordance with the Higher Education Act, the University of Ljubljana Statutes and the Rules on the Organisation and Operation of the Faculty.

**Faculty bodies** include: the Dean, the Senate, the Management Board, the Academic Assembly and the Student Council. The Faculty is managed and represented by the Dean.

**The Dean** manages, represents and acts on behalf of the Faculty and is at the same time the managing body when the Faculty performs activities under Article 16 of the UL Statutes. The Faculty has three Vice-Deans, for financial affairs, education and research, respectively.

**The Senate** of the Faculty is its highest professional body. It considers and deliberates on technical issues in the field of the educational, research and development work of the Faculty, and proposes relevant decisions to the Senate of the University of Ljubljana for adoption. The Senate consists of higher education teachers of the Faculty; its composition is based on the principle of equal representation of all scientific disciplines and professional areas, as well as of Faculty Student Council representatives. The working bodies of the Faculty Senate are: the Study Committee, the Scientific Research Committee, the HR Committee, the Quality Self-Evaluation and Accreditation Committee, and the Committee for the Recognition of Foreign Qualifications with a View to Access to Further Education. In 2013, the Faculty Senate elected the Dean of the Faculty and, at its regular sessions, addressed the issues within its competence, notably staffing and study issues, implementation of study programmes and promotion of study, measures to improve the quality of study, and student progression rates.

**The Academic Assembly** is composed of full-time higher education teachers and associates, scientists and research associates employed at the Faculty. Student representatives are also involved in its work. The Academic Assembly considers reports of the Dean and other Faculty bodies on the work of the Faculty and submits proposals and initiatives to the Faculty Senate. Representatives of the Faculty students are also involved in the discussion and decision-making process. In 2013, on the proposal of the departments, the Academic Assembly elected new Faculty Senate members and proposed to the Senate two candidates for the Dean's office.

**The Management Board** decides on the management of funds earned through activities under Article 16 of the University of Ljubljana Statutes, and ensures the smooth financial operation of the Faculty when the latter is involved in legal transactions in its name and for its account. Concerning matters under the state-funded National Higher Education Programme and the National Research and Development Programme, the Faculty Management Board decides within the powers conferred to the Faculty by the University of Ljubljana. In 2013, the Management Board of the Faculty decided in matters of an economic and financial nature, ensured the smooth operation of the Faculty, and monitored and supervised the financial plan implementation and Faculty asset management. The Board also discussed delivery and financial support for European and other research projects.

**The Student Council** discusses all matters related to the rights and duties of the students. In addition: it formulates the opinion of the Faculty students for the Student Council of the University of Ljubljana; it elects members of the working bodies of the Faculty Senate and other Faculty bodies from among the students, as stipulated by the Faculty rules; it submits its opinion on pedagogical qualifications in the procedure for the election to titles of teachers and associates; it gives its opinion on candidates for the Dean's office; and it performs other tasks resulting from decisions of the Senate or the Dean. Working together with the Faculty student community, the Student Council also adopts and implements the programme of student interest activities.

**The Dean's Cabinet** is an advisory body composed of the Dean, Vice-Deans and Secretary of the Faculty, normally meeting at weekly sessions. Members of the Extended Dean's Cabinet also include heads of departments and the president of the Student Council. The Extended Dean's Cabinet has an advisory role and meets as necessary to discuss issues related to the core activity of the Faculty.

## 4. ACTIVITIES CARRIED OUT IN 2013

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### 4.1 By activity

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#### 4.1.1 Educational activities

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The Faculty implements the National Higher Education Programme in accordance with the Higher Education Act and the University of Ljubljana Statutes. In so doing, it follows the principle of professional autonomy and the principle of professional competence stemming from the registered activity of the Faculty of Electrical Engineering, the Decree on the Reorganisation of the University of Ljubljana and the resolution of the University of Ljubljana Senate.

Furthermore, the Faculty of Electrical Engineering provides professional development and top-up training for experts from various technical professions. For this purpose, seminars, workshops and summer schools are organised and implemented. Special attention is devoted to educating young researchers, who are introduced to research and teaching under the mentorship of university teachers.

In 2013, the Faculty of Electrical Engineering offered three accredited 1<sup>st</sup> cycle undergraduate programmes, two accredited 2<sup>nd</sup> cycle programmes and one accredited doctoral programme. The Faculty also commenced the accreditation extension procedure for the 1<sup>st</sup> cycle higher professional programme Multimedia Communications, in 2013.

Due to a lack of financial resources, the accredited interdisciplinary study programme Multimedia has not been delivered.

In 2013, 1<sup>st</sup> and 2<sup>nd</sup> cycle courses for foreign students were available in English only in the form of consultations.

The Faculty of Electrical Engineering reduced the number of study places for all available programmes based on the performance analysis of 1<sup>st</sup> year students. Due to the fewer available places, the number of students dropping out prior to year end decreased, as did the number of enrolled “fictitious” students who did not pass any exams. Consequently, the progression rate between various years of study also improved.

##### 4.1.1.1 1<sup>st</sup> cycle

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In 2013, education in undergraduate programmes progressed according to the adopted plan.

In the 2013/2014 academic year, the Faculty is executing the following Bologna 1<sup>st</sup> cycle undergraduate study programmes:

- University study programme **Electrical Engineering**
- Higher professional study programme **Applied Electrical Engineering**
- Higher professional study programme **Multimedia Communication**

##### 4.1.1.2 2<sup>nd</sup> cycle

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In the 2013/2014 academic year, the Faculty is executing the following Bologna 2<sup>nd</sup> cycle postgraduate study programmes:

- Master’s study programme **Electrical Engineering**
- Interdisciplinary master’s study programme **Applied Statistics**

In 2013, the 2<sup>nd</sup> year of the master's study programme Electrical Engineering was delivered for the first time. The progression rate from the 1<sup>st</sup> to the 2<sup>nd</sup> year was 69.42%. Of the students who passed the selection exam and enrolled in the 1<sup>st</sup> year, 63.87% were 1<sup>st</sup> cycle university programme graduates, 11.76% were graduates of the higher professional programme Applied Electrical Engineering, 17.65% were graduates of the old higher professional programme, and 6.72% were graduates of other faculties. In comparison to 2012, there was a slight increase in the share of university programme graduates, while the number of graduates of the old higher professional programme dropped by about 20%.

In 2013, the interdisciplinary 2<sup>nd</sup> cycle master's study programme **Applied Statistics** was launched. The programme is offered as part-time study.

#### 4.1.1.3 3<sup>rd</sup> cycle

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In the 2013/2014 academic year, the Faculty is conducting the 3<sup>rd</sup> cycle doctoral study programme **Electrical Engineering** as well as participating in the implementation of the interdisciplinary doctoral study programme Bioscience, in which it coordinates the field of **Nanoscience**, and in the interdisciplinary doctoral study programme Statistics, in which it coordinates the field of **Technical Statistics**.

**In the 2013/2014 academic year, 76 students** enrolled in the 3<sup>rd</sup> cycle Bologna doctoral study programme Electrical Engineering: 23 in the 1<sup>st</sup> year, 24 in the 2<sup>nd</sup> year, and 29 in the 3<sup>rd</sup> year.

By submitting and successfully defending their doctoral theses, **17 students-doctorands completed the programme** in 2013 and acquired the scientific title of Doctor of Science.

#### 4.1.1.4 Internationalisation in education

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The Faculty of Electrical Engineering endeavours to increase the number of exchange students, both Slovenian students who intend to complete part of the study process abroad, and foreign students, who intend to complete part of their study at the FEE. In 2014, some 2<sup>nd</sup> cycle subjects will also be delivered in English.

### 4.1.2 Research and development activities

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Research work at the Faculty is conducted by the Faculty laboratories, as well as by programme and research groups. In 9 departments, there are 33 research laboratories bringing together the research efforts of pedagogical and scientific staff, researchers, young researchers and other associates.

Research programmes and projects are carried out on the basis of public calls published by the ministries and agencies of the Republic of Slovenia. We also work with Slovenian industry and take part in projects within framework programmes and other programmes of the European Community, centres of excellence and competence centres.

The research activity of the Faculty of Electrical Engineering is very diverse. There are 33 research laboratories carrying out 15 research programmes and one infrastructure programme, as well as 35 research projects of the Slovenian Research Agency, comprising 20 basic projects and 15 applied projects. Currently, 2 bilateral projects with 2 countries and 118 market projects for national and international companies are being conducted. The Faculty participates in 12 projects of the Seventh Framework Programme of the European Community, as well as in 15 other EU projects (2 SEE, 1 ALPINE SPACE, 3 EMRP, 1 INTERREG, 1 CIP, 4 COST, 3 TEMPUS). For 2014, the Faculty was awarded 10 new mentor positions for young researchers. The Faculty has 44 young researchers funded through the Slovenian Research Agency, 8 young researchers funded through the ESPIRIT agency, and 7 early career researchers, funded through the Ministry of Education, Science and Sport.

All of this is made possible by the first-rate experts, modern laboratory equipment and ramified activities of the Faculty of Electrical Engineering, covering the fields of Electrical Power Engineering,

Photovoltaics, Electronics, Microelectronics, Optoelectronics, Microsensors, Nanostructures, Mechatronics, Embedded Systems, Intelligent Systems, Control Systems, Robotics, Metrology and Quality Engineering, Biomedical Engineering and Informatics, ICT and Multimedia Systems.

In 2013, the Faculty was involved in **15 research programmes** with total programme funding of **EUR 1.59 million** or **27.43 FTE** (in 2012, EUR 1.58 million or 27.09 FTE). The Faculty coordinates or autonomously conducts 12 research programmes and participates in 3 research programmes coordinated by the Jožef Stefan Institute. The Faculty also runs the infrastructural centre of the Laboratory of Biocybernetics (1 FTE) as part of the infrastructure programme Network of Research Infrastructure Centres at the University of Ljubljana (MRIC UL). In 2013, five research programmes came to a close; however, based on the public call to submit research programmes for the next funding period and reports on the results of the research programmes, all of these programmes have been reselected for funding over the next 3–6 years (Table 4.1.2-1).

**Table 4.1.2-1:** Research programmes at the FEE in 2013, scope and duration of funding

CODE	PROGRAMME TITLE	FTE		DURATION
		at FEE	total	
P2-0257	Systems on chip with integrated optical, magnetic and electrochemical sensors	5.00	5.00	1.1.09 – 31.12.13 <sup>c)</sup>
P2-0246	Algorithms and optimization methods in telecommunications	4.14	4.14	1.1.09 – 31.12.14
P2-0249	Electroporation in biology, biotechnology and medicine	3.10	3.10	1.1.09 – 31.12.14
P2-0197	Photovoltaics and electronics	2.30	2.30	1.1.09 – 31.12.14
P2-0258	Electric power converters and controlled drives	2.20	2.20	1.1.09 – 31.12.13 <sup>d)</sup>
P2-0232 <sup>a)</sup>	Functions and technologies of complex systems	2.10	2.30	1.1.09 – 31.12.14
P2-0219	Modelling, simulation and control of processes	1.80	1.80	1.1.09 – 31.12.14
P2-0228 <sup>a)</sup>	Motion analysis and synthesis in man and machine	1.60	1.80	1.1.09 – 31.12.14
P2-0244	Microstructures and nanostructures	1.40	1.40	1.1.09 – 31.12.13 <sup>d)</sup>
P2-0225	Metrology and quality	1.30	1.30	1.1.09 – 31.12.14
P2-0356	Power systems	1.19	1.19	1.1.13 – 31.12.15
P2-0250 <sup>a)</sup>	Metrology and biometric systems	0.90	1.19	1.1.13 – 31.12.17
P2-0095 <sup>b)</sup>	Parallel and distributed systems	0.25	4.00	1.1.09 – 31.12.13 <sup>e)</sup>
P1-0135 <sup>b)</sup>	Experimental elementary particle physics	0.09	7.29	1.1.09 – 31.12.14
P2-0073 <sup>b)</sup>	Reactor physics	0.06	4.80	1.1.09 – 31.12.13 <sup>c)</sup>
	<b>Total</b>	<b>27.43</b>		

a) the programme is coordinated by the FEE, other institutions participate; b) the programme is coordinated by another institution, the FEE participates

c) reselected for funding until 31.12.19; d) reselected for funding until 31.12.17

e) reselected for funding until 31.12.16

Additional co-funding of the programme groups has been granted to the Faculty due to the involvement of programme group members in current projects of EU framework programmes, as shown in Table 4.1.2-2.

**Table 4.1.2-2:** Additional funding of programme groups at the FEE in 2013 due to the involvement of their members in current projects of EU framework programmes.

CODE	PROGRAMME TITLE	AMOUNT in EUR
P2-0197	Photovoltaics and electronics	18,193.36
P2-0228	Motion analysis and synthesis in man and machine	13,262.76
P2-0250	Metrology and biometric systems	7,357.12
P2-0356	Power systems	5,274.08
P2-0258	Electric power converters and controlled drives	1,761.72
P2-0246	Algorithms and optimization methods in telecommunications	1,313.86
	<b>Total</b>	<b>47,162.90</b>

#### 4.1.2.1 Research projects of the Slovenian Research Agency

In 2013, a total of **37 research projects** of the Slovenian Research Agency (ARRS) were active: 18 basic projects, 15 applied projects and 4 post-doctoral projects (Table 4.1.2-3). For 6 of these 37 projects, funding came to an end in 2013, but as many as 13 of the projects were new, with an implementation starting date of 1 August 2013 and funding until 31 July 2016. For 21 projects, the Faculty acted as an autonomous contractor or a coordinator.

The volume of project funding by the Slovenian Research Agency in 2013 amounted to **EUR 784 thousand** or **14.23 FTE**, which, despite the successful acquisition of new projects, represents a continued and marked trend of reduced funding for the research projects of the Slovenian Research Agency (in 2012: EUR 930 thousand or 17.7 FTE; in 2011: EUR 1.1 million or 18.5 FTE). In 2014, the funding of as many as 18 projects of the Slovenian Research Agency will come to an end. Therefore, despite the planned applications in the upcoming public calls, a drop in the volume of annual research project funding can be realistically expected this year too.

**Table 4.1.2-3:** Research projects of the Slovenian Research Agency at the FEE in 2013, scope and duration of funding

CODE	PROGRAMME TITLE	FTE		DURATION
		at FEE	Total	
L2-4122	Drug Delivery Microsystem	1.12	1.65	1.7.11 – 30.6.14
J4-4324	Gene electrotransfer of muscle – from studies on single cells to numerical optimization of parameters in tissue	0.99	1.65	1.7.11 – 30.6.14

CODE	PROGRAMME TITLE	FTE		DURATION
		at FEE	Total	
L2-4105	Development and validation of a software for numerical modelling of in vivo electroporation – in silico electroporation	0.82	1.65	1.7.11 – 30.6.14
J1-4131 <sup>a)</sup>	Synthesis, characterisation and use of novel ruthenium compounds in electrochemotherapy of tumours	0.79	1.65	1.7.11 – 30.6.14
J2-3639	New lipid model systems for determination of electroporation basic mechanisms	0.70	1.10	1.5.10 – 30.4.13
J2-4284 <sup>a)</sup>	Learning, analysis, and detection of motion in the framework of a hierarchical compositional visual architecture	0.65	1.65	1.7.11 – 30.6.14
J2-5466	Nanostructures for high-efficiency solar cells and photovoltaic modules	0.55	0.69	1.8.13 – 31.7.16
J2-5473	Image-guided endovascular interventions	0.54	0.69	1.8.13 – 31.7.16
L2-4289	Quality of service and quality of experience measurement and control system in multimedia communications environments	0.53	1.65	1.7.11 – 30.6.14
L2-4314 <sup>a)</sup>	Development of new technologies for the removal of pathogenic agents and toxins from different water sources	0.50	1.48	1.7.11 – 30.6.14
Z2-4189	Short- and long-term internal processes during operation of dye-sensitized solar cells	0.50	0.50	1.7.11 – 30.6.13
Z2-4312	Development of a web based application for an interactive learning and planning of electroporation based therapies and treatments	0.50	0.50	1.7.11 – 30.6.13
Z2-4152	Printed TiO2 layers for optoelectronic devices	0.50	0.50	1.7.11 – 30.6.13
L2-4072	Complex hyperspectral system for automatic analysis and control of pharmaceutical pellet coating processes	0.49	1.65	1.7.11 – 30.6.14
L3-4299 <sup>a)</sup>	Intraoperative monitoring of the optic nerve function during neurosurgery using photoplethysmography - a new application for intraoperative vision preservation	0.41	0.83	1.7.11 – 30.6.14
Z2-4214	Biometric face recognition in ambient intelligence environments (BAMBI)	0.37	0.37	1.7.11 – 30.6.13
J7-5497 <sup>a)</sup>	Selective and hypersensitive microcapacitive sensor system for targeted molecular detection in the atmosphere	0.37	0.61	1.8.13 – 31.7.16
J2-3625	Determination and evaluation of irregular solar activities' impact to satellite positioning	0.37	0.55	1.5.10 – 30.4.13
L2-5472	Visual analysis of orderless pharmaceutical tablets in mass production processes	0.34	0.69	1.8.13 – 31.7.16
L2-5471 <sup>a)</sup>	Intelligent robot for walking training	0.34	0.69	1.8.13 – 31.7.16

CODE	PROGRAMME TITLE	FTE		DURATION
		at FEE	Total	
L2-4263	Development of active distribution network concepts within an open service platform	0.33	1.65	1.7.11 – 30.6.14
J2-4273 <sup>a)</sup>	Oxide-based components for transparent electronics	0.30	1.48	1.7.11 – 30.6.14
J4-4115 <sup>a)</sup>	Development of advanced electrochemical sensors for in vitro and in vivo studies of brain development and function	0.28	1.48	1.7.11 – 30.6.14
L2-5476 <sup>a)</sup>	Optimisation of energy cost for refrigeration systems in shopping malls	0.27	0.69	1.8.13 – 31.7.16
J1-4109 <sup>a)</sup>	Interactions between nanoparticles with different surfaces and model biological systems	0.25	2.13	1.7.11 – 30.6.14
L7-5459 <sup>a)</sup>	Graph models and algorithms applied to parameterizing base stations of fourth generation	0.17	0.69	1.8.13 – 31.7.16
L2-5481	Use of wireless sensor devices for motion analysis and bio-feedback	0.17	0.69	1.8.13 – 31.7.16
J2-5495	Measuring psychophysiological parameters as input data for computerized adaptive testing	0.14	0.34	1.8.13 – 31.7.16
J3-5505 <sup>a)</sup>	Electrochemotherapy in treatment of deep seated tumours	0.14	0.34	1.8.13 – 31.7.16
J2-5482 <sup>a)</sup>	Tunable ferroelectric thin film capacitors for agile microwave antennas	0.12	0.61	1.8.13 – 31.7.16
J1-4136 <sup>a)</sup>	Modifications of surface of metallic biomaterials and their interaction with bio-environment	0.12	1.65	1.7.11 – 30.6.14
J3-4211 <sup>a)</sup>	Antiangiogenic gene therapy of cancer using electroporation and magnetic nanoparticles as targeted delivery systems	0.10	1.48	1.7.11 – 30.6.14
L7-4009 <sup>a)</sup>	Functionalization of biomedical samples by thermodynamic non-equilibrium gaseous plasma	0.10	1.48	1.7.11 – 30.6.14
J3-4108 <sup>a)</sup>	Microvesicles as risk factors for secondary thromboembolic events	0.10	0.83	1.7.11 – 30.6.14
J5-4281 <sup>a)</sup>	RAZKORAK Longitudinal study in competence potential of university graduates and a gap between graduates' competences and labour market requirements in technology, education and health	0.10	1.06	1.7.11 – 30.6.14
L7-5534 <sup>a)</sup>	Development of novel technologies for detection, quantification and characterisation of bacteriophages	0.10	0.61	1.8.13 – 31.7.16
L2-5571 <sup>a)</sup>	New materials for printed sensors and indicators and their integration in smart printed matter	0.06	0.61	1.8.13 – 31.7.16
	<b>Total</b>	<b>14.23</b>		

a) the programme is coordinated by another institution, the FEE participates

#### 4.1.2.2 Young researchers

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In 2013, the Faculty provided training to **33 young researchers under the Slovenian Research Agency programme and to 15 young researchers from the business sector under the Slovenian Technology Agency programme**. This included 19 young researchers from the Slovenian Research Agency and 7 young researchers from the business sector of the Slovenian Technology Agency who completed their training. In 2013, the Faculty welcomed 10 new young researchers under the Slovenian Research Agency programme, all of whom entered the training in autumn.

#### 4.1.2.3 Centres of excellence and competence centres

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In 2013, the Faculty participated in three centres of excellence and five competence centres, thus strengthening and promoting the development of partnerships with the business sector. All of the centres of excellence and competence centres in which the laboratories of the Faculty participated completed their activity in 2013 (Tables 4.1.2-4 and 4.1.2-5). Co-funding of the competence centres at the Faculty by the Ministry of Education, Science and Sport in 2013 amounted to **EUR 980 thousand**.

**Table 4.1.2-4:** Centres of excellence with FEE participation in 2013.

<b>CENTRE OF EXCELLENCE</b>	<b>PARTICIPATING FEE LABORATORIES</b>	<b>APPLICANT</b>
Centre of Excellence NAMASTE, Advanced Materials and Technologies for the Future	LMFE, LNIV, LMSE	IJS
Centre of Excellence for Biosensors, Instrumentation and Process Control	LSO, LNIV	UL EF
Centre of Excellence for Space Sciences and Technologies	LSO, LAIP, LMSV, LDOS	UL NTF

**Table 4.1.2-5:** Competence centres in which the FEE participated in 2013 and received co-funding from the Ministry of Education, Science and Sport.

ACRONYM	COMPETENCE CENTRE	CO-FUNDING OF THE MINISTRY OF EDUCATION, SCIENCE AND SPORT FOR THE FEE IN 2013 (in EUR)	NUMBER OF ALL PARTICIPATING GROUPS	APPLICANT
KC OPCOMM	Competence Centre – Open Communication Platform for Integrated Services	430,827.54	8	Zavod TM ICT
KC BME	Competence Centre – Biomedical technology	175,807.81	12	Zavod LAHA
KC SURE	Competence Centre – Advanced Systems for the Efficient Use of Electrical Energy	157,217.50	15	TECES
KC STV	Competence Centre for Advanced Control Technologies	129,745.85	18	Zavod Center ARI
KC CLASS	Competence Centre – Cloud Computing Services	87,231.57	17	Zavod e-oblak
	<b>Total</b>	<b>980,830.27</b>		

#### 4.1.2.4 International projects

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In 2013, the Faculty participated in 30 EU projects: 14 projects of the Seventh Framework Programme (FP7), 4 projects of the COST programme, 3 projects of the TEMPUS programme, 3 projects of the Metrology Research Programme (EMRP), 2 projects of the SEE programme and 1 project of each of the following programmes: AAL, ALPINE SPACE, CIP, INTERREG and IPA (Table 4.1.2-6). In 2013, the funding received for the implementation of these projects at the Faculty was **EUR 1.32 million**.

#### 4.1.2.5 Bilateral projects

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In 2013, the Faculty participated in **12 bilateral projects** with research institutions from **8 foreign countries** (Table 4.1.2-7). Compared to 2012, when there were as many as 26 bilateral projects, this represents a marked decrease, resulting mostly from the significantly reduced scope of published bilateral projects by the Slovenian Research Agency.

#### 4.1.2.6 Research and development cooperation with the business sector

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The Faculty laboratories are developing various forms of R&D cooperation with Slovenian industry: education of young researchers from the business sector, participation in centres of excellence, centres of competence, technology platforms and networks, and implementation of R&D projects. Project-based cooperation is facilitated by public calls published by ministries and public agencies, which encourage joint applications, partnerships on applied projects, and the involvement of complementary partners, whether institutions of knowledge or businesses, in particular: co-funding and partnership in applied projects of the Slovenian Research Agency, certain public calls of the Ministry of Education, Science and Sport (e.g., early career researchers), and public calls published by the Slovenian Technology Agency. In 2013, the Faculty had 118 different contracts with Slovenian and foreign companies, **amounting to a total of EUR 2.36 million, of which EUR 1.95 million was with**

**Slovenian partners and EUR 412 thousand was with foreign partners.** The level of funding and the implementation dynamic of market projects vary a great deal. Smaller projects with a value of around ten thousand euros prevail (approx. one half), while other projects exceed one hundred thousand euros in value. Most projects last for at least one year, but some have a duration of only a few months while others continue for several years. Project work in conjunction with industry is an important source of income for the Faculty. In 2013, the volume of contract-based cooperation between the Faculty and the business sector dropped by about one fifth (in 2012, it amounted to EUR 3 million).

In 2013, we also won 13 “Research Voucher” projects involving cooperation with the business sector, published by the Ministry of Education, Science and Sport, with funding for 2013 **totalling EUR 592 thousand** (Table 4.1.2-6).

**Table 4.1.2-6:** Funding of “Research Voucher” projects in 2013

<b>PARTNER FROM THE BUSINESS SECTOR</b>	<b>AMOUNT in EUR</b>	<b>DURATION</b>
AVIAT D.O.O.	87,500.00	01.01.13 – 31.03.14
TELEKOM SLOVENIJE D.D.	86,400.00	01.01.13 – 31.08.14
RLS D.O.O.	64,000.00	10.04.13 – 31.12.13
BISOL GROUP D.O.O.	60,000.00	21.05.13 – 31.12.13
ISKRA MEDICAL D.O.O.	60,000.00	18.03.13 – 31.12.14
ALPINEON D.O.O.	42,900.00	02.01.13 – 31.07.14
EC D.O.O.	42,858.00	30.01.13 – 31.12.13
METRONIK D.O.O.	40,000.00	29.11.13 – 30.06.15
HIDRIA AET D.O.O.	30,000.00	10.04.13 – 31.12.14
HARPHA SEA D.O.O.	29,000.00	22.12.12 – 31.12.14
INETR SOCKS D.O.O.	25,000.00	01.03.13 – 31.12.15
COSYLAB D.D.	14,286.00	28.01.13 – 31.12.14
TMG-BMC D.O.O.	10,714.00	21.01.13 – 31.07.14
<b>Total</b>	<b>592,658.00</b>	

#### 4.1.2.7 Scientific and academic publications, citations and patents

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In 2013, Faculty members published 186 scientific articles in journals with a JCR impact factor and four scientific monographs with recognised international publishers; in addition, they were granted seven foreign and international patents. Four scientific articles were published in journals ranking first or second within their subject category according to the impact factor; a total of 61 articles were published in journals appearing in the first quartile within their subject category. Both the total number of articles and the number of articles in the first quartile grew in comparison with 2012 (when the total number of articles published in journals with an impact factor came to 168, and those in the first quartile numbered 58), which testifies to the scientific research success in both quantitative and qualitative terms.

Scientific articles published in 2013 by Faculty members have already received 72 pure citations. Between 2000 and 2013, articles by Faculty members received 18,794 pure citations, and the number of both articles published and pure citations received is growing rapidly. The gradual increase in the number of joint publications with foreign co-authors is also encouraging: in 2013, out of 186 articles in journals with an impact factor, 53 were published in co-authorship with foreign authors (in 2012: 51 out of 168; in 2011: 49 out of 166; in 2010: 40 out of 146).

**Table 4.1.2-7:** Number of published articles in journals with an impact factor and number of received pure citations by year, 2000-2013.

YEAR	2000	2001	2002	2003	2004	2005	2006
PUBLISHED ARTICLES	78	86	81	115	97	103	95
PUBLISHED ARTICLES IN THE 1 <sup>ST</sup> QUARTILE OF THE IF	21	25	31	25	33	30	29
RECEIVED PURE CITATIONS	229	294	361	428	565	746	962

YEAR	2007	2008	2009	2010	2011	2012	2013
PUBLISHED ARTICLES	115	147	121	154	166	168	186
PUBLISHED ARTICLES IN THE 1 <sup>ST</sup> QUARTILE OF THE IF	33	58	41	48	55	58	61
RECEIVED PURE CITATIONS	1167	1352	1720	2115	2727	2946	3182

#### Monographs issued by foreign publishers:

1. KRČ, Janez, TOPIČ, Marko. *Optical Modelling and Simulation of Thin-Film Photovoltaic Devices*, CRC Press, 2013.
2. MIHELJ, Matjaž, NOVAK, Domen, BEGUŠ, Samo. *Virtual reality technology and applications*, Springer, 2013.
3. MIHELJ, Matjaž, PODOBNIK, Janez. *Haptics for virtual reality and teleoperation*, Springer 1. 2013.
4. BAJD, Tadej, MIHELJ, Matjaž, MUNIH, Marko. *Introduction to robotics*, Springer, 2013.

#### 4.1.2.8 Awards and recognitions

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**Outstanding scientific achievements** in the category of technical science recognised by the Slovenian Research Agency in 2013:

- **Izr. prof. dr. Marko Tomaž Čepin:** “Improvement of Nuclear Power Plant Safety”
- **Doc. dr. Mojca Pavlin:** “Development of Magnetic Nanoparticles for Biomedical Applications”
- **Prof. dr. Franjo Pernuš:** “A Review of 3D/2D Registration Methods for Image-Guided Interventions”
- **Izr. prof. dr. Damijan Miljavec:** “Claw-Pole Dynamoelectric Machine”
- **Doc. dr. Matej Kristan:** “Robust Visual Tracking Using an Adaptive Coupled-Layer Visual Model”

#### University of Ljubljana Rector’s “Best Innovation Award”:

- 1<sup>st</sup> place was awarded to the Laboratory of Biocybernetics team for the **ECTplan** innovation.
- 2<sup>nd</sup> place went to the Laboratory of Robotics team for the **BiMeo** project.

#### Vodovnik Awards

- **Dr. Dejan Dovžan** for his resounding PhD thesis entitled “*Recursive Fuzzy Identification in Process Control*”, mentor: prof. dr. Igor Škrjanc.
- **Prof. dr. Janez Krč** for outstanding research achievements.

#### Bedjanič Award

**Miha ČUK** for the Master’s thesis (Master’s of Science) *Design and Implementation of an AC Converter in High-Efficiency Circulating Pumps*, mentor prof. dr. Andrej Žemva.

## University of Ljubljana Awards

- Golden Plaque: **prof. dr. Drago Matko**
- Certificate of Achievement: **doc. ddr. Melita Hajdinjak**

## Vidmar Awards

- Mentors supervising practical training from the company Kolektor Sinabit: **Gregor Janc, Gašper Lukan, Gregor Selak Andrej Zeme.**
- Teaching assistant: **doc. dr. Tomaž Vrtovec.**
- Teacher: **izr. prof. dr. Andrej Košir.**

### 4.1.3 Knowledge transfer and use – University's third dimension

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The Faculty of Electrical Engineering has traditionally developed good **cooperation with its environment**: the Faculty earns up to 20% of funding through direct contracts for R&D work with the business and public sectors. In 2013, we undertook the strengthening of our ties with the business sector in an even more organised way. In addition to maintaining existing strategic development partnerships and joint projects, we organised get-to-know events with the companies Iskraemeco and Kolektor Group, respectively.

The transfer and use of knowledge from the Faculty to the business sector takes place in a number of forms involving R&D cooperation with industry: the training of young researchers from the business sector, participation in centres of excellence, competence centres, technological platforms and networks, and implementation of R&D projects for businesses. In 2013, the Faculty trained **15 young researchers from the business sector**, participated in **three centres of excellence** and **five competence centres**, and carried out 118 different contracts with businesses **totalling EUR 2.36 million**.

At the end of November, an annex was signed at the University of Ljubljana on the enlargement of the French-Slovenian international research laboratory LEA EBAM, of which the Laboratory of Biocybernetics, FEE, UL, is an important member.

In addition to our core activity, i.e., the education of future generations of electrical engineers, we organise various professional seminars and conferences (Industrial Robotics Days, Days of Electrical Engineering in Bistra, Days of Control Systems, Radiocommunications Seminar, Optical Communications Seminar, Electrotechnical and Computer Science Conference – ERK, International Seminar of Multimedia Technologies: New Approaches in Acoustics and Sound, International Scientific Workshop and Postgraduate Course EBTT (Electroporation-Based Technologies and Treatments), etc.), thus demonstrating that we are also focused on **lifelong learning**; in the future, we plan to further strengthen these activities.

In addition, we are endeavouring to settle the legal basis for the founding of new spin-offs and the transfer of technologies to industry.

In 2013, the Faculty of Electrical Engineering established the **Alumni Club of the Faculty of Electrical Engineering of the University of Ljubljana** (UL FEE), a professional, scientific and social meeting point for FEE graduates of all study programmes and all generations. The Alumni Club encourages the maintaining of ties and networking between FEE graduates, as well as between graduates and Faculty teachers, collaborators and partners. Membership in the Club is free; one only needs to complete the membership application on the website. Through the growth of the Club and commitment to the profession, we can together make a contribution to developing relationships between the academic and business spheres, as well as to the development and promotion of interdisciplinary cooperation between the Faculty, its graduates and institutions on the national and international levels.

**The University of Ljubljana Career Centre** continued its work at the Faculty of Electrical Engineering in 2013 by conducting workshops on complementary soft skills, as well as by co-funding two professional excursions for students. The Career Centre counsellors help students with:

- career planning during study (drafting a career plan, establishing links with employers, acquiring work experience, networking, membership in professional associations and organisations, etc.);
- activities during the course of study to improve employability after graduation;
- employment opportunities upon the completion of study;
- continuation of study;
- preparing a written presentation to potential employers;
- preparation for a personal presentation to the employer and job interview simulation.

#### 4.1.4 A creative environment for work and study

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The Faculty is constantly renovating its laboratories and teaching spaces, as well as modernising the laboratory equipment so as to offer top-notch education technology to its students, including state-of-the-art hardware and software. Numerous computers in the lobby, in front of the library and in some corridors are freely available to the students; furthermore, the entire Faculty premises are covered by the Eduroam Wi-Fi network, allowing free internet access.

At the Faculty, we involve senior students extensively in applied projects for industry, allowing them to establish initial contacts with businesses and their future employers.

##### 4.1.4.1 Extracurricular and interest activities, student services

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At the Faculty of Electrical Engineering, extracurricular activities have always had a strong presence, and are a high-quality complement to educational and scientific research work. The Faculty cooperates successfully with a number of organisations that have their seat at the FEE – the FEE Student Council and the FEE Students' Organisation, the Sports Club of the FEE and the Faculty of Computer and Information Science (FRI), the Slovenian section of the IEEE and its student branch – as well as with numerous organisations based outside the Faculty premises – the Association for Technical Culture of Slovenia, the association Stromar.si, EESTEC LC Ljubljana (Electrical Engineering Students European assoCiation), AIESEC Slovenia, BEST (Board of European Students of Technology), MENSA Slovenia, the Society of Young Researchers of Slovenia, the Electrotechnical Association and the Association of Radio Amateurs. We also cooperate well with the UL Career Centre. Established in 2013, the Alumni Club of the Faculty of Electrical Engineering can also be counted amongst our successful extracurricular activities. Within the framework of the Faculty of Electrical Engineering, the Laboratory for Telecommunications runs the OpenLab in Kranj, which is becoming increasingly visible in the local environment as a centre for young people and a meeting point of knowledge, educational institutions and entrepreneurship. As such, it has developed into an important venue for extracurricular activities (workshops, presentations, lectures, etc.) and for the promotion of the Faculty of Electrical Engineering.

**The FEE Student Council**, as a Faculty body, addresses current topics at its sessions, such as the extension of accreditation for the Bologna 1<sup>st</sup> cycle programme. Council members participate in the FEE Senate and its committees – in 2013, they participated in the election of the Dean for the 2013-2015 term. In the previous year, the Student Council carried out several projects, autonomously or in cooperation with other organisations, the Faculty and its clubs. For the fourth consecutive year, the Faculty organised the Introduction to the Study of Electrical Engineering for freshmen – a revision course covering high school mathematics and physics applied to electrotechnical problems. It is also a get-to-know event lasting several days, where future students have an opportunity to meet their fellow students. In October 2013, FEE Student Council members organised the traditional second-hand study book fair.

**The FEE Student Organisation** carried out numerous activities for students in 2013: a professional excursion to Munich, Skiopening, the second-hand book fair (together with the Student Council), the Charity Week (together with the Student Council), a picnic for the FEE and Faculty of Computer and Information Science (in cooperation with EESTEC), the freshmen inauguration party, a trip to Amsterdam with participation at the Batavierenrace (with around 8,500 participants from all over Europe), a surfing trip to Bol, and an Introduction to the Study of Electrical Engineering (together with the Student Council).

## **SPORT AT THE FACULTY**

In the 2012/2013 academic year, the Faculty re-introduced physical education, which is available to 2<sup>nd</sup> year students enrolled in the higher professional study programme Applied Electrical Engineering as an elective subject worth five credit points.

As part of the physical education programme in 2013, the students were able to choose from among various sports disciplines: swimming, ball games, basketball, volleyball, indoor football, fitness and jogging. Within the programme of outdoor sports activities – which are part of the regular physical education programme – mountaineering, cycling and ski trips were organised, as well as backcountry skiing and tennis classes.

### **Sports Club of the FEE and FRI**

The Sports Club of the FEE and FRI has brought together students and staff of both faculties for more than a decade. The mission of the Club is to involve as many members and supporters as possible. The Club organises skiing and mountaineering trips for students and staff, and passes on sports knowledge in the form of lessons and lectures.

The president of the Club is Dr Miha Fošnarič. In 2013, the Club was involved in the following activities:

The FEE teams participated in:

- the university football/futsal league,
- the university volleyball league,
- the university basketball league,
- the university regatta,
- the university competitions for individuals.

Members of the Club participated in the following recreational competitions:

- running marathons – (Ljubljana marathon),
- cycling marathon – (Cherries in Goriška Brda).

#### **4.1.4.2 Library and editorial activities**

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## **LIBRARY**

The FEE and FRI library is a joint library of the Faculty of Electrical Engineering and the Faculty of Computer and Information Science with a joint library stock (FERLJ). Its users include students, teachers and researchers from both faculties. Through active participation in the UL Library System Development Committee and in two of its working groups, and through external membership in the Advisory Council of the National and University Library, the Library contributes actively to the development of the UL library system. The library employs five professional librarians (head/FEE + 3/FEE + 1/ FRI). Wherever possible, data is available separately; if not, it is shared by both faculties.

**Findings:** In both faculties, the ratio between active and potential users of the library increased as compared to 2012 (FEE from 74.3% to 76.5%; FRI from 67.9% to 70.2%; in total from 71.6% to 73.9%). We assume that the increase in the number of active users was influenced by a higher number of study book copies available, introductory presentations of the library for 1<sup>st</sup> year students (at the FEE) and a higher demand for the use of the reading rooms. In order to further increase the percentage

of active library users, continuous and systematic activities will be necessary again in 2014, both in terms of working with the teaching staff to determine the needs for study literature and of promoting library and IT literacy among students.

### **Increase of the library stock**

In 2013, **1,005 library items** were purchased for the needs of the **FEE** (271 units less than in 2012).

**Findings:** Compared to 2012, the stock expansion was 21.2% lower. The reasons lie particularly in the severe austerity measures, i.e., fewer purchased monographs for the needs of education and research, and the cancellation of 32 periodic publications, which, however, we managed to replace with the possibility of e-access to the full texts of these publications.

## **PUBLISHING**

The publishing unit of the Faculty of Electrical Engineering and the Faculty of Computer and Information Science (Založba FE in FRI) publishes study aids for both faculties: textbooks, workbooks, instructions for tutorials and laboratory practice, professional manuals and, occasionally, monographs. The publishing unit provides for the relevant descriptors and cataloguing of items in the National University Library. Once a year, the publishing unit launches a public call for the publishing of study aids. The Editorial Board (FEE) and the Printing Committee (FRI) draft and approve the publishing plan. In 2013, the publishing unit's results followed the set goals. We issued and published **26** study aids in a total of **2,562** copies. In its bookstore, the publishing unit also offers books issued by the publishers Tehniška založba Slovenije and Buča. Our textbooks are also sold through other bookstores, such as the Konzorcij and Nebotičnik bookstores of Mladinska knjiga Trgovina.

### **4.1.5 Quality management for excellence in all fields of activity**

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Quality in science and research at the Faculty is monitored through scientific performance indicators. Over the last two decades, the number of publications in journals with an impact factor has been regarded as the most important indicator, but a comparison with other EU members has revealed that we are already above the average according to this indicator. We are, however, lagging behind in terms of publications in leading journals and the share of cited publications (among publications of Slovenian researchers in journals with an impact factor in 2008-2012, as many as 40% have not had a single citation, whereas the EU average was 31%). Therefore, we have recently been devoting a great deal of attention to publications in the most prestigious journals and received pure citations. As shown in Table 4.1.2-7 (chapter 4.1.2), there has been a breakthrough over the recent years, since both the number of articles in the first quartile and the number of received citations are growing rapidly, despite a marked drop in the funding of scientific research activity at the Faculty.

#### **4.1.5.1 Quality system management**

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At the FEE, we are making every effort to carry out activities providing for the monitoring and development of quality. Feedback loop principles, which are also significant in numerous scientific disciplines, are applied to all fields of activities conducted at the FEE, as is evident from the present report. It is therefore understandable that all of our staff are actively involved in this dynamic process. In addition to other bodies of great relevance to the quality of performance, the FEE also has a Self-Evaluation and Accreditation Committee, which meets on a regular basis and considers current issues, with any decisions or initiatives being referred to the Faculty management and staff. Furthermore, a report on quality monitoring and assurance at the FEE is produced every year. This year, the report has been integrated into the Business Report.

#### 4.1.5.2 Quality monitoring and improvement mechanisms

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At the FEE, we have conducted a Student Survey for many years in a desire to better understand the students' perspective on the study process and to improve the study process.

In 2013, we continued the practice of carrying out **surveys among our graduates** in order to highlight the following social issues, which are extremely topical in these times:

- Is there a need for our graduates on the labour market? (monitoring the employability of our graduates)
- Are these needs reflected in the readiness of Slovenian companies to offer scholarships to students?
- What proportion of our students start working during the course of study, and to what extent is such work related to the profession for which they are being trained? (relevance of the study programmes to the student career)
- How much interest is there among our graduates in continuing their education, and does this depend on other factors?
- Together with replies to the survey questions, we also collect graduates' general assessment of the study quality as well as their opinions and ideas on how to improve the learning process further.

The findings and conclusions arising from the surveys are:

Most of the burden for enabling our students to study rests on the shoulders of their parents and the state, as only about a third of the graduates involved confirmed that they had received some sort of corporate scholarship. Compared to 2012, we can nonetheless observe a larger share of those who reported receiving a corporate scholarship. A similar situation is reflected in a survey conducted among graduates after one year. The share of students who did not receive a scholarship during their study is on the increase. This is particularly notable among students in a higher professional programme.

The relatively low number of scholarships is probably reflected at least in part in the considerable share of students (almost half) with occasional part-time jobs. The share of students with full-time employment while studying full-time is small; not surprisingly, in the new 1<sup>st</sup> cycle Bologna programme, none of the students reported being in full-time employment.

There is definitely demand for our graduates on the labour market, as the employability of our students remains at a high level. Almost a half of the students already have guaranteed employment immediately upon the completion of studies. One year after the completion of their studies, practically all of our graduates have a job. In view of the general situation on the labour market and the economic crisis in which our country still finds itself, we can definitely be very satisfied with such results.

Having analysed data on specific companies in which our graduates intend to find a job, we can conclude that our graduates are employed by companies and institutions active in a diverse range of manufacturing and service sectors. This suggests that qualified electrical engineers are widely employable, but also that the electrical engineering study options offered must adapt dynamically to (and provide knowledge for) the emerging fields of manufacturing and services, where there are no longer clear boundaries between "classical" technical sciences and natural sciences. We are very aware of this fact at the Faculty; consequently, revised and new topical study options have been offered in the 2<sup>nd</sup> cycle Electrical Engineering programme. No Slovenian company stands out significantly as being the main employer of our graduates; therefore, it is important to also take this Slovenian specificity into account in designing new programmes.

Most graduates believe that they made the right decision in selecting their study option, in view of the employment awaiting them immediately after completing their studies. As in past years, a large majority of graduates expressed a desire to continue their education upon the completion of their

undergraduate studies. The need for further education is voiced somewhat more strongly among higher professional programme students and pre-reform university students, who expressed a clear desire for part-time study allowing them to meet their study obligations in the afternoon.

#### 4.1.6 Material conditions and support activities

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##### 4.1.6.1 Physical asset management

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Physical asset management at the Faculty was conducted in line with the set goals and according to the priority of works and activities. The Faculty manages property with an estimated value of EUR 17,033,643 (land and buildings of the Faculty). As part of the general maintenance in 2013, taking into account restrictions on general maintenance imposed by the University and the Ministry, we only undertook the most urgent works in line with priorities that guarantee the high quality of education and research; in so doing, we followed rigorous safety standards. We can proudly say that the Faculty implemented all of the measures pertaining to improved accessibility for persons with disabilities.

In the building on Tržaška cesta 25 in Ljubljana, the Faculty of Electrical Engineering will be sharing premises with the Faculty of Computer and Information Science until the summer of 2014. For this reason, and due to the shortage of space at both faculties, education activities took place until the late evening hours in 2013. We take constant care of modernising the equipment and premises; as a result, the FEE is perfectly equipped with ICT infrastructure, which is regularly and properly maintained.

In 2013, we published a tender aimed at renting out the catering premises serving Faculty students and staff. The company selected was Delicije d.o.o., which already successfully offers its services at two other UL members.

Numerous planned investments were not executed due to the fact that the Faculty did not receive the expected funding from the University and the Ministry; instead, the financial plan was revised, resulting in less funding for major investments of UL members. Similarly, due to the financial situation, in 2013 the Faculty was unable to provide own funds for all long-planned renovations (Faculty entrance area, hall and façade on the A building), which have had to be postponed to a future date.

Nevertheless, we did carry out numerous repairs and minor renovations by ourselves – partly thanks to our technical maintenance service – in order to ensure an up-to-date, safe and technologically advanced environment for education and scientific research, as well as for the financial and administrative services providing support to the core activity of the Faculty. The Faculty is facing a severe space shortage and several renovations were undertaken due to the need for modernisation of premises and more space for new staff, or due to adaptation to new educational needs.

In 2013, the Faculty commenced an energy review of the building, co-financed by funds acquired in a public call entitled “*Subsidies for measures improving energy efficiency 2 / 20 Acronym: PURE 2013-2*”. Experts from the Faculty and the UL Institute for Innovation and Development (IRI) participated in carrying out the energy review.

In order to ensure the undisturbed execution of education and scientific research, we also modernised the **pedagogical and research equipment and furnishings** in 2013. The equipment was purchased specifically to improve work conditions, as well as to guarantee a higher quality of education and undisturbed high-quality research.

**The LPVO solar power plant** on the roof of the Faculty produced **18,380.71 kWh** of electrical energy, and **the LRTME solar power plant** produced **4,528.00 kWh** of electrical energy in 2013. Both power plants are also used for scientific research and educational purposes.

A safe and healthy working environment is provided at the Faculty, as reflected in the ergonomic equipment in the working spaces, emergency lighting and the knowledge of safety-at-work and fire safety rules acquired by the staff and students at courses delivered by a safety-at-work and fire safety expert. As in previous years, and in accordance with the time schedule and risk assessment (which is based on the workplace and age of workers), employees undertake periodic health check-ups.

#### 4.1.6.2 Public procurement

In 2013, the Faculty purchased goods and services in compliance with the Public Procurement Act (ZJN-2, OJ RS No. 12/2013) as well as with the legal bases and rules applicable to indirect budget users in Slovenia. In the light of austerity measures, our procurement was based on the goal of economy (value for money) and getting the most for the funds invested.

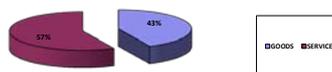
The Faculty is subject to quotas for employed disabled persons on the basis of Article 62 of the Vocational Rehabilitation and Employment of Disabled Persons Act and Article 2 of the Decree Establishing an Employment Quota for Persons with Disabilities (given the classification of the Faculty activity under the Standard Classification of Activities, SKD 2008 - SKD code P 85.422 – Higher Education, we were obligated to meet a quota of 3% in 2013). We began meeting our legal quota obligation for disabled persons in accordance with Article 64 of the Vocational Rehabilitation and Employment of Disabled Persons Act partly through business co-operation with providers granted the status of a “disabled employment company” by the government of Slovenia. For example, we signed a contract for landscaping and gardening at the Faculty premises with the disabled employment company Dobrovita d.o.o., and another contract for printing and security services with the disabled employment company Sinet d.o.o.

#### Non-regulated low-value public procurement

This involves procurements up to EUR 20,000.00 for goods and services and up to EUR 40,000.00 for works (not subject to publication requirement on the PP and TED portal), which are not regulated by the Public Procurement Act, but require statistical recording.

#### Non-regulated low-value public procurement in 2013

Type of PP	Amount of PP in EUR incl. VAT	%	No. of PPs
Goods	782,652.00	43	1003
Services	1,736,540.00	57	1344
<b>Total:</b>	<b>2,519,192.00</b>	100	2347



Source: FEE PP archive – PP statistical data for 2013.

As shown above, in 2013 we carried out more than two and a half million euros worth of public procurements in values not subject to publication on the PP portal, which is less than in 2012 and reflects the extreme austerity in the current procurement. We processed a total of 2,347 requests, of which 1,003 (43%) were for the procurement of goods and 1,344 (57%) were for the procurement of services.

#### Public tenders

Public tendering is required for the procurement of goods and services exceeding EUR 20,000.00 and of works exceeding EUR 40,000.00 (publication on the PP and TED portal required). In 2013, we carried out nine public tenders (electronic publication of statistical data is available on the PP portal) for goods and services, with a total value of EUR 727,786.00.

#### Public tenders in 2013

Type of PT	Amount of PT in EUR incl. VAT	%	PT total
Goods	666,763.00	89	8
Services	61,023.00	11	1
<b>Total</b>	<b>727,786.00</b>	100	9



Source: FEE PP archive – PP statistical data for 2013.

As shown above, in 2013 we carried out public tenders worth over EUR 700,000.00 for the purchase of goods and services.

### Total value of public procurement in 2013

Type of procedure	Procurement amount in EUR incl. VAT	%
Non-regulated low-value PP	2,519,192.00	78
Public tenders	727,786.00	22
<b>Total</b>	<b>3,249,978.00</b>	100



Source: FEE PP archive – PP statistical data for 2013.

In 2013, there was a total of over three million euros worth of public procurements, of which 22% (EUR 727,786.00) were subject to publication; other non-regulated procurement requiring only statistical reporting accounted for 78% (EUR 2,519,192.00). All amounts include VAT.

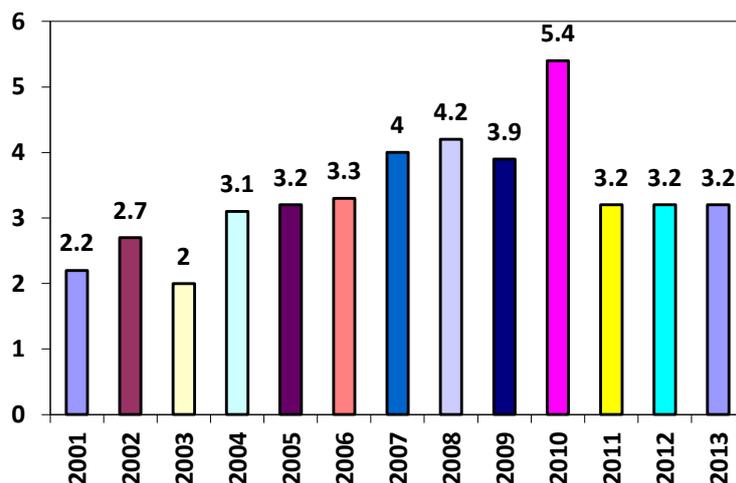
### Comparison of public procurement in 2012 and 2013

YEAR	Amount in EUR incl. VAT	%
2012	3,279,121.00	100
2013	3,246,978.00	99

Source: FEE PP archive – PP statistical data for 2012 and 2013.

As shown above, austerity measures were again applied at the Faculty in 2013, resulting from reduced funding of education (Ministry of Education, Science and Sport) and scientific research (Slovenian Research Agency, EU, market).

## Overview of public procurement between 2001 and 2013 (in million EUR)



Source: FEE PP archive – PP statistical data 2001-2013

As shown above, the value of public procurement in 2013 remained at a similar level to that of 2011 and 2012. The trend is consistent with the economic situation and austerity measures, and indicates that in 2013 we again operated extremely economically, making only the most urgent investments. We intend to maintain this trend in the future and to exercise strict supervision of the Faculty's financial position.

### 4.1.6.3 Information system

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With two full-time system engineers and with the participation of full-time and external Faculty staff, the ICT department provides for the maintenance and upgrading of the information and communication infrastructure and offers support to ensure its uninterrupted operation.

After signing a contract with the Faculty of Computer and Information Science, UL, as the provider we introduced new software support for the student register, which is based on a modern platform and satisfies all of the statutory requirements for personal data protection.

### 4.1.6.4 Human resource development

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The organisational structure of the FEE did not change significantly in 2013. Compared to 2012, the total employee count decreased by 11, primarily due to 6 retirements and researchers employed for the duration of a project that came to an end. At the end of 2013, the Faculty employed 122 higher education teachers and associates, 145 scientific associates, researchers and technical staff, and 43 young researchers. The professional services of the Faculty Secretariat employed 59 staff. There are 6 foreigners among the Faculty staff, most of whom are young researchers.

Despite our endeavours to attract and retain the best scientists/researchers at the Faculty, this is hindered by the system in Slovenia, which does not allow universities to offer scientists regular employment and, in the higher education environment, is often quite discriminatory with regard to scientists compared to teaching staff. The situation is further aggravated by the marked drop in project funding by the Slovenian Research Agency – its cumulative scoring system limits the possibilities for younger staff to win a project; furthermore, because the scoring system places such great emphasis on corporate funding the possibility of obtaining funding for basic research has been practically eliminated.

## 5. UL FEE STATISTICAL DATA (2013 results)

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### Number of enrolled students in 2013/2014

YEAR	CYCLE	STUDY PROGRAMME	number of enrolled students
2013/14	1 <sup>st</sup>	HIGHER PROFESSIONAL PROGRAMME	598
2013/14	1 <sup>st</sup>	UNIVERSITY PROGRAMME	402
2013/14	2 <sup>nd</sup>	MASTER'S PROGRAMME	223
2013/14	3 <sup>rd</sup>	DOCTORAL PROGRAMME	76

### Number of enrolled foreign students in 2013/2014

YEAR	CYCLE	STUDY PROGRAMME	number of enrolled foreign students
2013/14	1 <sup>st</sup>	HIGHER PROFESSIONAL PROGRAMME	5
2013/14	1 <sup>st</sup>	UNIVERSITY PROGRAMME	15
2013/14	2 <sup>nd</sup>	MASTER'S PROGRAMME	14
2013/14	3 <sup>rd</sup>	DOCTORAL PROGRAMME	7

### Number of graduates in 2013/2014

YEAR	CYCLE	STUDY PROGRAMME	number of graduates
2013	1 <sup>st</sup>	HIGHER PROFESSIONAL PROGRAMME	48
2013	1 <sup>st</sup>	UNIVERSITY PROGRAMME	84
2013	2 <sup>nd</sup>	MASTER'S PROGRAMME	-
2013	3 <sup>rd</sup>	DOCTORAL PROGRAMME	40
2013	UN pre-reform	UNIVERSITY PROGRAMME	133
2013	VS pre-reform	HIGHER PROFESSIONAL PROGRAMME	91

### Number of accredited study programmes in 2013/2014

YEAR	CYCLE	STUDY PROGRAMME	number of accredited study programmes
2013/14	1 <sup>st</sup>	HIGHER PROFESSIONAL PROGRAMME	2
2013/14	1 <sup>st</sup>	UNIVERSITY PROGRAMME	2
2013/14	2 <sup>nd</sup>	MASTER'S PROGRAMME	2
2013/14	3 <sup>rd</sup>	DOCTORAL PROGRAMME	1

### Number of joint study programmes in 2013/2014

YEAR	CYCLE	STUDY PROGRAMME	number of joint study programmes
2013/14	1 <sup>st</sup>	HIGHER PROFESSIONAL PROGRAMME	-
2013/14	1 <sup>st</sup>	UNIVERSITY PROGRAMME	-
2013/14	2 <sup>nd</sup>	MASTER'S PROGRAMME	1
2013/14	3 <sup>rd</sup>	DOCTORAL PROGRAMME	2

### No. of cooperation agreements in acquiring "double" degrees

YEAR	CYCLE	STUDY PROGRAMME	No. of agreements in acquiring double degrees
2013/14	1 <sup>st</sup>	HIGHER PROFESSIONAL PROGRAMME	0
2013/14	1 <sup>st</sup>	UNIVERSITY PROGRAMME	0
2013/14	2 <sup>nd</sup>	MASTER'S PROGRAMME	0
2013/14	3 <sup>rd</sup>	DOCTORAL PROGRAMME	1

### Exchange teachers, associates and researchers (in Slovenia)

YEAR	cycle	type	No. of visiting experts from the business and non-business sectors participating in education	No. of visiting higher education teachers, associates and researchers from Slovenian research institutes participating in education
2013	1 <sup>st</sup>	HIGHER PROFESSIONAL PROGRAMME	1	0
2013	1 <sup>st</sup>	UNIVERSITY PROGRAMME	0	0
2013	2 <sup>nd</sup>	MASTER'S PROGRAMME	0	1
2013	3 <sup>rd</sup>	DOCTORAL PROGRAMME	0	3

### Exchange teachers, associates and researchers (abroad/from abroad)

YEAR	time frame	No. of foreign higher education teachers, associates and scientists participating in the delivery of at least part of a subject	No. of foreign scientists and research associates participating on exchange and participating in the scientific research process	No. of higher education teachers and associates on exchange, in education or participating in education, scientific research or artistic work abroad with foreign higher education institutions
2013	1-3 months	2	4	3

### Number of students with a special status

YEAR	STUDY CYCLE	TYPE OF STUDY	TYPE OF DISORDER/IMPAIRMENT OF THE STUDENT WITH A DISABILITY OR TOP ATHLETE STATUS	number of students with a special status	number of graduates with a special status in 2013
2013	1 <sup>st</sup>	HIGHER PROFESSIONAL PROGRAMME	mental disorders	2	0
2013	1 <sup>st</sup>	HIGHER PROFESSIONAL PROGRAMME	top athlete status	1	0
2013	1 <sup>st</sup>	UNIVERSITY PROGRAMME	speech and language disorders	1	0
2013	1 <sup>st</sup>	UNIVERSITY PROGRAMME	motor impairment	1	0
2013	1 <sup>st</sup>	UNIVERSITY PROGRAMME	top athlete status	2	0

### Practical training

YEAR	cycle		No. of students involved in practical training	No. of students involved in practical training abroad	No. of subjects provided at the Faculty	No. of subjects for selected cycle and type of study, provided in a foreign language	No. of Faculty students who have passed at least one subject at another UL member	No. of credits earned by students who have passed at least one subject at another UL member	No. of students from other UL members who have passed at least one subject at the Faculty	No. of credits earned by students who have passed at least one subject at the Faculty
2012/13	1 <sup>st</sup>	HIGHER PROFESSIONAL PROGRAMME	151	0	126	0	0	0	0	0
2012/13	1 <sup>st</sup>	UNIVERSITY PROGRAMME	0	7	60	0	2	3	0	0
2012/13	2 <sup>nd</sup>	MASTER'S PROGRAMME	0	0	71	0	0	0	4	6
2012/13	3 <sup>rd</sup>	DOCTORAL PROGRAMME	0	10	33	0	5	5	10	5

## 6. SUMMARY OF THE ACCOUNTING REPORT FOR 2013

In accordance with Article 13 of the Accounting Act and Article 16 of the Order on Classifying and Measuring Revenues and Expenses in the Uniform Chart of Accounts, the Faculty of Electrical Engineering, University of Ljubljana, is obliged to produce the annual report according to the rules for certain users of the uniform chart of accounts. In compiling its accounting statements, the Faculty of Electrical Engineering followed the principle of accrual accounting for the 2013 business year (which is the same as the calendar year) and, as an indirect budget user, also the cash flow principle.

The Faculty of Electrical Engineering is liable under the Corporate Income Tax Act and the Value Added Tax Act. In accordance with Article 65, item 7, of the VAT Act, we calculate the tax based on the actual data, separately for the public service and market activity (two tax records).

### Key elements of the Balance Sheet

#### Assets

The value of assets of the FEE on 31 December 2013 amounted EUR 20,632,541.23 (on 31 December 2012: EUR 20,471,787.27 EUR). Compared to the previous year, the total value of assets grew by slightly less than 1%.

The tables below offer a comparison of acquired fixed assets and small tools at the FEE in 2012 and 2013 together with the relevant sources. Due to austerity measures, the trend of reductions in equipment purchasing continues, resulting in a higher accumulated depreciation rate of equipment (87% in 2012 and 90% in 2013).

### PURCHASE OF FIXED ASSETS AND SMALL TOOLS IN 2013 AND 2012

TYPES OF FIXED ASSETS AND SMALL TOOLS	FIXED	ASSETS	index	SMALL	TOOLS	index	TOTAL	PURCHASE	index
	2012	2013	2013/2012	2012	2013	2013/2012	2012	2013	2013/2012
computer software license	22.040,50	18.278,20	82,93				22.040,50	18.278,20	82,93
teaching aids	21.037,20	19.325,52	91,86	1.539,97	1.505,54	97,76	22.577,17	20.831,06	92,27
furniture	20.344,88	19.840,49	97,52	25.573,04	12.668,27	49,54	45.917,92	32.508,76	70,80
laboratory equipment	248.296,52	196.539,91	79,16	2.082,58	5.831,78	280,03	250.379,10	202.371,69	80,83
other transport and communication equipment	7.277,69	18.927,44	260,07	6.389,12	9.615,37	150,50	13.666,81	28.542,81	208,85
computer equipment	213.964,37	183.686,06	85,85	35.026,53	30.211,55	86,25	248.990,90	213.897,61	85,91
servicing and maintenance equipment	3.179,77	1.078,74	33,93	351,42	587,21	167,10	3.531,19	1.665,95	47,18
cleaning equipment	1.097,16		0,00				1.097,16	0,00	0,00
AV equipment	14.228,30	1.651,62	11,61	435,11	4.085,97	939,07	14.663,41	5.737,59	39,13
printing and copying equipment	2.292,43	15.005,92	654,59		471,58		2.292,43	15.477,50	675,16
cooling and heating equipment	16.278,25		0,00	365,98		0,00	16.644,23	0,00	0,00
other equipment	39.306,77	23.682,72	60,25	10.510,07	6.819,75	64,89	49.816,84	30.502,47	61,23
<b>TOTAL EQUIPMENT</b>	<b>587.303,34</b>	<b>479.738,42</b>	<b>81,68</b>	<b>82.273,82</b>	<b>71.797,02</b>	<b>87,27</b>	<b>669.577,16</b>	<b>551.535,44</b>	<b>82,37</b>
<b>TOTAL PURCHASE OF FIXED ASSETS</b>	<b>609.343,84</b>	<b>498.016,62</b>	<b>81,73</b>	<b>82.273,82</b>	<b>71.797,02</b>	<b>87,27</b>	<b>691.617,66</b>	<b>569.813,64</b>	<b>82,39</b>

SOURCES OF FUNDING FOR FIXED ASSET AND SMALL TOOLS PURCHASE			index
	2012	2013	2013/2012
education funding	113.657,56	73.747,39	64,89
research funding	299.460,94	304.105,37	101,55
structural funds	158,30		0,00
other public funding	12.689,41	10.190,72	80,31
EU	24.089,77	86.263,97	358,09
market-based funding	241.561,68	95.506,19	39,54
	<b>691.617,66</b>	<b>569.813,64</b>	<b>82,39</b>

## Liabilities

The liabilities of the FEE on 31 December 2013 totalled EUR 20,632,541.23 (in 2012: EUR 20,471,787.27).

On 31 December 2013, the assets fund for intangible assets and tangible fixed assets owned by the FEE, being the main liabilities item, was worth EUR 14,901,064.29 (in 2012: EUR 15,703,800.56 EUR) and consisted of the following items:

<b>FIXED ASSETS FUND</b>	<b>2013</b>	<b>2012</b>	<b>Index</b>
assets fund – education	10,040,594.68	10,665,296.40	94.14
assets fund – TDC	120,000.00	120,000.00	100.00
assets fund – Ministry grants for equipment	239,631.28	410,371.19	58.39
assets fund – Ministry grants for competence centres	20,910.72	28,205.36	74.13
assets fund – research	1,352,277.25	1,352,277.25	100.00
assets fund – market activity	1,240,166.89	1,240,166.89	100.00
unused surplus of revenues for investments and purchase of fixed assets	751,137.18	751,137.18	100.00
unused surplus of revenues for general maintenance	1,136,346.29	1,136,346.29	100.00
<b>TOTAL</b>	<b>14,901,064.29</b>	<b>15,703,800.56</b>	<b>94.89</b>

## Key elements of the Statement of Revenue and Expenditure

The table below includes revenue and expenditure data, shown separately for the provision of public service and market activities, for the business years 2013 and 2012.

### COMPARISON OF RESULTS: PUBLIC SERVICE vs. MARKET ACTIVITY 2013/2012

DESCRIPTION	PUBLIC SERVICE 2012	PUBLIC SERVICE 2013	Index 2013 / 2012	MARKET-BASED ACTIVITY 2012	MARKET-BASED ACTIVITY 2013	Index 2013 / 2012	TOTAL 2012	TOTAL 2013	Index 2013 / 2012
<b>REVENUES</b>	<b>15.292.875</b>	<b>14.632.497</b>	<b>95,68</b>	<b>3.300.393</b>	<b>2.993.237</b>	<b>90,69</b>	<b>18.593.268</b>	<b>17.625.734</b>	<b>94,80</b>
1. Operating revenues	15.220.585	14.580.549	<b>95,79</b>	3.299.092	2.990.262	<b>90,64</b>	<b>18.519.677</b>	<b>17.570.811</b>	94,88
2. Financial revenues	48.693	22.156	<b>45,50</b>	1	0	<b>0,00</b>	<b>48.694</b>	<b>22.156</b>	45,50
3. Other and revaluatory revenues	3.065	12.512	<b>408,22</b>	1.300	2.975	<b>228,85</b>	<b>4.365</b>	<b>15.487</b>	354,80
4. Increase of inventories	20.532	17.280	<b>84,16</b>				<b>20.532</b>	<b>17.280</b>	84,16
<b>EXPENDITURE</b>	<b>15.279.028</b>	<b>14.633.070</b>	<b>95,77</b>	<b>3.202.225</b>	<b>2.957.581</b>	<b>92,36</b>	<b>18.481.253</b>	<b>17.590.651</b>	<b>95,18</b>
1. Costs of materials	664.316	652.791	<b>98,27</b>	42.308	61.182	<b>144,61</b>	<b>706.624</b>	<b>713.973</b>	101,04
2. Cost of engaged services	2.706.549	2.565.933	<b>94,80</b>	1.667.296	1.668.664	<b>100,08</b>	<b>4.373.845</b>	<b>4.234.597</b>	96,82
3. Labour costs	11.174.711	10.677.954	<b>95,55</b>	1.130.835	951.772	<b>84,17</b>	<b>12.305.546</b>	<b>11.629.726</b>	94,51
- Gross wages	8.663.119	8.454.716	<b>97,59</b>	852.421	697.292	<b>81,80</b>	<b>9.515.540</b>	<b>9.152.008</b>	96,18
- Social security contributions	1.400.788	1.322.577	<b>94,42</b>	136.582	145.915	<b>106,83</b>	<b>1.537.370</b>	<b>1.468.492</b>	95,52
- Holiday allowance	212.898	82.040	<b>38,53</b>	25.747	15.107	<b>58,67</b>	<b>238.645</b>	<b>97.147</b>	40,71
- Other labour costs	897.906	818.621	<b>91,17</b>	116.085	93.458	<b>80,51</b>	<b>1.013.991</b>	<b>912.079</b>	89,95
4. Other costs	261.656	217.125	<b>82,98</b>	22.414	13.004	<b>58,02</b>	<b>284.070</b>	<b>230.129</b>	81,01
- contributions for special cases of insurance	73.484	39.357	<b>53,56</b>	0	0		<b>73.484</b>	<b>39.357</b>	53,56
- remaining other cost	188.172	177.768	<b>94,47</b>	22.414	13.004	<b>58,02</b>	<b>210.586</b>	<b>190.772</b>	90,59
5. Costs of inventory sold	7.862	12.735	<b>161,98</b>				<b>7.862</b>	<b>12.735</b>	161,98
6. Depreciation	460.795	466.291	<b>101,19</b>	332.248	257.529	<b>77,51</b>	<b>793.043</b>	<b>723.820</b>	91,27
7. Financial, other and revaluatory expenditure	3.139	40.241	<b>1.281,97</b>	7.124	5.430	<b>76,22</b>	<b>10.263</b>	<b>45.671</b>	445,01
<b>SURPLUS OF REVENUES/EXPENSES</b>	<b>13.847</b>	<b>-573</b>	<b>-4,14</b>	<b>98.168</b>	<b>35.656</b>	<b>36,32</b>	<b>112.015</b>	<b>35.083</b>	<b>31,32</b>
<b>INCOME TAX</b>	<b>1.614</b>	<b>661</b>	<b>40,95</b>	<b>7.467</b>	<b>3.232</b>	<b>43,28</b>	<b>9.081</b>	<b>3.893</b>	<b>42,87</b>
<b>SURPLUS OF REVENUES/EXPENSES AFTER TAX</b>	<b>12.233</b>	<b>-1.234</b>	<b>-10,09</b>	<b>90.701</b>	<b>32.424</b>	<b>35,75</b>	<b>102.934</b>	<b>31.190</b>	<b>30,30</b>

## Revenue

In 2013, the FEE generated a total of EUR 17,625,734.84 in revenues, i.e., a reduction of more than 5% compared to 2012 (EUR 18,593,268.03).

The total revenue structure by sources is shown below.

<b>SOURCES OF REVENUE</b>	<b>AMOUNT (in EUR)</b>	<b>SHARE</b>
Ministry of Education, Science and Sport – education funding	7,925,800.16	44.97%
Ministry of Education, Science and Sport / Slovenian Research Agency and Slovenian Technology Agency – research funding	3,829,613.84	21.73%
Other budget sources (other ministries)	1,156,519.51	6.56%
Other budget sources – local communities	57,600.00	0.32%
Receipts from the EU budget	1,070,388.11	6.08%
Other funds for the provision of public services	592,576.42	3.36%
Proceeds from sales of goods and services on the market	2,993,236.80	16.98%
<b>TOTAL REVENUES</b>	<b>17,625,734.84</b>	<b>100.00%</b>

### ***Expenditure***

In 2013, FEE expenditure totalled EUR 17,590,651.37, i.e., almost 5% less than in 2012 (EUR 18,481,252.89).

In comparison with 2012, the costs of labour – accounting for 66% of the total expenditure – dropped by about 5.5%, which was primarily the result of the Fiscal Balance Act. At the end of 2013, the FEE employed 369 staff, compared to 381 at the end of 2012. The reduction in the costs of labour would have been even more substantial if the cost of labour in 2013 had not included the first instalment of the third quarter of the amount to eliminate wage disparities, amounting to EUR 293,774.02 (without statutory interest).

### ***Surplus of revenue over expenditure***

In 2013, the operation of the FEE was again affected by the economic crisis, as reflected in reduced revenues and, consequently, reduced expenditure. Nevertheless, the FEE closed the 2013 business year with a surplus of revenues over expenditure of EUR 35,083.47. Corporate income tax amounted to EUR 3,893.45; therefore, the remaining surplus of revenues over expenditure was EUR 31,190.02 EUR. The generated surplus of revenues over expenditure for 2013 remains undistributed.

### ***Statement of revenue and expenditure indicators***

<b>Indicator</b>	<b>2012</b>	<b>2013</b>
Total revenue per employee (in EUR)	48,801	46,629
Total expenditure per employee (in EUR)	48,507	46,536
Labour costs per employee (in EUR)	32,298	30,766
Share of labour costs in total expenses (%)	67	66

The Annual Report was approved at the 3<sup>rd</sup> regular session of the Faculty of Electrical Engineering Management Board on 27 February 2014.



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