**Faculty of Environmental and manufacturing Technology**

technical university in zvolen



**report**

**on scientific and research activities at feMt of TU in zvolen for 2017**

Proposal for a decision:

Scientific Board of FEMT TU in Zvolen

The 2017 report for the 2017 FEMT was approved by:

(a) no comments,

(b) with comments

Presented by: **doc.** **Marián Kučera, PhD.**

Dean of FEMT TU in Zvolen

Processed by: **Prof. Štefan Barcík, CSc.**

Vice-Dean

from the documents of the heads of the FEMT workplaces in Zvolen

Zvolen 2018

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# INTRODUCTION

We present to the Scientific Council of the Faculty of Environmental and Production Technology the Report on Scientific and Research Activities for 2017.

The purpose of the report is to:

* capture and document the state of play in the field of science and research, as well as in other activities in the 2017 assessment year;
* quantify parameters from the field of science and research and related publishing activity for some procedures for the redistribution of funds at the faculty,
* ensure continuity and comparability of endpoints,
* summarize the documents for the elaboration of materials for the periodic evaluation of the faculty by the authorities of the Ministry of Education of the Slovak Republic and ak,
* to provide the members of the Scientific Council of FEMT with the basis for obtaining a comprehensive overview of the structure of qualitative and quantitative indicators in the field of science and research management at the faculty, so that they can adjust the process of organization and direction of scientific research activity and current dreams by their decision-making, in order to gain an overview of the state of affairs in individual departments.

The report is designed to provide a comprehensive and objective picture of what is happening in the fields of science and research, scientific education, cooperation, direction and concept of development. The following areas of science, research are comprehensively evaluated in the report:

* scientific and research profile of FEMT,
* organizational, personnel, financial and material - technical provision of science and technology,
* publishing activities of the faculty,
* cooperation in the field of science and technology at home and abroad,
* scientific and professional events,
* science and technology projects,
* ŠVOČ,
* doctoral studies.

For clarity, most of the quantitative indicators and information are compiled into tables.

The adopted measures for 2017, resulting from the latest Report on Scientific research activities, have been largely fulfilled.

The aim of the evaluation of the scientific research activities of FEMT was to create an objective deduction of the faculty's activities for the year 2017, which was also the first year of fulfillment of the Long-Term Goal of the Faculty of Environmental and Production Technology of the Technical University in Zvolen for the years 2017 – 2023 with a vision for 2030. It was drafted in accordance with the requirements of Act No. 131/2002 Coll. on Higher Education Institutions, as amended, and approved by the Academic Senate of the Faculty. The long-term plan is the basic planning document for ensuring the development of the faculty in all key areas. The long-term objective is an open document, the implementation of the strategic objectives will be evaluated annually on the basis of defined indicators, the measures will be updated, if necessary, in accordance with the change in the internal and external conditions of its implementation.

Evaluating the implementation of the measures of the fields of scientific research and creative activity, it can be concluded that in the past year every faculty employee has been involved in solving research projects, the faculty's publishing activity has a growing trend in the field of more valuable publications, the proportion of less valuable publications is decreasing, the qualification structure of faculty staff is improving, doctoral students are actively involved in solving projects and publishing in renowned database journals, The faculty carries out activities in the field of popularization of achieved results and visibility in national and international forums and events.

# SCIENTIFIC AND RESEARCH PROFILE OF FEMT

The basic platform of profiling of the Faculty of Environmental and Production Technology in Science and Research is activities in the context of its long-term intention. They represent the area of creation and protection of the working and environmental environment, as well as techniques for the protection of the environment from the negative effects of production processes, in the field of production technology with a focus on forestry and mobile technology, in woodworking machinery and equipment, in the management of machines and equipment, in industrial engineering and management with a focus on safety engineering and in the field of technical provision of production activity. An essential starting point for the focus of the scientific and research profile of FEMT is the know-how of the faculty, its personnel capabilities and material-technical base. In the above areas of science and research, the activity of the faculty in the submission of grant and scientific research projects is oriented. The financial envelope of scientific research tasks is mainly implemented through grant projects VEGA, KEGA, IPA and APVV. The largest part of the scientific research capacity of the faculty's staff and PhD students is used to solve the projects of the above-mentioned grant agencies.

## Orientation and supporting directions of research

The scientific and research profile of the faculty is based on the professional focus and mission of the faculty, which was reflected in the main directions of science and research at FEMT. The scientific and research activities of FEMT are built on the principle of maximum interconnectedness of pedagogical and scientific activities, respecting global trends and current transfer of knowledge into economic and social practice.

The content focus of the faculty's research activities is oriented to the main directions of research in the field of development and assessment of the quality of forestry and woodworking machines, reduction of material and energy intensity, use of new energy resources (permanently renewable resources, biomass), quality management of production enterprises.

The concept of FEMT's development objectives is based on the intentions of the development of science and technology in terms of world trends and the needs of society. The aim is also to ensure the uniform development of all accredited fields of study of the faculty and professional disciplines provided by individual departments.

The faculty will develop a long-term program of science and research for the modernization of the production base in the engineering and woodworking industries and in forestry and for the development and improvement of environmental facilities. This will take into account the requirements of society and will be based on the needs of innovation in the teaching subjects of the faculty's fields of study. The strategy of FEMT TU in Zvolen is also aimed at developing contacts with universities in European countries in the form of bilateral agreements on scientific and research cooperation and student exchange. This opens up the potential and balance of research and teaching into a form of consistency between the orientation of research activity and accredited study programmes.

## Main areas and orientations of scientific research activity

The mission of the Faculty of Environmental and Production Technology is to develop creative scientific research and, on its basis, to provide higher education in all three levels in the Slovak and European research and education area.

In the field of research, it fulfils its mission by solving research projects and programs of a national and international nature, especially in the areas of agricultural and forestry sciences, engineering and technology, environmental sciences and ecology, engineering and management, human protection and integrated safety, as well as other related and application areas. Based on the Long-Term Intention of FEMT TU in Zvolen for 2017 - 2023 with a vision for 2030, the focus of scientific research activities is mainly concentrated on:

* techniques and technologies in the field of waste and secondary raw materials management,
* secondary and renewable energy sources,
* research into water and air protection techniques,
* machinery and mechanisms for woodworking and forestry technology,
* measuring and control systems with microcomputers and modular computer systems,
* use of traditional and special construction and tool materials,
* technological problems with an emphasis on the possibilities of implementing CA – technologies,
* production management, quality management, diagnostics and operational reliability of machines in relation to the environment,
* creation and management of production systems,
* integration of management systems and certification procedures.

To achieve this, the following measures are defined:

* publish the results of research and creative activities in the international environment, in particular in indexed renowned international scientific journals,
* strengthen the faculty's position in scientific research projects of national and international cooperation,
* build research infrastructure, including qualified operators,
* deepen the involvement of PhD students in research, subject to publication in indexed international scientific journals,
* build and ensure the effective dissemination and commercialisation of research results through a university technology transfer centre,
* to popularize and raise the profile of the results of scientific research and other creative activities of the faculty of professional public.

# ORGANIZATIONAL, PERSONNEL, FINANCIAL AND MATERIAL – TECHNICAL PROVISION OF SCIENCE AND TECHNOLOGY

## Scientific research capacity of FEMT and its qualification structure

The scientific research capacity consists of scientific and pedagogical staff and researchers, whom the faculty does not have. PhD students or students - diplomats are also involved in the scientific research capacity of FEMT and in solving research tasks.

It is recommended to base the planning of scientific research capacities on the following values:

|  |  |  |
| --- | --- | --- |
| pedagogical staff |  | 1000 h |
|  |  |  |
| internal PhD students | 1st year of study | 1000 h |
| 2nd year of study | 1500 h (max. 2000 h) |

The numbers and structure of the faculty staff constituting the basic scientific research capacity are shown in Table 2.1.

**Table 2.1** Qualification structure of FEMT staff by workplace

|  |  |  |  |
| --- | --- | --- | --- |
| Workplace | C o u n c il a t i on o f the | Together | Ofthe total number of |
| scientific and pedagogical staff |
| Prof. | .doc. | Oa | DrSc., Dr. | CSc., PhD. |
| KELT | 2 | 2 | 4 | 8 | 0 | 8 |
| KMSD | 0 | 3 | 4 | 7 | 0 | 7 |
| KVAT | 1 | 4 | 4 | 9 | 0 | 9 |
| KVTMKv | 0 | 4 | 2 | 6 | 0 | 6 |
| TOGETHER | 3 | 13 | 14 | 30 | 0 | 30 |

**Graph 2.1 Qualification structure** of FEMT staff

The research capacity spent on solving all research tasks is presented in Table 2.2, with an average of 1,269 hours per reported FEMT teaching staff member. PhD students are also involved in solving scientific projects, but they are not counted in the summary capacity calculations.

**Table 2.2** Research capacity of FEMT teaching staff for grant

 and otherscientific projects in hours in 2017

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| WORKPLACE | VEGA GRANT PROJECTS | KEGA GRANT PROJECTS | OTHER PROJECTS | TOGETHER |
| CELT | 2 600 | 4 600 | 0 | 7 200 |
| KMSD | 1 500 | 4 700 | 1 800 | 8 000 |
| KVAT | 6 500 | 2 800 | 2 200 | 11 500 |
| KVTMKv | 4 900 | 2 700 | 3 780 | 11 380 |
| TOGETHER | 15 500 | 14 800 | 7 780 | 38 080 |

## Thematic concentration and financial provision of research at FEMT

In basic and applied research, the faculty focused on tasks and projects that will significantly contribute to minimizing the negative impacts of technology and technology on the living and working environment and reducing the material and energy intensity of equipment. A significant part of the research capacities are focused on research and development of new machinery and equipment for forestry and the timber industry.

The funds were obtained in the form of approved and solved grant projects, for which the main investigator of the project was fully responsible, in full respect of the Decree of the Ministry of Education of the Slovak Republic on the use of budgetary funds.

A summary overview of the funds allocated to the solution of grant and scientific and technical projects by department is given in Tables 2.3 and 2.4, graphically shown in Figure 2.2. A more detailed overview of the allocations for individual projects is given in Chapter 6.

**Table 2.3** Departments' allocations in 2017 for VEGA and KEGA projects (in EUR)

|  |  |  |  |
| --- | --- | --- | --- |
| WORKPLACE | VEGA GRANT PROJECTS | KEGA GRANT PROJECTS | TOGETHER |
| Common | Capital | together | Common | Capital | together |
| CELT | 4 261 | 0 | 4 261 | 20 552 | 0 | 20 552 | 24 813 |
| KMSD | 0 | 0 | 0 | 4 071 | 0 | 4 071 | 4 071 |
| KVAT | 11 103 | 0 | 11 103 | 7 219 | 0 | 7 219 | 18 322 |
| KVTMKv | 6 382 | 0 | 6 382 | 9 943 | 0 | 9 943 | 16 325 |
| TOGETHER | 21746 | 0 | 21746 | 41785 | 0 | 41785 | 63531 |

**Table 2.4** Departments' allocations in 2017 for IPA, Institute Research, APVV, Other projects (in EUR) projects

|  |  |  |
| --- | --- | --- |
| WORKPLACE | PROJECTS IPA, INŠT. RESEARCH, APVV, OTHER  | TOGETHER |
| Ipa |  INST. RESEARCH | APVV | Other |
| Common | Capital | Common | Capital | Common | Capital | Common | Capital |
| CELT | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| KMSD | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| KVAT | 958 | 0 | 0 | 0 | 0 | 0 | 5 205 | 0 | 6 163 |
| KVTMKv | 947 | 0 | 0 | 0 | 37 732 | 0 | 0 | 0 | 38 679 |
| FEMT | 0 | 0 | 6 505 | 0 | 0 | 0 | 0 | 0 | 6 505 |
| TOGETHER | 1 905 | 0 | 6 505 | 0 | 37 732 | 0 | 5 205 | 0 | 51 347 |

**Graph 2.2** Overview of funds allocated to project solutions by department

Table 2.5 gives an overview of the volume of allocated funds from the Ministry of Education of the Slovak Republic and funds from other programs.

**Table 2.5** Overview of the volume of funds allocated and spent to address projects (in EUR)

|  |  |
| --- | --- |
| PROJECTS | ALLOCATIONS |
| VEGA | 21 746 |
| KEGA | 41 785 |
| Ipa  | 1 905 |
| INSTITUTIONAL RESEARCH | 6 505 |
| APVV | 37 732 |
| OTHER PROJECTS | 5 205 |
| TOGETHER | 114 878 |

Graph 2.3 below shows, for comparison, the evolution by volume of funding allocated to grant and other projects in 2015, 2016, 2017

**Graph 2.3** Project allocations in 2015, 2016, 2017

# PUBLICATIONS

## Evaluation of publishing activity in 2017

The basic form of outputs of scientific research and creative activity is publishing and artistic activity, which was evaluated in accordance with Directive No. 13/2008-R on bibliographic registration and categorization of publishing activity and decree of the Ministry of Education of the Slovak Republic No. 456/2012 Coll. on the central register of records of publishing activity and the central register of records of artistic activity.

In Table 3.1 and Graphs 3.1 and 3.2, publishing activity is tracked by individual departments as well as years at the faculty. The overall publication performance of FEMT its quality of publications is assessed through the preferred categories A1 to D, showing that publishing activity in 2017 still has a relatively qualitatively increasing level, while in quantitative terms it still has a sustained average trend over recent years.

Tables 3.1, 3.2 and the following graphs were drawn up from the departments' documents and according to the documents from the SLDK. The individual categories were determined according to the criteria of the Ministry of Education of the Slovak Republic and took into account the proportions of individual authors. This breakdown is important from the point of view of allocating funds for TU and FEMT, the most important being categories A1, A2, B and C. Based on the evaluation of publishing activity, it can be concluded that the share of categories A1, A2 has decreased somewhat compared to previous years, and in category B there is a substantial increase . According to current criteria, it is precisely the need to continue to focus on these types of publications. A very positive phenomenon is the continued stability of publications in category C, which also have a considerable benefit either in terms of obtaining a subsidy, but also for the evaluation of projects or for the comprehensive accreditation of the faculty as well as the career growth of faculty staff. From a global perspective, FEMT continues to maintain the established trend of publishing outputs per creative worker, which is also due to some extent due to the gradual decrease in the number of staff at the faculty.

**Table 3.1** Evaluation of publishing activities for individual departments according to the criteria of the Ministry of Education of the Slovak Republic for 2017 – employees

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| DEPARTMENT | A1 | A2 | B | C | D |
| KELT | together | 0 | 2,21 | 1,85 | 1,71 | 14,0 |
| average for the reporting staff of the department | 0 | 0,28 | 0,23 | 0,21 | 1,75 |
| KMSD | together | 0 | 3,29 | 3,54 | 1,97 | 9,33 |
| average for the reporting staff of the department | 0 | 0,41 | 0,44 | 0,25 | 1,17 |
| KVAT | together | 0 | 0 | 3,05 | 1,2 | 24,43 |
| average for the reporting staff of the department | 0 | 0 | 0,34 | 0,13 | 2,71 |
| KVTMKv | together | 0 | 0,5 | 1,3 | 4,6 | 16,53 |
| average for the reporting staff of the department | 0 | 0,08 | 0,22 | 0,77 | 2,76 |
| TOGETHER | 0 | 6 | 9,74 | 9,48 | 64,29 |
| AVERAGE PER WORKER  | 0 | 0,2 | 0,32 | 0,31 | 21,43 |

Note. 1:Group A1Book publications of the nature of a scientific monograph

 Group A2Other book publications

 Group BPublications in peer-reviewed scientific journals and copyright certificates, patents and discoveries

 Group CPublications in journals that are not peer-reviewed but are registered in WoS or Scopus databases

 Group OTHER PUBLICATIONS

**Graph 3.1** Evaluation of publishing activity in shares for individual departments according to the criteria of the Ministry of Education of the Slovak Republic for 2017 – employees

**Table 3.2** Utility models, designs of FEMT staff for 2017

|  |  |  |
| --- | --- | --- |
| NUMBER | TITLE | NAME OF THE DESIGNER |
| Application No 88 - 2016 | Stend for experimental tests of hydraulics of mobile machines.  | M. Helexa, M. Mikleš, J. Mikleš |
| Application No 99 - 2016 | Measuring head for sensing frictional characteristics of plain bearings. | J. Turis, P. Beňo, J. Marienčík |
| Application No 137 - 2016 | Arrangement for stretching the chain. | M. Krajčovičová, J. Sklenka, J. Solár |
| Design No. 28401 | ROBOPLAY LOGO  | E. Pivarčiová, S. Kvočka |
| Design No. 28404 | FEMT 20th anniversary logo  |  S. Kvočka |
| utility modelNo 7797 /2017 | Initiation assembly for the initiation of energetic substances with a mechanical impulse and a detonation hammer for the initiation of the detonation decomposition of energy substances.  | L. Štibrányi, M. Bachratý, Ľ. Javorek |

**Graph 3.2** Comparison of the number of outputs in each category of publishing activity

according to the criteria of the Ministry of Education of the Slovak Republic

Table 3.3 shows the assessment of the citation activity of individual faculty staff in the categories:

1 - In foreign publications registered in the Web of Science and the Scopus database

2 - In home publications registered in the Web of Science and the Scopus database

3 - In foreign publications not registered in the Web of Science and the Scopus database

4 - In domestic publications not registered in Web of Science and the Scopus database

**Table 3.3** Evaluation of citation activities for the2017 departments – staff

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| DEPARTMENT | 1 | 2 | 3 | 4 |
| KELT | together | 36,00 | 5,00 | 14,00 | 31,00 |
| average for the reporting staff of the department | 4,50 | 0,63 | 1,75 | 3,88 |
| KMSD | together | 45,00 | 3,00 | 7,00 | 15,00 |
| average for the reporting staff of the department | 5,63 | 0,38 | 0,88 | 1,88 |
| KVAT | together | 91,00 | 18,00 | 10,00 | 34,00 |
| average for the reporting staff of the department | 10,11 | 2,00 | 1,11 | 3,77 |
| KVTMKv | together | 44,00 | 3,00 | 22,00 | 40,00 |
| average for the reporting staff of the department | 7,30 | 0,50 | 3,70 | 6,70 |
| TOGETHER | 216,00 | 29,00 | 53,00 | 120,00 |
| AVERAGE FOR FEMT REPORTING WORKER (30) | 7.20 | 0,97 | 1,77 | 4,00 |

Table 3.4 shows the H index by individual databases of FEMT executives, the above overview is inserted into the Report on the VVČ for the first time in the history of the faculty, both for motivational reasons in advance reflecting on the possible subsidy system of the Ministry of Education of the Slovak Republic and the university, as well as compatibility with the Report on the VVČ TU in Zvolen.

**Table 3.4** FEMT creative employees as of 31.12.2017

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| DEPARTMENT | NAME | TITLE | H index WOS /ALL DATABASES | H index SCOPUS  | H index SCOPUS (without autoci-tations) |
| KELT | Kováč Ján doc. Ing. PhD. | associate professor with CSc./PhD. | 2 | 2 | 2 |
| Krilek Jozef doc. Ing. PhD. | associate professor with CSc./PhD. | 1 | 2 | 2 |
| Brodnianská Zuzana Ing. PhD. | odb.as.s CSc./PhD. | 1 | 2 | 1 |
| Helexa Milan Ing. PhD. | odb.as.s CSc./PhD. | 0 | 1 | 1 |
| Černecký Jozef prof. Ing. CSc. | professor with CSc./PhD. | 2 | 4 | 3 |
| Víglaský Jozef prof. Ing. CSc. | professor with CSc./PhD. | 2 | 1 | 1 |
| KMSD | Beňo Pavel doc. Ing. PhD. | associate professor with CSc./PhD. | 1 | 2 | 2 |
| Bodnár Ferdinand doc. Ing. CSc. | associate professor with CSc./PhD. | 1 | 1 | 1 |
| Kučera Marian doc. Ing. PhD. | associate professor with CSc./PhD. | 2 | 4 | 4 |
| Kotšmíd Stanislav Ing. PhD. | odb.as.s CSc./PhD. | 0 | 0 | 0 |
| Kvočka Stanislav Ing. ArtD. | odb.as.s CSc./PhD. | 0 | 1 | 1 |
| Matej Jaroslav Ing. PhD. | odb.as.s CSc./PhD. | 1 | 1 | 1 |
| Minárik Marián Ing. PhD. | odb.as.s CSc./PhD. | 0 | 0 | 0 |
| Turis Ján Ing. PhD. | odb.as.s CSc./PhD. | 0 | 1 | 1 |
| KVAT | Javorek Ľubomír doc. Ing. CSc. | associate professor with CSc./PhD. | 2 | 2 | 2 |
| Naščák Ľubomír doc. Ing. CSc. | associate professor with CSc./PhD. | 1 | 1 | 1 |
| Pivarčiová Elena doc. Mgr. PhD. | associate professor with CSc./PhD. | 2 | 3 | 3 |
| Svoreň Ján doc. Ing. CSc. | associate professor with CSc./PhD. | 1 | 2 | 1 |
| Hrčková Mária Ing. PhD. | odb.as.s CSc./PhD. | 0 | 0 | 0 |
| Koleda Pavol Ing. | odb.as.s CSc./PhD. | 0 | 1 | 1 |
| Koleda Peter Ing. | odb.as.s CSc./PhD. | 0 | 0 | 0 |
| Krajčovičová Mária Ing. PhD. | odb.as.s CSc./PhD. | 0 | 0 | 0 |
| Barcík Štefan prof. Ing. CSc. | professor with CSc./PhD. | 8 | 7 | 5 |
| KVTMKv | Black Helena doc. Ing. PhD. | associate professor with CSc./PhD. | 0 | 2 | 2 |
| Dado Miroslav doc. Ing. PhD. | associate professor with CSc./PhD. | 1 | 3 | 2 |
| Hnilica Richard doc. Ing. PhD. | associate professor with CSc./PhD. | 2 | 3 | 2 |
| Kalincová Daniela doc. Ing. PhD. | associate professor with CSc./PhD. | 1 | 4 | 4 |
| Sujová Erika Ing. PhD. | odb.as.s CSc./PhD. | 1 | 2 | 2 |
| Ťavodová Miroslava Ing. PhD. | odb.as.s CSc./PhD. | 0 | 4 | 3 |

In the context of the Draft Measures for 2017 of the report on the VVČ for the year, paragraphs 10 and 11, the Dean's Methodological Guideline (Rules and Requirements for phD study program VT at FEMT TU in Zvolen in AR 2017/2018) was adopted at the faculty, valid on 01.10.2017. The above-mentioned material is conceived in order to improve the quality of the publication activity of doctoral students with regard to the best possible fulfillment of the criteria for obtaining funds from the subsidy breakdown and for the need to meet the criteria of future comprehensive accreditation in the field of research 14 - mechanical engineering.

In particular, the publishing activity of doctoral students of the departments for the year 2017 was evaluated at the Faculty of Environmental and Production Technology of the Tu in Zvolen.

**Table 3.5** Evaluation of publishing activities for individual departments according to the criteria of the Ministry of Education of the Slovak Republic

 2017 – PhD students

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| DEPARTMENT | A1 | A2 | B | C | D |
| KELT | together | 0,00 | 0,00 | 0,00 | 0,80 | 4,00 |
| average for phD student of the department | 0,00 | 0,00 | 0,00 | 0,13 | 0,67 |
| KMSD | together | 0,00 | 0,00 | 0,00 | 0,00 | 0,10 |
| average for phD student of the department | 0,00 | 0,00 | 0,00 | 0,00 | 0,10 |
| KVAT | together | 0,00 | 0,00 | 0,70 | 0,50 | 9,27 |
| average for phD student of the department | 0,00 | 0,00 | 0,07 | 0,05 | 0,93 |
| KVTMKv | together | 0,00 | 0,00 | 0,00 | 0,25 | 5,76 |
| average for phD student of the department | 0,00 | 0,00 | 0,00 | 0,13 | 2,88 |
| Together | 0,00 | 0,00 | 0,77 | 1,55 | 19,13 |
| AVERAGE PER FEMT PHD STUDENT (19) | 0,00 | 0,00 | 0,04 | 0,082 | 1,007 |

**Graph 3.3** Evaluation of the publication outputs of PhD students per department

Table 3.6 shows the assessment of the citation activity of individual PhD students in the categories:

1 - In foreign publications registered in the Web of Science and the Scopus database

2 - In home publications registered in the Web of Science and the Scopus database

3 - In foreign publications not registered in the Web of Science and the Scopus database

4 - In domestic publications not registered in Web of Science and the Scopus database

**Table 3.6** Evaluation of citation activities for individual departments in 2017 – PhD students

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| DEPARTMENT | 1 | 2 | 3 | 4 |
| CELT | together | 0,00 | 0,00 | 0,00 | 2,00 |
| average for the reported PhD student of the department | 0,00 | 0,00 | 0,00 | 0,33 |
| KMSD | together | 0,00 | 0,00 | 0,00 | 0,00 |
| average for the reported PhD student of the department | 0,00 | 0,00 | 0,00 | 0,00 |
| KVAT | together | 8,00 | 0,00 | 0,00 | 2,00 |
| average for the reported PhD student of the department | 0,80 | 0,00 | 0,00 | 0,20 |
| KVTMKv | together | 0,00 | 0,00 | 0,00 | 0,00 |
| average for the reported PhD student of the department | 0,00 | 0,00 | 0,00 | 0,00 |
| TOGETHER | 8,00 | 0,00 | 0,00 | 0,53 |
| AVERAGE PER FEMT PHD STUDENT (19) | 0,42 | 0,00 | 0,00 | 0,03 |

The following table and graph provides an overview of the implementation, management and organisational activities of individual FEMT employees for the period 1.1.2017 – 31.12.2017 in the categories:

A. Implementation activity,

B. Management and organisational activities in the field of science and technology,

C. Assessment activity.

**Table 3.7**  Scores of FEMT departments in each category for 2017

|  |  |  |  |
| --- | --- | --- | --- |
| Department | And | B | C |
|
| CELT | 5,50 | 36,00 | 26,00 |
| Average per reporting person | 0,69 | 4,50 | 3,25 |
| KMSD | 1,00 | 25,00 | 23,00 |
| Average per reporting person | 0,13 | 3,13 | 2,88 |
| KVAT | 28,00 | 27,00 | 62,00 |
| Average per reporting person | 3,11 | 3,00 | 6,88 |
| KVTMKv | 6,00 | 18,00 | 29,00 |
| Average per reporting person | 1,00 | 3,00 | 4,80 |
| TOGETHER | 40,50 | 106,00 | 140,00 |
| AVERAGE FOR FEMT REPORTING WORKER (30) | 1,35 | 3,53 | 4,67 |

**Graph 3.4** Evaluation of the activities of FEMT departments in individual categories in 2017

# CO-WORKING IN SCIENCE AND TECHNOLOGY AT HOME AND ABROAD

## Cooperation with higher education institutions

The Faculty of Environmental and Production Technology has developed cooperation with higher education institutions throughout the Slovak Republic and also with many foreign higher education institutions and their staff.

They cooperate not only in the pedagogical field within the framework of the latest information and knowledge in pedagogy, but also scientific and research activities in solving specific grant projects. FEMT staff are also engaged in assessment and expertise activities, they are members of commissions for the improvement of scientific and pedagogical qualifications, etc.

### FEMT's cooperation with domestic university departments

* Slovak University of Agriculture in Nitra

Faculty of Technology, Prof. Zdenko Tkáč, PhD., doc. Ing. Ivan Janoško, CSc.; Dr. h.c. Prof. Pavol Findura, PhD., doc. Ľubomír Hujo, PhD., doc. Ing.

Faculty of Economics and Management, Prof. Dr. Elena Horská;

* University of Žilina in Žilina

Faculty of Mechanical Engineering, Prof. Jozef Pilc, CSc., Prof. Ing.Miroslav Neslušan, Prof. RNDr. Milan Malcho, PhD., Prof. Jozef Jandačka, PhD., doc. Ing. Andrej Kapjor, PhD., doc. Štefan Papučík, PhD., doc. Radovan Nosek, PhD., Department of Materials Engineering prof. E. Tillová, PhD., Department of Industrial Engineering doc. Ľ. Dulina, PhD., Department of Machining and Production Technology prof. A. Czán, PhD.,

Faculty of Electrical Engineering, Prof. Klára Čápová, PhD., Prof. M. Dado, PhD.;

* Slovak University of Technology in Bratislava

Faculty of Materials Technology, Prof. Maroš Soldán, PhD., Dr.h.c. prof. Pavol Božek, CSc. , doc. RNDr. Karol Hatiar, CSc., Kamil Trnka, Doc. Marta Kučerová, PhD: Institute of Materials - Doc. M. Hudáková, PhD.,

Faculty of Mechanical Engineering, Prof. Marián Peciar, PhD., doc. Lešinský, CSc., Michal Bachratý, PhD., doc. Marián Rabbit, CSc., Ľuboš Magdolen, PhD., prof. Ladislav Gulan, PhD.,

Faculty of Chemical and Food Technology, Bratislava, doc. V. Chovancová, CSc., Prof. I. Hudec, PhD. - Director of the Institute of Polymeric Materials;

Faculty of Electrical Engineering and Informatics, Prof. Viktor Ferencey, CSc.;

* Technical University of Košice

Faculty of Mechanical Engineering, Prof. Peter Horbaj, PhD., Prof. Mária Čarnogurská, CSc., Prof. Augustín Varga, CSc., doc. Ján Kizek, PhD., doc. J. Brezinová, PhD., doc. Ing. D. Jankura, PhD., prof. Ing. E. Lumnitzer, CSc.;

Faculty of Metallurgy, doc. J. Petrík, PhD., doc. Ing. Jarmila Trpčevska, PhD.

Faculty of Electrical Engineering, Prof. Ján Mihalík, CSc., Prof. Dušan Marchevský, CSc.;

Faculty of Production Technologies based in Prešov, Prof. Jozef Zajac, CSc.;

* Matej Bel University in Banská Bystrica

Faculty of Natural Sciences, Prof. PaedDr. Milan Ďuriš, CSc., externally - Prof. M. Piatrik, PhD., Prof. RNDr. Iveta Marková, PhD., doc. Ing. A. Očkajová, CSc.;

* University of St. Petersburg Cyril and Methodius in Trnava

Faculty of Natural Sciences, doc. Ing. Stanislav Hostin, PhD.;

**Dubnica Institute of Technology in Dubnica nad Váhom** prof. Ladislav Várkoly, PhD., doc.

### FEMT's cooperation with foreign university departments

* Vysoké učení technické v Brno, prof. Milan Pavelek, CSc., doc. Miroslav Škopán, Faculty of Mechanical Engineering inženýrství Ing. Z. Smékal, CSc., Czech Republic;
* Czech Technical University in Praza, Faculty of Electrical Engineering, Prof. S. Ďaďo, DrSc., Prof. M. Laipert, CSc., Strojní fakulta , Martin Hlinovský, Ph.D., Libor Reif, CSc., Czech Republic;
* Czech University of Agriculture in Prague, Faculty of Forestry and Dřevařská Prague, doc. Jiří Dvořák, Ph.D., doc. Milan Gaff, Ph.D., Faculty of Technology Prague, Prof. Vladimír Jurča, CSc., Prof. Martin Libra, CSc., Prof. M. Müller, PhD., Czech Republic;
* Palacký University in Olomouc, Industrial Laboratory of Optics, RNDr. Jiří Keprt, DrSc., Czech Republic;
* Technical University of Ostrava – doc. J. Kionka, CSc., doc. Dr. J. Punčochář, CSc., Faculty of Security Inženýrství Ing.
* Jan Evangelisty Purkyně University, Ústí nad Labem, Faculty of Mechanical Engineering, doc. Nataša Náprstková, PhD., Czech Republic;
* University of Silesia in Opava, Faculty of Entrepreneurship in Karviné; RNDr. R. Jewellery, PhD., Czech Republic;
* Mendel University in Brno, Faculty of Lesnická a dřevařská, doc. D. Tesařová, PhD., prof. Miroslav Rousek, CSc., doc. Ing, Zdenko Kopecký, PhD., doc. Karel Janák, CSc. , Czech Republic;
* University of Pardubice, Faculty of Chemistry and Technology, Prof. P. Kalenda, CSc., Prof. A. Kalendová, Dr., Czech Republic;
* Technical University, Faculty of Mechanical Engineering, Liberec, Eva Nováková, PhD., Czech Republic;
* University of West Bohemia in Pilsen, Faculty of Mechanical Engineering, Marek Bureš, PhD., Prof. Dr. Antonín Kříž, Czech Republic;
* Voronezh State Academy of Forestry Engineering, Prof. Dr. Tech. Sci. Larissa I. Belchinskaya, Russia;
* University of Life Sciences – SGGW, Faculty of Forestry and Wood Technology, Warsaw, prof. Dr. hab. Krzysztof J. Krajewski, Dr.hab. Piotr Borysiuk, prof. Dr hab inž. Ewa Dobrowolska, Poland;
* SGGW, Faculty of Production Engineering Warszawa, prof. dr. Hab. Jerzy Wiesik, Poland;
* AR, Department of Mechanizacji Prac Lesnych Krakow, prof. dr. Hab. Józef Walczyk, Dr. Hab. Inž. Pawel Tylek, Dr. Hab. Inž. Krzystof Slowinski, Poland;
* Ukrainian derzavnyj lisotechničnyj universytet Lviv, prof. Nestor J, Bybljuk, DrSc., doc. Oleg Styranivsky, Ph.D., doc. Oleg Magura, Ph.D., Ukraine;
* Nyguat-Magyarországi Egytem Sopron, Prof. Belo Horváth, Prof. Z. Kovacs, Hungary;
* University of Zagreb, Faculty of Forestry, Prof. Dr. Sc. Marian Šušniar, doc. Dr.sc. Igor Dukic, Croatia;
* Kazan National Research Technological University, Prof. Ruslan R. Safin, DrSc., Russia;
* Belarusian State University, Minsk, doc. Pavel M. Rudak, PhD., Belarus;
* Volga State University of Technology, Yoshkar Ola,doc.Ing. Evgeny Y. Razumov,CSc, Russia
* Instytut Technologii Mechanicznej, Wydział Budovy Maszyn i Zarządzania, Politechnika Poznańska, Poznań , Dr. inž. Bartosc Palubicki, Poland;
* University of Rijeka, Faculty of Engineering, Prof. T. Mikac, Croatia;
* Josip Juraj Strossmayer University of Osijek, Mechanical Engineering Faculty in Slavonsky Brod, Prof. D. Kozak, Croatia;
* Technical University of Sofia, Prof. G. Popov, Bulgaria;
* [Gdansk University of Technology](https://www.researchgate.net/institution/Gdansk_University_of_Technology), [Faculty of Mechanical Engineering](https://www.researchgate.net/institution/Gdansk_University_of_Technology/department/Faculty_of_Mechanical_Engineering), Dr. Mieczyslaw Siemiatkowski), Poland;
* Transilvania University of Brasov, Brasov, Prof. M. Ispas, Romania;
* Politechnika Koszalińska, Wydział Mechaniczny, prof. nadzw. dr hab. inż. Witold Gulbiński, prof. nadzw. dr hab. inż. Krzysztof Rokosz, prof. nadzw. Dr.. Hab. Inz. Jerzy Chojnacki, Poland;
* University of Maribor, Faculty of Mechanical Engineering, prof. Dr. T. Kreže;
* Silesian University of Technology, Faculty of Organization and Management, Institute of Production Engineering, Prof. W. Bialy, Republic of Poland;
* Ryerson University, Toronto, Ontario, Dept. of Mechanical & Industrial Engineering, Prof. David Nayolor, Ph.D., P. Eng., Canada;
* University of L'Aquila, Department of Industrial and Information Engineering and Economics, Stefano Sfarra, PhD., Italy;
* State Forest Technical University, State institution of Higher profesional Education, Saint-Petersburg, doc. Sergey Spiridov, Republic of Russia.

## FEMT's cooperation with professional workplaces

FEMT staff cooperates with various institutions in solving projects, their development and implementation work, in arranging operational exercises, within the framework of diploma theses.

* HIVUS s.r.o. , Žilina, Jaroslav Kocian;
* K-system, s.r.o., Žiar nad Hronom, Ľudovít Červenýk, Andrea Kúdelová;
* Zvolenská teplárenská, a.s., Zvolen, Ing. Jozef Petrinec;
* Doka Drev, s.r.o, Banská Bystrica, Štefan Mátik;
* DETOX, s.r.o., Plant Banská Bystrica, Katarína Babková, Karina Paulíny, PhD.;
* VIMAR Ecological boilers VIGAS, Slovenská Ľupča, Pavel Vigaš;
* Wastewater treatment plant Rakytovce, Banská Bystrica, Pavol Badinský;
* Euroheat SK, s.r.o. , Bratislava, Ján Karman;
* SHMÚ Banská Bystrica, RNDr. Jana Podolinská;
* SECOLÓG, s.r.o., Brezno (Landfill) – Richard Bergel, PhD.;
* Slovak Academy of Sciences, Institute of Polymers, Department of Theoretical and Applied Polymer Research, Bratislava, Igor Novák, CSc., Institute of Electrical Engineering, M. Polák, DrSc.;
* Research Institute of Plastic Substances, Nitra, Dana Červinková, Eva Lukáčiková;
* PPS Group, a. s., Detva, Complex PPS Group a.s., Tajovského 7, 962 12 DETVA, Vladimír Ľalík, Jozef Klimo;
* LKT, s. r. o., Trstená; Štefan Furdek 270/12, **Peter Šinál**;
* ESSEL Slovenská Lupča, Ing. Szylágy;
* Forest Technology Plant Banská Bystrica, Sivčo, Franta PhD.;
* Continental Automotive System Slovakia, Zvolen, Zvolen, Slovakia, p. Šimiak, (contractual cooperation, Ing. J. Salay;
* BRC Slovakia, s. r. o., Drmla, Dobrotová;
* SLAVIA PRODUCTION SYSTEMS a.s., Detva, Dobrota, Michal Kucej, Jana Kucejová;
* Zetor Slovakia, Ing. Klonga;
* INOVAL Ladomeská Vieska , Slovak Academy of Sciences, Institute of Materials and Mechanics Machine
* SAS, Dr. František Simančík, P. Oslanec, Spanish - specification of software for the ASFEU project;
* Institute of Material Research SAS, Košice, RNDr. Miroslav Džupon, PhD.;
* ŽOS Zvolen, a. s. Zvolen, Ing. Ľ. Martinská;
* Ironworks Podbrezová, a. s., Podbrezová , Ing.
* Hriňovské strojárne, a. s., Hriňová , Ing. A. Krnáčová;
* Mint Kremnica, š. p., Kremnica (contractual cooperation), R. Kaštan, PhD.;
* GeWiS Slovakia, spol. s r. o., Handlová , Ing. L. Mazúrová;
* NEMAK Slovakia, s.r.o., Žiar nad Hronom, R. Palacka, PhD.;
* Foundry Hronec, a. s. , Ing.
* Fronius, a. s., Slovakia , Bc. P. Acs;
* Slovak Society for Quality – PS " Education and Training" Ing.
* K – Kosorín system, Ing.
* STATON , Turany , Ing. Morgoš;
* WAY Industries Krupina a.s., Ing. Macko, Ing. Škoda;
* Ironal, s. r. o., Banská Bystrica Ing. L. Kamenický;
* Certification bodies: PQM s.r.o. Banská Bystrica., Ing. Snopek;
* ITQ – CZ s.r.o. Žilina;
* CADvision – Mihálik;
* FOREST MERI, s.r.o., Martin Šmíd;
* ROYAL FOREST, s.r.o. Sokoľ, Jaroslav Sepeši;
* GRD s.r.o., Ing. M. Gregáň;
* FIBERPLAST s.r.o., Miroslav Ďurica;
* Research Institute of Welding Industrial Institute of the Slovak Republic, Ing.

# SCIENTIFIC AND PROFESSIONAL EVENTS OF FEMT

In 2017, the departments of the Faculty of Environmental and Production Technology organized or participated in the co-organization of the following scientific and professional events:

Name of department: **KVAT**

Workshop for 3. Primary school Zvolen (Arduino)

*Type of event:* practical workshop

Date of the event:  **10.1.2017**

*Expert guarantor:* Doc. Mgr. Elena Pivarčiová, PhD.

Number of participants: - domestic: 8

*Event focus:*  robotics, algorithmics, programming

Name of department: **KMSD**

*Type of event:* Virtual reality presentation – TUZVO Day in Europe SC, Zvolen

Date of the event:  **20.1.2017**

*Expert guarantor:* Jaroslav Matej, PhD.

Number of participants: - domestic: 150

*Event focus:* pvirtual reality presentation

Name of department: **KVAT**

Workshop for 3. Primary school Zvolen

*Type of event:* practical workshop

Date of the event:  **24.1.2017**

*Expert guarantor:* Doc. Mgr. Elena Pivarčiová, PhD.

Number of participants: - domestic: 17

*Event focus:*  robotics, construction, algorithmization, programming

Name of department: **KVAT**

Roboplay 2017: robot competition for high school and university students TUZVO

*Type of event:* robot competition

Event date:  **25.1.2017**

*Expert guarantor:* Doc. Mgr. Elena Pivarčiová, PhD.

*Number of participants:* - home: 6 teams (14 competitors), 26 guests

Focus of the event: robotics

Name of department: **KVAT**

Roboplay 2017: competitive robot show for primary schools

*Type of event:* robot competition

Date of the event:  **27.1.2017**

*Expert guarantor:* Doc. Mgr. Elena Pivarčiová, PhD.

*Number of participants:* - home: 7 teams (18 competitors), 65 guests

Focus of the event: robotics

Name of department: **KVAT**

ROBOPLAY: fun and competitions with robots – a reward for a good certificate for pupils. Schools

*Type of event:* presentation of robotics

Date of the event:  **31.1.2017**

*Expert guarantor:* Doc. Mgr. Elena Pivarčiová, PhD.

Number of participants: - domestic: 50

Focus of the event: robotics

Name of department: **KVAT**

Workshop for 5. Primary school Zvolen

*Type of event:* practical workshop

Date of the event:  **17.2.2017**

*Expert guarantor:* doc. Mgr. Elena Pivarčiová, PhD.

Number of participants: - domestic: 26

*Event focus:*  robotics, construction, algorithmization, programming

Name of department: **KVAT**

RoboPlaying: fun and competitions with robots: Presentation event for 5. Primary school Zvolen

*Type of event:* presentation of robotics

Date of the event:  **23.2.2017**

*Expert guarantor:* Doc. Mgr. Elena Pivarčiová, PhD.

Number of participants: - domestic: 38

Focus of the event: robotics

Name of department: **KVAT**

Workshop for 5. Primary school Zvolen

*Type of event:* practical workshop

Date of the event:  **24.2.2017**

*Expert guarantor:* Doc. Mgr. Elena Pivarčiová, PhD.

Number of participants: - domestic: 24

*Event focus:*  robotics, construction, algorithmization, programming

Name of department: **KVAT**

Workshop for 5. Primary school Zvolen

*Type of event:* practical workshop

Date of the event:  **7.3.2017**

*Expert guarantor:* Doc. Mgr. Elena Pivarčiová, PhD.

Number of participants: - domestic: 23

*Event focus:*  robotics, construction, algorithmization, programming

Name of department: **KVAT**

RoboPlaying: fun and competitions with robots: Presentation event for 5. Primary school Zvolen

*Type of event:* presentation of robotics

Date of the event:  **9.3.2017**

*Expert guarantor:* Doc. Mgr. Elena Pivarčiová, PhD.

Number of participants: - domestic: 61

Focus of the event: robotics

Name of department: **KVAT**

Workshop for 5. Primary school Zvolen

*Type of event:* practical workshop

Date of the event:  **10.3.2017**

*Expert guarantor:* Doc. Mgr. Elena Pivarčiová, PhD.

Number of participants: - domestic: 25

*Event focus:*  robotics, construction, algorithmization, programming

Name of department: **KVAT**

Workshop for 5. Primary school Zvolen

*Type of event:* practical workshop

Date of the event:  **14.3.2017**

*Expert guarantor:* Doc. Mgr. Elena Pivarčiová, PhD.

Number of participants: - domestic: 20

*Event focus:*  robotics, construction, algorithmization, programming

Name of department: **KVAT**

Workshop for 5. Primary school Zvolen

*Type of event:* practical workshop

Date of the event:  **17.3.2017**

*Expert guarantor:* Doc. Mgr. Elena Pivarčiová, PhD.

Number of participants: - domestic: 27

*Event focus:*  robotics, construction, algorithmization, programming

Name of department: **KVAT**

Workshop for 5. Primary school Zvolen

*Type of event:* practical workshop

Date of the event:  **21.3.2017**

*Expert guarantor:* Doc. Mgr. Elena Pivarčiová, PhD.

Number of participants: - domestic: 27

*Event focus:*  robotics, construction, algorithmization, programming

Name of department: **KVAT**

Workshop for 1. Primary school Zvolen

*Type of event:* practical workshop

Date of the event:  **24.3.2017**

*Expert guarantor:* Doc. Mgr. Elena Pivarčiová, PhD.

Number of participants: - domestic: 20

*Event focus:*  robotics, construction, algorithmization, programming

Name of department: **KVAT**

Workshop for Vígľaš Primary School

*Type of event:* practical workshop

Date of the event:  **28.3.2017**

*Expert guarantor:* Doc. Mgr. Elena Pivarčiová, PhD.

Number of participants: - domestic: 19

*Event focus:*  robotics, construction, algorithmization, programming

Name of department: **KVAT**

Workshop for Vígľaš Primary School

*Type of event:* practical workshop

Date of the event:  **31.3.2017**

*Expert guarantor:* Doc. Mgr. Elena Pivarčiová, PhD.

Number of participants: - domestic: 25

*Event focus:*  robotics, construction, algorithmization, programming

Name of department: **KVTMKv**

*Type of event:* Quality Manager course

Event date:  **April 2017**

*Professional guarantor:* Helena Čierna, PhD.

Number of participants: - domestic: 24

 - foreign: 1

*Focus of the event:* The quality manager course according to ISO 9001:2015 is designed for students of a technical university and professional practice. After completing the lectures, solving the case studies, as well as after drawing up the final test, the participants of the course will receive the Quality Manager certificate, which will allow them to be more applicable in practice, as well as increase their credit to other students.

Name of department: **KVAT**

RoboPlaying: fun and competitions with robots: Presentation event for 3. Primary school Zvolen

*Type of event:* presentation of robotics

Date of the event:  **12.5.2017**

*Expert guarantor:* Doc. Mgr. Elena Pivarčiová, PhD.

Number of participants: - domestic: 72

Focus of the event: robotics

Name of department: **KVTMKv**

*Type of event:* workshop "Surface Engineering"

Event date: **29.5.2017**

*Expert guarantor:* Erika Sujová, PhD.

Number of participants: - domestic: 10

 - foreign: 35

*Focus of the event:*  lectures of the participants of the CEEPUS excursion project focused on the specific area of surface treatment of metallic materials for the project participants. Lectures of foreign and domestic teachers who are experts in the field on the topic of special surface treatment of metallic materials, heat treatment and powder metallurgy technology.

Name of department: **KVAT**

RoboPlaying: fun and competitions with robots: Presentation event for 3. Primary school Zvolen

*Type of event:* presentation of robotics

Date of the event:  **29.5.2017**

*Expert guarantor:* Doc. Mgr. Elena Pivarčiová, PhD.

Number of participants: - domestic: 57

Focus of the event: robotics

Name of department: **KVAT**

Workshop for The New Mine Leisure Center

*Type of event:* practical workshop

Date of the event:  **12.7.2017**

*Expert guarantor:* Doc. Mgr. Elena Pivarčiová, PhD.

Number of participants: - domestic: 24

*Event focus:*  robotics, construction, algorithmization, programming

Name of department: **KVAT**

*Type of event:* International scientific conference Production and automation technology

*Date of the event:* **20-21/09/2017**

*Professional guarantor:* Prof. Štefan Barcík, CSc.

Number of participants: - domestic: 25

 - foreign: 1

*Focus of the event:*  the articles were focused in the field – Production technology.

*Title of the proceedings:* Trends in production and environmental technology in the 21st century

Name of department: **KELT**

*Type of event:* IX. International Scientific Conference, Mobile Energy Means – Hydraulics – Environment – Ergonomics of Mobile Machines

*Date of the event:* **19.- 20.9.2017**

*Expert guarantor:* Jozef Krilek, PhD.

Number of participants: - domestic: 20

 - foreign: 4

*Focus of the event:* The conference programme focused on the presentation of current scientific research results and operational knowledge. The conference provided a space for the mutual exchange of information, experience and knowledge in this field. The Conference's Proceedings of Abstracts were published and the conference articles were published in a scientific peer-reviewed journal - Acta Facultatis Technicae Zvolen (AED).

*Title of proceedings:* Mobile energy means – Hydraulics – Environment

Ergonomics of mobile machines: Proceedings of abstracts

Name of department: **KMS**

*Type of event:* Virtual reality presentation – Open Day at the Private Secondary School

 Technical, Žiar nad Hronom

Event date:  **04/10/2017**

*Expert guarantor:* Jaroslav Matej, PhD.

Number of participants: - domestic: 50

*Focus of the event:* Virtual Reality Presentation

Name of department: **KVAT**

Science & Technology Week: Lego Mindstorms Education Robotic Building Kits Presentation

*Type of event:* presentation of robotics

Date of the event:  **6.11.2017**

*Expert guarantor:* Doc. Mgr. Elena Pivarčiová, PhD.

Number of participants: - domestic: 175

Focus of the event: robotics

Name of department: **KVAT**

Workshop for 7. Primary school Zvolen

*Type of event:* practical workshop

Date of the event:  **18.12.2017**

*Expert guarantor:* Doc. Mgr. Elena Pivarčiová, PhD.

Number of participants: - domestic: 20

*Event focus:*  robotics, construction, algorithmization, programming

Name of department: **KVAT**

Workshop for private secondary technical school, Žiar nad Hronom

*Type of event:* practical workshop

Date of the event:  **19.12.2017**

*Expert guarantor:* Doc. Mgr. Elena Pivarčiová, PhD.

Number of participants: - domestic: 21

*Event focus:*  robotics, construction, algorithmization, programming

Name of department: **KVAT**

Workshop for 3. Primary school Zvolen

*Type of event:* practical workshop

Date of the event:  **20.12.2017**

*Expert guarantor:* Doc. Mgr. Elena Pivarčiová, PhD.

Number of participants: - domestic: 22

*Event focus:*  robotics, construction, algorithmization, programming

Name of department: **KVAT**

Workshop for 3. Primary school Zvolen

*Type of event:* practical workshop

Date of the event:  **22.12.2017**

*Expert guarantor:* Doc. Mgr. Elena Pivarčiová, PhD.

Number of participants: - domestic: 11

*Type of event:* **"Week of Science and Technology 2017" at FEMT –** Professional lectures and practical demonstrations for students aimed at linking study with practice.

*Expert guarantor:* Marián Kučera, PhD., Dean of FEMT

*Date of the event:* **7-9/11/2017**

Number of participants: - domestic: 180

1.Expert lecture of Fronius Slovensko s. r. o., - Expert lecture

associated with virtual and real welding.

2.Professional lecture of companies:

- WAY Industries, a.s.- Development of loaders, deminers, specials.

- SLAVIA PRUCTION SYSTEMS a.s. - Industry 4.0

 Development of automated production lines for automotive and other engineering industries.

- BURGMAIER PRECISION SLOVAKIA s.r.o. - Burgmaier – fascination with accuracy.

- GEVORKYAN, s.r.o. - We create where one technology ends and the other begins.

- CADVISION, s.r.o., - Modeling and use of Autodesk 2D and 3D products in practice.

# SCIENCE AND TECHNOLOGY PROJECTS

## Grant projects VEGA, KEGA

In 2017, **3** VEGA projects and 6 KEGA projects were solved at FEMT.

**Table 6.1** Allocations for VEGA grant projects in 2017 (in EUR)

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| PROJECT NO | PROJECT NAME | PROJECT LEADER | DEPARTMENT | SOLUTION TIME | ALLOTTED |
| Bv | Kv |
| VEGA 1/0315/17 | Research of relevant properties of thermally modified wood in contact phenomena in the machining process with prediction of obtaining an optimal surface | Štefan Barcík | KVAT | 2017 - 2019 | 11 103 | 0 |
| VEGA1/0826/15 | Research of cutting mechanisms in the process of processing wood mass | Jozef Krilek | CELT | 2015 - 2018 | 4 261 | 0 |
| VEGA1/0531/15 | Increasing the service life of tools and structural parts of mechanisms used in forestry technologies | Richard Hnilica | KVTMKv | 2015 - 2018 | 6 382 | 0 |
| TOGETHER | 21 746 | 0 |

Results achieved in solving VEGA projects in 2017

**ONGOING PROJECTS:**

**VEGA 1/0826/15 Research of cutting mechanisms in the process of processing wood mass**

**.doc. Ing. Jozef Krilek, PhD.**

Achievements:

As part of the solution of the project 1/0826/15, an analysis of the current state of affairs and an analysis of the problems of solving the methodology of measurement and evaluation of specific monitored indicators were solved. During 2017, a measurement methodology was proposed and measurements were carried out on the basis of the established methodology. As part of the project, a scientific monograph and scientific articles were published at various conferences and in the journals CCC, WOS, SCOPUS.

**VEGA 1/0531/15 Increasing the service life of tools and structural parts of mechanisms used in forestry technologies**

**.doc. Ing. Richard Hnilica, PhD.**

Achievements:

In the third year of the project solution, we continued with material analyses. In the second part of the year, we proceeded to the actual operational tests of the working tools of mulchers working in forestry operation. Based on the proposed modifications of the working tools, the actual modifications of the tools by hardening and cementation were carried out. Surface treatments were again followed by material analysis to detect changes in structure and mechanical properties. Based on the analyses, we also proceeded to the design of the use of hardeners on exposed surfaces of working tools. For this new treatment procedure, the necessary material analyses have been carried out in order to identify the most suitable welds. Those proposals should contribute to increasing the abrasive wear resistance of the tools.

**VEGA 1/0315/2017 Research of relevant properties of thermally modified wood in contact phenomena in the machining process with prediction of obtaining an optimal surface.**

**Prof. Ing. Štefan Barcík, CSc.**

Achievements:

As part of the 1st stage of the VEGA project solution, a comprehensive methodology of individual measurements was developed, test samples of individual trees were prepared (identification of trees for the experiment, handling of lumber, thermal treatment at four technological temperatures). Furthermore, a tooling economy was provided for sample machining (4 head milling with different angular geometry, 4 types of milling knive materials), as well as the completion of monitoring workplaces (machining quality and energy intensity) and verification experiments under given conditions on experimental trees.

Staff of FEMT KVTMKv **doc. Dado Miroslav, PhD., Ing Sujová Erika, PhD., doc.** participated in projects at other faculties (FEE TU) and universities (UMB FF).

**VEGA 1/0377/17 Research on the synergistic effect of the interaction between noise and ototoxic substances in hazardous operations of forestry and woodworking enterprises.**

**doc. Marián Schwarz, CSc. (FEE)**

Achievements:

In the first year of the solution, based on a literary review, the mechanisms of hearing impairment were clarified and characterized by the synergistic effect of noise and ototoxic substances. In cooperation with the RÚVZ in B. Bystrica, professions/work activities in the field of wood production and processing have been identified, for which there is a real possibility of simultaneous exposure to noise and ototoxic substances.

**VEGA 1/0187/16 Post - fundamentalism as a perspective in (applied) ethics**

**Prof. PhDr. Pavel Fobel, PhD. (UMB FF)**

In 2017 , 6 KEGA projects were solved, four projects continue to be solved in 2017 and two new projects started in 2017.

**Table 6.2**  Allocations for KEGA grant projects in 2017 (in EUR)

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| PROJECT NO | PROJECT NAME | PROJECT LEADER | DEPARTMENT | TIMESOLUTIONS | ALLOTTED |
| Bv | Kv |
| KEGA 001TUZ- 4/2017 | Support of the value of the teaching process in the field of Body Mechanics through the development of educational methods | Marian Minárik | KMSD | 2017 - 2019 | 4 071 | 0 |
| KEGA011TUZ-4/2017 | Integration of progressive information technologies and soft-skills into study programs focused on the management of production processes. | Helena Čierna | KVTMKv | 2017 - 2019 | 4 931 | 0 |
| KEGA008TUZ-4/2016 | New forms and methods of teaching in the field of machinery safety | Miroslav Dado | KVTMKv | 2016 -2018 | 5 012 | 0 |
| KEGA003TUZ-4/2016 | Research and teaching laboratory of robotics | Elena Pivarčiová | KVAT | 2016 - 2018 | 7 219 | 0 |
| KEGA 001TUZ-4/2016 | Support for teaching heat and substance transfer in technical education | Ján Černecký | CELT | 2016 - 2018 | 15 473 | 0 |
| KEGA019TUZ-4/2015 | Innovation of forms and methods of the teaching process in the field of agricultural and forestry technology | Ján Kováč | CELT | 2015 - 2017 | 5 079 | 0 |
| TOGETHER |   |   |   |   | 41 785 | 0 |

**COMPLETED PROJECTS:**

**KEGA 019TUZ-4/2015 Innovation of forms and methods of the teaching process in the field of agricultural and forestry technology**

**doc. Ing. Ján Kováč, PhD.**

Achievements:

The aim of the project was to create wider opportunities for better preparation of students in all forms of study, with an emphasis on the needs of the labour market and the knowledge society. For this purpose, the project innovated the current subject offer and created new study programs in the bachelor's degree - Management of operation of transport and energy technology and in the engineering degree of study - Inzinierstvo transport and energy technology. Another goal of the project was to provide new didactic aids necessary to improve the teaching of given subjects, the creation of a functional model of the harvester head was carried out, a universitytextbook was published in cooperation with three universities.

**ONGOING PROJECTS:**

**KEGA 008TUZ-4/2016 New forms and methods of teaching in the field of machinery safety**

**doc. Ing. Miroslav Dado, PhD.**

Achievements:

In the second year of the project, simulation models were created/tested imitating the activities of selected machinery (lathe, circular saw, chainsaw). The results of the pilot testing of the simulation model created on the TECNOMATIX JACK software platform indicate its lack of interactivity from the user/student's point of view. Increasing the interactivity of the simulation model is possible by using the additional Module Interactive Fitting for Jack (IFJ), which can create an interface for the implementation of Haption's IPSI™ technology in the JACK TECNOMATIX environment.

**KEGA 003TU Z-4/2016 Research and Teaching Laboratory of Robotics**

**doc. Mgr. Elena Pivarčiová, PhD.**

Achievements:

creation of a web portal: www.robohranie-profevt.wz.sk,

\* 17 workshops for children and youth,

\* popularization of science and technology – presentations at 23 events,

\* 3 robot competitions for children and youth,

\* participation in 3 conferences,

\* 18 publishing outputs, of which 3 registered in the SCOPUS database + 1 design,

\* prepared 6 master's theses, 4 bachelor's theses and 3 dissertations related to the project solution,

\* 1st place in the BrillianTT 2017 competition, which is announced by the International Institute for Interdisciplinary Research at the Faculty of Mass Media Communication of st. Petersburg University. Cyril and Methodius in Trnava for the project "Roboplay – proFEVT" – Innovation of education in the field of algorithmization and programming and Popularization of RObotics at TUZVO–FEMT

\* utility model related to the design of the project: "Device for reversing control of the vehicle combination with trailer/semi-trailer" in the proceedings.

**KEGA 001TU Z-4/2016 Support of heat and substance transfer teaching in technical education.**

**Prof. Jozef Černecký, CSc.**

Achievements:

In the second year of the project, some more chapters were processed within the framework of a university textbook entitled "Transfer of heat and substance" with their own samples of measurements. Other experimental assemblies for heat and substance transfer research and verification experiments were designed and completed. For the practical parts of each chapter, additional protocols for measurements on experimental assemblies have been developed. Partial results from measurements on experimental assemblies were published in a scientific work in a foreign peer-reviewed journal and in a foreign journal registered in Web of Science, SCOPUS.

**NEW KEGA PROJECTS:**

**KEGA 011TU Z-4/2017 Integration of progressive information technologies and soft-skills into study programs focused on production process management.**

**doc. Helena Čierna, PhD.**

Achievements:

In the first year of the solution, the preparatory work of the research part (output – scientific work in a foreign journal) was carried out. We prepared the first version of the questionnaires, which we sent to the respondents. The evaluation of the pilotage and the adaptation of the questionnaires to their final version are currently underway. We participated in international conferences in order to establish international contacts and present partial outputs with a focus on the integration of progressive information technologies.

**KEGA 001TU Z-4/2017 Support of the quality of the teaching process in the field of Body Mechanics through the development of educational methods**

**Ing. Marián Minárik, PhD.**

Achievements:

The project is designed to support the teaching of issues in the field of body mechanics in order to improve the teaching of related subjects. An adjustment of the classroom area was carried out, where space was created for the compilation of showcases, which are used for didactic aids and student works. Another modification of the classroom was the realized wiring and networking of computers, which allows new and existing workstations to communicate with each other. As part of the solution of the project, a collection of scientific papers of the members of the research team was published.

## APVV projects (Agency for the Promotion of Research and Development)

In 2017, one APVV project was solved at the Faculty of Environmental and Production Technology.

**APVV 16-0194 Research on the impact of innovations in production processes on the durability of tools and components of forest mechanisms**

**.doc. Ing. Richard Hnilica, PhD.**

Achievements:

In the first phase of the project, the risk components of forest mechanisms were selected, in cooperation with professional operation in Slovakia as well as abroad. During the consultations, tools and components were selected that are subject to rapid wear and tear and thus to increase the cost of maintenance, repair and, last but not least, the purchase of new tools and components of forest machinery. Based on the documents, the initial analyses of the work tool were carried out and, in cooperation with Royal Forest, operational tests of the selected new work tool in real conditions began. In cooperation with the co-operative organization Institute of Material Research SAS, FEM analysis of the voltage-deformation state of the instrument and prediction of critical areas of wear were developed. A comprehensive material analysis of the tool and the determination of technological processes of production began.

**Table 6.3** APVV project allocations in 2017 (in EUR)

|  |
| --- |
| APVV PROJECT  |
| PROJECT NO | PROJECT NAME | PROJECT LEADER | DEPARTMENT A | TIMESOLUTIONS | ALLOTTED |
| Bv | Kv |
| APVV16-0194  | Research on the impact of production process innovations on the durability of tools and components of forest mechanisms | Richard Hnilica | KVTMKv | 2017 - 2020 | 37 732 | 0 |

Staff of FEMT **doc. Richard Hnilica, PhD**. , and **doc. Ing. Miroslav Dado, PhD., Jaroslav Matej, PhD., Stanislav Kvočka, ArtD.** participated in the solution of 1 APVV project at the Faculty of Forestry.

**APVV-14-0468 Adapter development and technological deployment to increase forest fire extinguishing efficiency**

**Prof. Valéria Messingerová, CSc. – Faculty of Forestry**

Achievements:

As part of the third year of the project, the technical drawing documentation of the functional model of the adapter for the destruction of ground forest fires continued. Based on the drawing documentation, the production of a functional model of the fire extinguisher began with its subsequent functional tests. Based on the requirements of firefighting practice, ideological technical designs of mechanisms for indirect use in the extinguishing of forest fires in mountainous terrains were approached. These are innovative adapter solutions for transporting firefighter equipment in difficult terrain. The stated objectives of the project have been met in such a way that functional and operational tests of the fire extinguishing equipment can be continued, on the basis of which the definition of technological procedures for the destruction of fires in forests is proceeded with.

##

## Institutional research

For institutional research, the Faculty of Environmental and Production Technology was allocated EUR 6,505, which was used for the main activities of the faculty.

## Internal Project Agency Projects

In 2017, **2** projects funded by the Internal Project Agency tu in Zvolen were solved at FEMT.

**Table 6.4** Allocations for IPA projects in 2017 (in EUR)

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| PROJECT NO | PROJECT NAME | PROJECT LEADER | DEPARTMENT | BV ASSIGNED |
|
| IPA 3/2017 | Design and construction of a robotic arm for exploring an inertial navigation system | Škultéty Emil | KVAT | 958 |
| IPA 6/2017 | Research on the process of generating solid aerosol in wood grinding | Lucia Mikušová | KVTMKv | 947 |
| TOGETHER |  | 1 905 |

**Institutional projects completed**

**IPA No. 3/2017 Design and construction of a robotic arm for the examination of an inertial navigation system**

**Škultéty Emil**

Achievements:

* design of the design of the robotic arm, design of the basic dimensions of individual parts of the arm and from this determination of the necessary torques of the motors in individual joints and selection of specific motors,
* creation of a robotic arm model in a CAD system, simulation and strength analysis of stressed components,
* production of individual components of the robotic arm,
* a proposal for the wiring of the electronic part,
* purchase of standardised mechanical parts, motors and electronic components,
* installation of the mechanical part, wiring of motors, wiring and control part,
* programming of the control part of the robotic arm and testing,
* evaluation of the project.

**IPA No 6/2017 Research on the process of generating solid aerosol in wood grinding**

**Ing. Lucia Mikušová**

Achievements:

As part of the project, experiments were designed and implemented aimed at measuring the mass concentration and size composition of wood dust when grinding wood with electric hand tools in real time using the optical method – based on light scattering. The knowledge gained in solving the project will be the starting point in the creation of analytical models that will take into account the influence of individual factors on the characteristics of wood dust generated during wood grinding.

## Projects other

**Table 6.5** Allocations for other projects in 2017 (in EUR)

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| PROJECT NO | PROJECT NAME | PROJECT LEADER | DEPARTMENT | SOLUTION TIME | ALLOTTED |
| Bv | Kv |
| 179/16-RT | "Roboplay – proFEVT" – Popularization of RObotics at FEMT, project financed by the economic sphere: Volkswagen Slovakia Foundation | Elena Pivarčiová | KVAT | 2016-2017 | 1 547 | 0 |
| R-8926/2017 | Roboplay – proFEVT" – Popularization of RObotics at FEMT – Additional project support | Elena Pivarčiová | KVAT | 2016-2017 | 2 000 | 0 |
| 25042017/2 | Roboplay – proFEMT" – Innovation of education in the field of algorithmics and programming and Popularization of RObotics at TUZVO–FEMT | Elena Pivarčiová | KVAT | 2017 | 700 | 0 |
| TOGETHER | 4 247 | 0 |

Results achieved by other projects in 2017

**179/16-RT Roboplay – proFEVT – Popularization of RObotics at FEMT – project financed by the economic sphere: Volkswagen Slovakia** Foundation**: Develop a technician(s)u**

**doc. Mgr. Elena Pivarčiová, PhD.**

Achievements:

By robohra", we expanded FEMT's cooperation with primary and secondary schools, allowed young people to have an active and creative approach to robotic systems, aroused interest in technical creation, pointed out the importance of algorithmic thinking, taught them the principles of teamwork and found, designed and implemented their own solutions.

We organized:

* workshops for working with LEGO Mindstorms Education robots: design, construction, programming, competition
* presentation events with demonstrations of functional robots – popularization of science and technology at various events.

We supported the events of the Technical Academy for attracting those interested in studying technology (TA Open Doors Day, Technical Talent)

**R-8926/2017: "Roboplay – proFEVT" – Popularization of RObotics at FEVT**

 **– Additional project support, Volkswagen Foundation: Develop technician(s)**

**.doc. Mgr. Elena Pivarčiová, PhD.**

**25042017/2: "Roboplay – proFEVT" – Innovation of education in the field of algorithmics and programming and Popularization of RObotics at TUZVO–FEMT**

**doc. Mgr. Elena Pivarčiová, PhD.**

Achievements:

1st place in the Briliantt 2017 competition, which is announced by the International Institute for Interdisciplinary Research at the Faculty of Mass Media Communication of the University of St. Petersburg. Cyril and Methodius in Trnava.

# Student scientific professional activity

The 17th faculty conference of ŠVOČ FEMT took place in the academic year 2016/2017 on 11.5.2017. In total, 11 students participated in the faculty conference of ŠVOČ. The number of works is shown in Table 7.1.

**Organizing Committee of the ŠVOČ:**

Prof. Štefan Barcík, CSc.Vice-Dean for Science, Research and Doctoral Studies

Marián Minárik, PhD.Chairman of the Board of ŠVOČ

Zuzana Brodnianská, PhD. Member of the Board of the ŠVOČ

Peter Koleda, PhD.member of the board of ŠVOČ

Erika Sujová, PhD. Member of the Board of the ŠVOČ

Emil Škultéty Member of the Board of ŠVOČ

**Evaluation committees:**

*Ecotechnics section*

Prof. Jozef Víglaský, CSc.Chairman of the Commission

Milan Helexa, PhD.member of the Commission

Zuzana Brodnianska, PhD.member of the commission

Pavol Koleda, PhD.member of the commission

doc. Ján Kováč, PhD.member of the Commission

Andrej Mazáň, student representative

*Section Production Technology*

Prof. Štefan Barcík, CSc.Chairman of the Commission

doc. Pavel Beňo, PhD.member of the Commission

Mária Krajčovičová, PhD.member of the commission

Miroslava Ťavodová, PhD.member of the Commission

Milan Štefánek, Student Representative

**Table 7.1** Number of works by year

|  |  |
| --- | --- |
| SECTION | VINTAGE |
| 1. | 2. | 3. | 4. | 1. | 2. |
| Bachelor's degree (I. degree) | engineering (level II) |
| Ecotechnics |  |  | 1 |  | 1 | 3 |
| Production Engineering |  | 1 | 1 |  | 1 | 3 |
| TOGETHER | 11 works presented |

**Evaluation of the tenders:**

When evaluating the competition works, the topicality of the topic, the objectivity of the execution of experimental works (if any), the level of evaluation of one's own conclusions, the formal level of the work as well as the level of presentation itself were taken into account. The submitted competition works were at a good level from a professional point of view. Minor shortcomings were in the area of the level of presentation itself.

The participants were awarded the diplomas for placement according to the statement of the evaluation committee. The diplomas were handed over by the Vice-Dean of the FEMT TU in Zvolen doc. Ján Kováč, PhD. and Chairman of the Board of the ŠVOČ Marián Minárik, PhD. In the section of Ecotechnics as well as in the section Production technology, the Honorable Mention award was awarded to selected participants of the ŠVOČ, who were rewarded with a material prize.

# DOCTORAL STUDIES

Doctoral studies at the faculty took place in the academic year 2016/2017 in one study programme within the meaning of Act No. 131/2002 on Higher Education Institutions.

**Table 8.1** PhD programme at FEMT

|  |  |  |
| --- | --- | --- |
| Code | FIELD OF STUDY | STUDY PROGRAMME |
| 5.2.50 | Production Engineering | Production Engineering |

## 5.2.50 Production Engineering

List of trade union commission members in 2017

**Chairman OK 5.2.50**

Prof. Štefan Barcík, CSc. FEVT TU in Zvolen

**MEMBERS OK 5.2.50**

|  |  |
| --- | --- |
| doc. Ing. Pavel Beňo, PhD. | FEMT TU in Zvolen |
| doc. Ing. Ferdinand Bodnár, CSc. | FEMT TU in Zvolen |
| Dr.h.c. prof. Ing. Pavol Božek, CSc. | STU Bratislava, MTF Trnava |
| Prof. Jozef Černecký, CSc. | FEMT TU in Zvolen |
| doc. Ing. Miroslav Dado, PhD. | FEMT TU in Zvolen |
| Prof. Peter Demeč, CSc. | TU Košice, Faculty of Mechanical Engineering |
| doc. Ing. Jiří Fries,Ph.D. | VŠB- Ostrava Strojní fakulta |
| doc. Ing. Richard Hnilica, PhD. | FEMT TU in Zvolen |
| doc. Ing. Ľubomír Javorek, CSc. | FEMT TU in Zvolen |
| doc. Ing. Ján Kováč, PhD. | FEMT TU in Zvolen |
| doc. Ing. Jozef Krilek, PhD. | FEMT TU in Zvolen |
| doc. Ing. Marián Kučera, PhD. | FEMT TU in Zvolen |
| doc. Ing. Ľubomír Naščák, CSc. | FEMT TU in Zvolen |
| doc. Mgr. Elena Pivarčiová, PhD. | FEMT TU in Zvolen |
| Prof. Mikuláš Siklienka, PhD. | DF TU in Zvolen |
| doc. Ing. Ján Svoreň, CSc. | FEMT TU in Zvolen |
| Prof. Jozef Víglaský, CSc. | FEMT TU in Zvolen |

**Study programme under the responsibility of the trade union committee:**

Production technology

**Headquarters of the trade union commission:**

Faculty of Environmental and Production Technology

Technical University of Zvolen

Student 26, 960 53 Zvolen

In the last academic year 2016/2017 (as of 31.12.2017), 5 phD students successfully passed the dissertation exam in the full-time form of doctoral studies.

**Table 8.2** Successfully passed dissertation examinations in the academic year 2016/2017

(as at 31.12.2017)

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| DEPARTMENT | NAME | TRAINER | BRANCH | DATE | THEME |
| KELT | TomasKuvik | Jozef Krilek | Production technology | 25. 4. 2017 | Research on chainsaw cutting mechanisms |
| KVAT | Andrej Mazáň | Štefan Barcík | Production technology | 25. 4. 2017 | Determination of the methodology and creation of a mathematical model for the design of a lumber sorting device |
| KVAT | Mohammad Emal Qazizada | Elena Pivarčiová | Production technology | 25. 4. 2017 | Influence of selected parameters on the reliability of centrifugal pumps |
| KELT | Milan Štefánek | Ján Kováč | Production technology | 25. 4. 2017 | Research on the effect of coating saw blades on their energy intensity |
| KVAT | MarekVančo | Štefan Barcík | Production technology | 25. 4. 2017 | Analysis of factors influencing the qualitative indicators of the machining of thermally modified oak wood in plane milling |

The dissertation was successfully defended by 1 internal doctoral student in so-called 5.2.50 Production technology.

**Table 8.3** Successfully conducted dissertation defenses in the academic year 2016/2017

(as at 31.12.2017)

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| DEPARTMENT | NAME | TRAINER | BRANCH | DATE | THEME |
| KELT | Lukáš Ohanka | Jozef Černecký | Production technology | 31.8.2017 | Research of thermal and pressure ratios in thermosyphone |

# CONCLUSION

The submitted Report on Scientific Research Activities (SCC) summarizes the results of the SCC and provides basic information about the personnel, technical and financial provision of the faculty's scientific and research work.

The focus of scientific and research activities is in accordance with the professional profiling of the faculty. The scope and effectiveness of SCC is largely determined by external conditions, in particular the lack of financial resources, which, among other things, directly affect the construction of laboratories and their equipment with the necessary technology. It is necessary that the initiative of the faculty staff be aimed at obtaining grants, projects and other activities to provide financial resources for scientific research activity.

Increased attention in this regard should be paid to cooperation with practice and the commercial exploitation of the results of scientific research activities. In this area, scientific and research activity at the faculty has stabilized compared to previous years.

# DRAFT MEASURES FOR 2018

Based on the incipient Long-Term Development Plan of FEMT for 2017-2023, the draft measures in scientific research activities are mainly focused on:

1. To maintain the position of the faculty in the scientific community and to develop the research character of the faculty by involving all creative faculty employees in solving domestic and international research projects, especially in the main directions of research.

**Responsible:** dean, vice-dean for VVČ, head of departments

 Timeframe: continuous

1. In the field of the structure of scientific research projects, focus on basic and applied research projects in order to achieve a balanced structure of funding of scientific research activities from all available sources, which are Slovak grant agencies (APVV, VEGA, KEGA); EU framework programmes, cross-border cooperation projects, operational programme research and development (Agency of the Ministry of Education of the Slovak Republic for EU Structural Funds) with maximum use of the activities of the FEMT Project Office.

**Responsible:** Dean, Vice-Dean for VVČ and ZS, Head of Departments

 Timeframe: continuous

1. In the field of presentation of the results of scientific research activities of the faculty, focus on increasing the quality and frequency of published outputs, especially focusing on categories A1, A2 and B, which are the focus categories in the accreditation, design and subsidy processes of the faculty (priority of the faculty of the faculty with the highest possible IF as well as copyright certificates patents and discoveries - UV), search for citations according to WOS/Scopus and obtaining attributes of awards in top international quality in the field of research 14 - engineering. In each output of publishing activity, it is mandatory to indicate the address (affiliation) of the authorship of the Technical University in Zvolen/Technical University in Zvolen.

**Responsible:**  dean, vice-dean for VVČ, head of departments, all creative employees

 Timeframe: continuous

1. To combine the research capacities of departments into larger projects with regard to the complex use of the laboratory and instrumental potential of the faculty.

**Responsible:** Dean, Vice-Dean for VVČ, Head of Departments

 Timeframe: continuous

1. Maintain and deepen cooperation with domestic and foreign research and production institutions in order to improve the quality of research results and their commercial use.

**Responsible:** Dean, Vice-Dean for VVČ and ZS, Head of Departments

 Timeframe: continuous

1. Use all available means to improve the image of the faculty and TU in professional circles and the public by presenting the results of scientific research activities.

**Responsible:** Dean, Vice-Dean for VVČ and ZS, Head of Departments

 Timeframe: continuous

1. In the field of building and expanding instrumentation, regularly contribute to the purchase of instruments and equipment from the means to solve projects. Use development projects and all other available options to improve the status quo.

**Responsible:** project leaders

 Timeframe: continuous

1. Continue to support the development of student scientific and professional activities and focus on improving the quality of the presented works. To promote ŠVOČ FEMT at other technical faculties in Slovakia with similar professional profiling.

**Responsible:** Vice-Dean of the VVČ, Head of Departments, Chairman of the ŠVOČ

 Timeframe: continuous

1. To support the presentation of their own scientific research activity and the possibility of comparing it with the results of other workplaces by organizing scientific events at the faculty.

**Responsible:** Vice-Dean of the VVČ, Head of Departments, Head of Projects

 Timeframe: continuous

1. Focusing the publication activity of PhD students on improving its quality, especially with a focus on categories B and C, on the best possible fulfillment of the criteria for obtaining funds from the subsidy breakdown and for the need to meet the criteria of future comprehensive accreditation in the field of research 14 - engineering. In each output of publishing activity, it is mandatory to indicate the address of the authorship of the Technical University in Zvolen/Technical University in Zvolen.

**Responsible:** dean, vice-dean of the VVČ, head of departments, trainers

 Timeframe: continuous

1. To establish and implement thepostdoctoral study at the faculty.

**Responsible:** Dean, Vice-Dean for VVČ, Head of Departments

**Timeframe:** 31.12.2018

1. Adopt the "Methodological Guidance of the Dean of the Faculty", concerning the executive staff of FEMT in relation to their participation in faculty projects, leadership and representation, especially from the ranks of doc. and prof.

**Responsible:** Dean, Vice-Dean for VVČ, Head of Departments

**Timeframe:** 31.12.2018