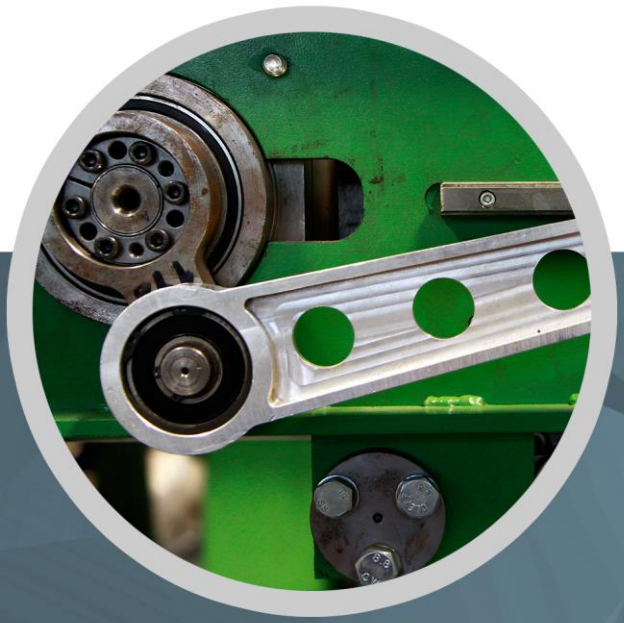
TECHNICAL UNIVERSITY OF LIBEREC
Faculty of Mechanical Engineering

ANNUAL REPORT 2014



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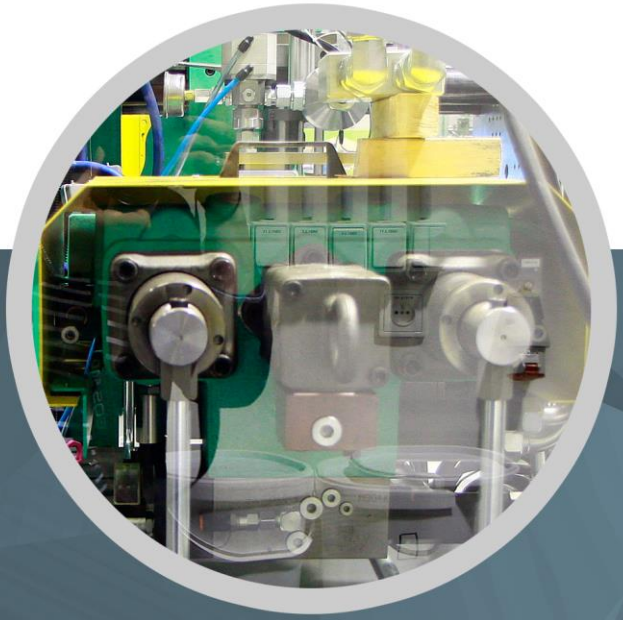
INTRODUCTION



TECHNICAL UNIVERSITY OF LIBEREC
Faculty of Mechanical Engineering

1 INTRODUCTION

The Faculty of Mechanical Engineering is the oldest faculty of the Liberec University. In 2013, it celebrated the 60th anniversary of its foundation and the year of 2014 (the academic year 2013/2014) was the 60th year of the Faculty operation. Throughout its existence, during years of good and bad, the Faculty of Mechanical Engineering has always strived to fulfill its goals, visions, and missions. There is no doubt that it has been going well, and with the support of all the academic community members, it would continue to go well in the future. The Faculty of Mechanical Engineering has always borne its share of activities and responsibilities for the development of the University, has always been involved in the establishment of new faculties and last but not least, in the establishment of the Institute for Nanomaterials, Advanced Technologies, and Innovations, which would not be created without the support of the Faculty of Mechanical Engineering, but could not be developed either.

The Annual Report of the Faculty of Mechanical Engineering TU of Liberec in 2014 expresses the fulfilment of the Long-Term Plan for Educational, Scientific, Research, Development, Artistic, and Other Creative Activities of the Faculty of Mechanical Engineering of the Technical University of Liberec for 2011-2015 and its update for 2014.

The Annual Report of the Faculty of Mechanical Engineering TU of Liberec in 2014 presents information on the Faculty, pedagogical activities, scientific research activities, international cooperation, partnership, and internationalisation. For the Faculty's sustainability and for its development, it is necessary to cooperate with the academic community, sufficient knowledge and competences of the Faculty's academic staff, development of personalities and teams, sufficient laboratory support and equipment, and high-quality support in terms of administrative activities not only at the Faculty, but also from the position of Rector's departments and TUL management.

Highlights of 2014

The position of the Dean of the Faculty of Mechanical Engineering TU of Liberec was undertaken by Prof. Dr. Ing. Petr Lenfeld who was appointed Dean of the Faculty for the 2014–2018 term.

In March, elections were announced for the Academic Senate of FME TUL and for the Academic Senate TUL for the 2014-2017 term. In June, the first constituent meeting of the Academic Senate of the Faculty of Mechanical Engineering TU of Liberec was held, and the bodies were elected for the new term there.

In April, a new Scientific Council of the Faculty of Mechanical Engineering was established, consisting of 33 members. Of them, 16 members are from TUL and 17 members are external, including representatives of major industrial companies and enterprises.

During the summer months, the workplaces of the Faculty of Mechanical Engineering was moved from Building P – the Faculty of Mechanics, Elasticity, and Strength (KMP) and the Faculty of Glass Machines and Robotics (KSR) – and the Faculty of Mechanical Engineering Dean's Office was moved from Building A to Building G. Consequently, the concentration of all the workplaces of the Faculty of Mechanical Engineering in the campus TUL Husova – Studentská was completed.

FACULTY STRUCTURE

TECHNICAL UNIVERSITY OF LIBEREC
Faculty of Mechanical Engineering

2 FACULTY STRUCTURE

2.1 Faculty Bodies

	Representation
Dean from 01/02/2014	Prof. Dr. Ing. Petr Lenfeld
Secretary	Ing. Anna Benešová

Academic Senate of the Faculty of Mechanical Engineering TU of Liberec from 01/072014 to 30/06/2017

Chairman	doc. Ing. Lukáš Čapek, PhD
Vice-Chairman of the Academic Staff Chamber	Prof. Ing. Ladislav Ševčík, CSc.
Vice-Chairman of the Students Chamber	Ing. Ondřej Řídký
Secretary	Ing. Rudolf Martonka, PhD
Members of the Academic Staff Chamber	Prof. Ing. Jaroslav Beran, CSc.
	Ing. Luboš Běhálek, PhD
	Ing. Jiří Blekta, PhD
	doc. Ing. Václav Dvořák, PhD
	Ing. Vlastimil Hotař, PhD
	Ing. Michaela Kolnerová, PhD
	doc. Ing. Lubomír Moc, CSc.
	Prof. Ing. Iva Nová, CSc.
	Ing. Robert Voženílek, PhD
Members of the Students Chamber	Ing. Martin Borůvka
	Ing. Jan Hujer
	Ing. Lukáš Zuzánek
	Ing. Jiří Komárek
	Ing. Andrii Shynkarenko

Academic Senate TU of Liberec from 01/06/2014

Academic representatives for FME TUL	Prof. Ing. Jaroslav Beran, CSc.
	doc. Ing. Lubomír Moc, CSc.
Student representatives for FME TUL	Ing. Jan Vácha
FME TUL representative in the University Council	Ing. Michaela Kolnerová, PhD

Academic Senate of the Faculty of Mechanical Engineering TU of Liberec from 09/04/2014

Chairman	Prof. Dr. Ing. Petr Lenfeld
Members – from TUL	doc. Ing. Martin Bílek, PhD
	prof. Ing. Jaroslav Beran, CSc.
	doc. Ing. Karel Fraňa, PhD
	doc. Ing. Josef Janeček, CSc.
	Prof. Ing. Zdeněk Kovář, CSc.
	Prof. RNDr. David Lukáš, CSc.
	Prof. Ing. Petr Louda, CSc.
	doc. Ing. Miroslav Malý, CSc.
	Ing. Ivo Matoušek, PhD
	Prof. Ing. Iva Nová, CSc.
	Prof. Ing. Miroslav Olehla, CSc.
	Prof. Ing. Lubomír Pešík, CSc.
	doc. Ing. Iva Petríková, PhD
	doc. Ing. Ludvík Prášil, CSc.
	Prof. Ing. Jan Skalla, CSc.
	Prof. RNDr. Bohuslav Stříž, DrSc.
Members – external	
UP DFJP Pardubice	doc. Ing. Ivo Drahotský, PhD
FNSPE CTU Prague	Prof. Ing. Nikolaj Ganev, CSc.

FME CTU Prague	Prof. Ing. Stanislav Holý, CSc.
FAS UWB in Pilsen	Prof. Ing. Vladislav Laš, CSc.
FT UTB in Zlín	doc. Ing. David Maňas, PhD
IT of CAS, v. v. i. Prague	Prof. Ing. František Maršík, DrSc.
Magna Exteriors&Interiors (Bohemia), s.r.o., Liberec	Ing. Pavel Neumann
FME TU Ostrava	Prof. Ing. Petr Noskievič, CSc.
FME STU Bratislava	doc. Ing. František Palčák, CSc.
IT of CAS, v. v. i. Prague	Prof. Ing. Jaromír Příhoda, CSc.
Professor Emeritus	Prof. Ing. Jaroslav Purmenský, DrSc.
Professor Emeritus	Prof. RNDr. Miroslav Raab, CSc.
FME BUT in Brno	doc. Ing. Pavel Rumíšek, CSc.
Rieter CZ, s.r.o.	Ing. Jiří Sloupenský, CSc.
FME CTU in Prague	Prof. RNDr. Petr Špatenka, CSc.
ČEZ, a.s., Temelín Nuclear Power Plant	Ing. Pavel Šimák
Benteler ČR s.r.o. Stráž nad Nisou	doc. Ing. Jiří Vejvoda, CSc.

Disciplinary Committee from 25/03/2014

Chairman	doc. Ing. Václav Dvořák, PhD
Members	doc. Ing. Martin Bílek, PhD
	Ing. Jan Hujer
	Ing. Petr Kulhavý

Faculty Bodies — Representation

Dean until 31/01/2014	doc. Ing. Miroslav Malý, CSc.
Secretary	Ing. Anna Benešová

Academic Senate of the Faculty of Mechanical Engineering TU of Liberec to 30/06/2014

Chairman	doc. Ing. Martin Bílek, PhD – until 05/03/2014
	doc. Ing. Lubomír Moc, CSc. – until 06/03/2014
Vice-Chairman of the Academic Staff Chamber	Ing. Luboš Běhálek
Vice-Chairman of the Students Chamber	** Ing. František Lemfeld – until 27/03/2013
	* Ing. Martin Mazač – from 27/03/2013
Secretary	* Ing. Kateřina Horáková – until 25/09/2013
	Ing. Michaela Kolnerová, PhD – from 25/09/2013
Members of the Academic Staff Chamber	doc. Ing. Lukáš Čapek, PhD
	Ing. Pavel Doubek, PhD
	Ing. Vlastimil Hotař, PhD
	doc. Ing. Lubomír Moc, CSc.
	Ing. Aleš Lufinka, PhD
	Ing. Ivo Matoušek, PhD
	Prof. Ing. Iva Nová, CSc.
	Prof. Ing. Lubomír Pešík, CSc.
	Ing. Robert Voženílek, PhD
* Members of the Students Chamber	Jiří Čonka – until 20/11/2013
	Ing. Ladislav Perk
	Ing. Pavel Srb – from 20/11/2013
	Ing. Jan Vácha
	Jiří Vraštil – from 27/03/2013

** Resigning from the mandate

Academic Senate TU of Liberec

Academic representatives of FME TUL	prof. Dr. Ing. Petr Lenfeld
	Prof. Ing. Petr Louda, CSc.
Student representatives for FME TUL	Ing. Jan Vácha
FME TUL representative in the University Council	Ing. Jan Vácha

Academic Senate of the Faculty of Mechanical Engineering TU of Liberec until 30/01/2014

Chairman	doc. Ing. Miroslav Malý, CSc.
Members – from TUL	Prof. Ing. Jaroslav Beran, CSc.
	Prof. Ing. Stanislav Beroun, CSc.
	doc. Ing. Karel Fraňa, PhD
	doc. Ing. Josef Janeček, CSc.
	Prof. Ing. Zdeněk Kovář, CSc.
	Prof. RNDr. David Lukáš, CSc.
	Prof. Ing. Petr Louda, CSc.
	doc. Dr. Ing. Ivan Mašín
	Prof. Ing. Iva Nová, CSc.
	Prof. Ing. Miroslav Olehla, CSc.
	doc. Ing. Iva Petríková, PhD
	doc. Ing. Ludvík Prášil, CSc.
	doc. Ing. Petr Tůma, CSc. – until 27/03/2013
	Prof. Ing. Jan Skalla, CSc.
	Prof. RNDr. Bohuslav Stříž, DrSc.
	Prof. RNDr. Petr Špatenka, CSc.
Members – external	
FNSPE CTU Prague	Prof. Ing. Nikolaj Ganev, CSc.
FME CTU Prague	Prof. Ing. Stanislav Holý, CSc.
IT of CAS, v. v. i. Prague	Prof. Ing. František Maršík, DrSc.
DFJP, UPa Pardubice	Prof. Ing. Jaroslav Menčík, CSc.
FS Politechnika Łódž, Poland	Prof. Dr. Stanislaw Mitura, DrSc.
FME TU Ostrava	Prof. Ing. Petr Noskievič, CSc.
FME STU Bratislava	doc. Ing. František Palčák, CSc.
IT of CAS, v. v. i. Prague	Prof. Ing. Jaromír Příhoda, CSc.
Professor Emeritus	Prof. Ing. Jaroslav Purmenský, DrSc.
Professor Emeritus	Prof. RNDr. Miroslav Raab, CSc.
Benteler ČR s.r.o. Stráž nad Nisou	doc. Ing. Jiří Vejvoda, CSc.

Disciplinary Committee until 25/03/2014

Chairman	doc. Ing. Lubomír Moc, CSc.
Members	doc. Ing. Martin Bílek, PhD
	Ing. Jan Hujer
	Ing. Jan Škoda

2.2 Faculty Structure

The Faculty is organised into the Dean's Office, the Study Department and eleven departments.

Organisational Unit	Representation
Dean's office until 31/01/2014	
Dean	doc. Ing. Miroslav Malý, CSc.
Vice-Dean for Scientific Research Activities	Prof. Ing. Jaroslav Beran, CSc.
Vice-Dean for Pedagogical Activities	doc. Ing. Iva Petríková, PhD
Vice-Dean for External Relations	doc. Ing. Karel Fraňa, PhD

Dean's office from 01/02/2014

Dean	Prof. Dr. Ing. Petr Lenfeld
Vice-Dean for Scientific Research Activities	doc. Martin Bílek, PhD
Vice-Dean for Pedagogical Activities	Ing. Ivo Matoušek, PhD
Vice-Dean for Doctoral Studies	doc. Ing. Iva Petríková, PhD
Vice-Dean for External Relations	doc. Ing. Karel Fraňa, PhD
Secretary	Ing. Anna Benešová
Secretariat of the Dean	Pavla Kholová
Development and Projects Manager	RNDr. Iveta Lukášová
Foreign Relations Officer	Ing. Marcela Válková

Study Department

Head of the Study Department	Mgr. Radka Dvořáková
Officer	Ing. Mgr. Dana Semotjuková
Officer	Daniela Stejskalová

Departments

Department of Mechanics, Elasticity, and Strength / DAM	Prof. Ing. Miroslav Václavík, CSc. – until 31/01/2014 doc. Ing. Iva Petríková, PhD – from 01/02/2014
Department of Mechanical Engineering Technology / DET	Prof. Dr. Ing. Petr Lenfeld – until 31/01/2014 Ing. Jaromír Moravec, PhD – until 01/02/2014
Department of Materials / DMS	Prof. Ing. Petr Louda, CSc.
Department of Power Engineering Equipment / DPE	doc. Ing. Václav Dvořák, PhD
Department of Applied Cybernetics / DAC	Prof. Ing. Miroslav Olehla, CSc.
Department of Machine and Mechanisms / DMM	Parts Prof. Ing. Ladislav Ševčík, CSc.
Department of Machining and Assembly / DMA	doc. Ing. Jan Jersák, CSc.
Department of Vehicles and Engines /DVE	Ing. Robert Voženílek, PhD
Department of Glass Machines and Robotics / DGR	doc. Ing. František Novotný, CSc.
Department of Textile and Special Purpose Machines / DTS	Prof. Ing. Jaroslav Beran, CSc.
Department of Manufacturing Systems / DMA	Ing. Petr Zelený, PhD

2.3 Personnel Structure of the Faculty

In 2014, the total of 165 employees (125.8 FTEs) were working at FME TUL, of which 112 were academics (88.5 FTEs). The total number of educators decreased year on year by 8.1%.

The teaching in the Bachelor's, Master's, and doctoral degree programmes was provided mainly by internal professors (21) and senior lecturers (28) in the position of guarantors of study subjects, trainers, lecturers, and supervisors of the final theses. Teaching tasks were also shared by 53 assistant professors, 9 assistants, and 4 lecturers.

2.4 Professorship and Habilitation Procedures

One professorship procedure was initiated in 2013.
One habilitation procedure that was initiated 2012 was suspended.
One habilitation procedure for the appointment of senior lecturer was successfully completed and one senior lecturer was appointed.

EDUCATIONAL ACTIVITY

TECHNICAL UNIVERSITY OF LIBEREC
Faculty of Mechanical Engineering

3 EDUCATIONAL ACTIVITY

The Faculty provides and guarantees the expert level for all three study programme types.

3.1 Accredited Degree Programmes and Fields

The Faculty guarantees teaching in 8 study programmes (of which 7 programmes are accredited in English). In 2014, the Faculty was accredited for the five-year Master's programme M2301 Mechanical Engineering, Applied Mechanics.

All the programmes are taught in the full-time and part-time study forms. The overviews are provided in the table annexes 3.1.

Teaching at Detached Workplaces

- Teaching in Mladá Boleslav – in the summer semester of the academic year 2013/2014, students of the first year of the Bachelor's Mechanical Engineering study programme studied in the full-time study form at a detached workplace in Mladá Boleslav.

3.2 Offer of Study in English

- The Faculty of Mechanical Engineering offers study in English in all the types of study programmes.
- In the 2013/2014 academic year, during the summer semester, three students were enrolled at the Faculty of Mechanical Engineering as self-payers.
- In the 2014/2015 academic year, during the winter semester, seven students were enrolled at the Faculty of Mechanical Engineering to study in English. Four students were enrolled as self-payers, three as the government scholarship beneficiaries under the "Ensuring the Study Programme in the Field of Power Engineering taught in English". The Government of the Czech Republic offers scholarships through the Ministry of Education, Youth within the programme supporting foreign development cooperation to foreigners from developing countries to support studies at public universities in the Czech Republic.
- Teaching in English also took place under the short-term ERASMUS+, CEEPUS, IAESTE, and IRP programmes. For more details, see Chapter 5.3.

3.3 Interest in Studies and the Admission Procedure

The total of 797 applicants showed interest in studying at the Faculty of Mechanical Engineering TU of Liberec (compared to 2013, it is 205 less). Of the total number of applicants, 554 students enrolled, i.e. approximately 69% (71.9% in 2013). The total of 1,154 students enrolled to study in all years of study in the 2014/2015 academic year (i.e. 299 less than in 2013).

The structure of students does not change, the proportion of students in the individual types of study remains approximately the same. The total of 62% of students are enrolled in the Bachelor's programme, approximately 26% in Master's programmes, and 12% of the total number of enrolled students in doctoral programmes.

Traditionally, applicants from secondary technical schools predominate – 51.5%, applicants from other secondary schools represent 34%, and those from grammar schools form the least numerous group – 15.5%.

BSP (Bachelor's Study Programme) 635 registered, 431 enrolled. Applicants from secondary technical schools (approx. 50% of the total number of applicants) applied for study in the Bachelor's programmes at BSP, then here were applicants others from grammar schools (14%) and other secondary schools (36%).

MSP (Master's Study Programme) 8 registered, 7 enrolled

NMSP (Follow-Up after Master's Study Programme) 126 registered, 92 enrolled. Applicants for Master's degree programmes were in most cases graduates of Bachelor's degree at the TU Liberec and in individual cases, from other faculties.

DSP (Doctoral Study Programme)

28 registered, 24 enrolled. The applicants for doctoral programmes were predominantly Master's degree programme graduates from the Faculty of Mechanical Engineering TU Liberec, 7 applicants completed their previous studies at another university.

3.4 Numbers of Students and Graduates

The number of unsuccessful students during the first year of study is still high, especially in the Bachelor's degree programme. Students are admitted based on their academic results from high school.

During the first year, 279 BSP students, 4 NMSP students, and 1 DSP student failed. The average study duration before graduation exceeds the standard study length.

BSP In the academic year 2014/2015, 712 students were enrolled (528 in the full-time study and 184 in the combined study programmes). In 2014, 107 students successfully completed their studies (53% of the total number of students). The average study duration of BSP graduates was 4.73 years in 2014.

(N) MSP In the academic year 2014/2015, 301 students were enrolled (212 in the full-time study and 89 in the combined study programmes). In 2014, 72 students successfully completed their studies (35 % of the total number of students). The average study length for MSP (five-year) graduates was 10.2 years, the average study length for NMSP graduates was 3.37 years.

DSP In the academic year 2014/2015, 141 students were enrolled (83 in the full-time study and 58 in the combined study programmes). In 2014, 23 students successfully completed their studies (11 % of the total number). The average graduate study period was 7.13 years.

3.5 Credit System and Study Evaluation

The ECTS (European Credit Transfer System) credit system is used to evaluate the course of study in bachelor's and master's programmes. The Technical University of Liberec was awarded the ECTS Label certificate for 2011-2014 by the European Commission.

The bilingual Diploma Supplement, supported by the consistent use of the credit system, has been automatically received by every TUL graduate since 2005 as a supplement to his diploma.

In 2014, a student's successful study completion required obtaining:

- 180 credits in BSP
- 180 credits in three-year NMSP and 120 credits in two-year NMSP
- 300 credits in MSP (five-year) (divided into two parts: 150 credits in the first part of the study, 150 credits in the second part of the study).

3.6 Scholarships

The scholarships paid in 2014 were awarded in accordance with the Scholarship Regulations of the Faculty of Mechanical Engineering of the TU of Liberec and according to valid decrees of the Dean of the Faculty of Mechanical Engineering.

- A total of 1,187 students were awarded their scholarships.
- The total amount of scholarships paid was 14.42 mil. CZK.
- The amount of 2014 scholarships decreased by 1.63 mil. CZK, compared to 2013.

Preciosa Foundation Jablonec nad Nisou Scholarship

A total of 19 students of the Faculty of Mechanical Engineering received their scholarships ranging from CZK 3,000 to 5,000.

3.7 Creative Student Activities

Award of the Liberec Region Governor
Ing. Láník Pavel – Field: Engineering Technology
Thesis topic: Geopolymer composite systems and their resistance to dynamic stress

TUL Rector's Award
Ing. Jan Kracík – Field: Applied Mechanics
Thesis topic: Supersonic wind tunnel design

TUL FS Dean's Award
Ing. Hana Kupilíková – Field: Engineering Technology
Thesis topic: Influence of deformation and state of stress on protective Zn-Mg-based coating damage

Ing. Jiří Riegr – Field: Machines and Equipment Design
Thesis topic: Design of winding machine with digital winding

Ing. Martin Holub – Field: Applied Mechanics
Thesis topic: Study of a light off-road vehicle with special chassis

Ing. Kamil Hübner – Field: Innovative Engineering
Thesis topic: Innovation of the hydraulic table vibro-insulation mechanism

Bc. Martin Vajgl – Field: Materials and Technologies
Bachelor's thesis topic: Proposed change of the Škoda Rapid horn holder shape

Bc. Jakub Sieber – Field: Machines and Equipment
Bachelor's thesis topic: Design a suitable frame for rotating the cartridge in DNA analysis equipment

Bc. Petr Havlík – Field: Production Systems
Bachelor's thesis topic: Prototype production of a functional unit on in the CNC machining centre

Graduated with distinction – Red diploma
Ing. Kamil Hübner
Ing. Jan Kracík
Ing. Martin Kulič
Ing. Jiří Riegr
Ing. Miroslav Rudolf

Student Grant Competition at the Faculty
The student grant competition included 16 projects with the total volume of 6.1 mil. CZK. For more details, see Chapter 4. 5.

Student Scientific and Professional Activity (SSPA/SVOČ)
The sixth year of the competition supporting the talented students of master's and doctoral courses was organised by the Faculties of Textile, Faculty of Mechanical Engineering, and Faculty of Mechatronics during the IRP TUL 2014. The aim of the competition is to support the creative types of students with prerequisites for scientific and development activities at the TUL technical faculties. The competition was attended by more than 40 students, including 22 students from the Faculty of Mechanical Engineering.

Mechanical Engineering Section – Student ranking:
1 Kamil Hűbner – Innovation of the hydraulic table vibro-insulation mechanism
2 Tomáš Stloukal – Innovation of small glass melting pan aggregate
3 Jitka Kulifay – Minimising glass surface defects caused by press feed cutting shears
4 Eva Habelová – Innovation of the caliper displacement force measuring system
5 Josef Vašata – Piston ring deburring device

Mechanical Engineering – Ranking of PhD Students:
1 Ing. Pavel Brdlík – Usability of the carbon dioxide cooling potential in the blowing process
2 Ing. Martin Mazač – Measuring of gear temperatures in real operation
3 Ing. Ondřej Matúšek – Positioning of MEMS clamps using an industrial camera
4 Ing. Petr Kulhavý – Analysis and optimisation of the heat convector pressure loss calculation

5 Ing. Jan Vácha – Influence of carbon nano-tubes as the filler on the injected polypropylene matrix properties

Workshop for the Doctoral Students of the FME TUL and FTT TUL
It took place traditionally at Světlance in Rokytnice nad Jizerou on 16–19 September. A total of 15 students of the Faculty of Mechanical Engineering and 30 students of the Textile Faculty presented their professional works. Discussions with the academics from both faculties were part of their meeting. The event was financially supported by the TUL Institutional Development Programme for 2014.

Summer School of Technology for the Processing and Evaluation of Metal Materials Structure
On 22–28 May, the "Summer School of Technology for the Processing and Evaluation of Metal Materials Structure" was organised by the Department of Materials and Department of Engineering Technology. The Summer School was organised as part of the TUL 2014 Institutional Development Plan project. The event was intended primarily for students of Master's, Bachelor's, and Doctoral study programmes at the Faculty of Mechanical Engineering and was a follow-up to the successful laboratory course implemented in 2013 as part of the Centralised Development Project.

CREOman – prove it!
On 17 October, the Department of Textile and Special Purpose Machines organised the first annual fastest designer contest. Michal Strnad won the fastest designer title, Lukáš Bárta placed the second, and Jan Konopásek the third. In addition to the diploma, the contestants received vouchers for the purchase of electronics worth CZK 3,000, CZK 1,500, and CZK 500.

Seminars and workshops realised within the projects of EC OP projects, University Development Fund (FRVŠ), and the Centralised Project of the Ministry of Education, Youth, and Sports
See project website:
http://www.fs.tul.cz/cz/rozvoj-a-projekty/resene/

3.8 Educational Promotional Events

Open Days for Prospective Students

- Open Day at FME TUL – February 2014.
- Open Day at FME TUL – December 2014.
- Students of the Technical Club from the Higher Vocational School and the Secondary Technical School in Žďár nad Sázavou visiting at the FME TUL – October 2014.

Education Fairs
The study in study programmes and opportunities for graduates were promoted at education fairs (active participation of the FME):

- EAIE 2014 Fair in Prague – September 2014 (FME, TUL).
- EAIE 2014 International Conference in Prague - active participation of representatives of the Faculty of Mechanical Engineering at the fair through the TUL stand during a conference – September 2014 (FAS, TUL).
- Educa 2014 Education Fair of Liberec – October 2014 (TUL).
- European Exhibition of Higher Education Gaudeamus Nitra – October 2014 (TUL).
- European Gaudeamus Education Fair in Brno – November 2014 (FME, TUL).
- China Education Expo 2014 in Shanghai – November 2014 (FME, TUL).
- B2B International Fair NAFSA 2014, San Diego, USA – April / May 2014 (FME).

T-Forum 2014
The 19th year of the T-Forum job fair for students, attended by representatives of about 50 industrial companies and firms. The fair is traditionally organised by the IAESTE branch at TU of Liberec with the co-organisation of the Department of Vehicles and Engines of the FME TUL. The fair is one of the biggest personnel events in the region. December, 2014.

Study Promotion

- Promotion through FB and the Faculty website.

- FB campaigns for selected age groups of high school students.
- Study promotion through personal visits and presentations at selected secondary schools and grammar schools.

Promotion of Study at the FME TUL for Foreigners

- Welcome Days at TUL
  Traditionally, before the academic year start, on 29 September, the Welcome Days were held for foreign Erasmus+ students who will study at TUL in the winter semester (from France, Poland, Portugal, Slovakia, Spain, Turkey, and Greece).
- FME TUL – Seminar for the students of the Faculty of Mechanical Engineering about the possibilities of study in the LLP ERASMUS programme – December 2014.
- In cooperation with the Institute of Vocational and Language Training of the Charles University, a group of 38 students from their Russian-speaking countries visited the faculty, preparing to study in the Czech Republic. The visit took place during the Open Door Day – December 2014.

Promotion of Study in the EC OP Educational Projects

- The events were organised both by the faculty and university.

3.9 Teaching Quality

Teaching is organised in accordance with accredited curricula and is guaranteed by educators who prove their professional competence through professional and publishing activities.

The lecturers are mostly professors and senior lecturers of the Faculty of Mechanical Engineering and in some cases other experts – university teachers. External workers from the industry and other institutions (AS of the Czech Republic) are involved in the teaching as well.

In 2014, a total of 15 external experts gave lectures in their individual subjects through the accredited degree programmes. Other experts from the application and academic spheres (see 6.4) gave their professional seminars and lectures

The subject content innovation is ensured by the individual faculty departments continuously and is reflected in the contents of the subjects of study and in the innovation of teaching and study texts. It reflects the needs of both the industrial practice and contents of the faculty's scientific and research activities.

The activities supporting the quality of teaching are specified in detail in the annual reports of every department. In summary, we may conclude:

- Subject innovations were ongoing, financially supported through the OP Education for Competitiveness projects, support area 2.2 – see Annex 7.4.
- As a standard, electronic presentations are created in the electronic form, the offer of video recordings on classical or CD media intended for study has increased, web interactive applications have been developed to increase the efficiency and attractiveness of teaching, as well as a number of educational catalogues. It is documented in detail in the annual reports of the individual departments.
- The normal construction-technical and investment development of classrooms and laboratories using the FRIM funding was carried out.
- 21 textbooks were published to support teaching. A number of new lecture presentations, didactic aids, teaching texts, and experimental teaching facilities were created.
- All the departments conduct their own questionnaire evaluations of the quality of the subjects taught.
- Students have the opportunity to evaluate subjects anonymously in the IS STAG system. The event is organised by the TUL Student Chamber. In 2014, 69 students participated in the survey in ZS 2013/14 and 58 in SS 2013/14.

3.10 Lifelong Learning

Within the framework of the lifelong learning, the Faculty of Mechanical Engineering organises a wide range of specialised seminars, which were structured according to the requirements of industrial firms and companies.

Lifelong learning is an important part of cooperation with the industrial practice:

- The total scope of the lifelong learning was the total of 1,283 lessons in 63 courses (in 2013, it was 773 lessons in 44 courses).
- The courses were attended by approximately 890 participants (in 2013, there were 680 participants).
- The volume of funds obtained by this activity amounted to approx. CZK 2.45 million (CZK 2.02 million in 2013).

SCIENTIFIC RESEARCH ACTIVITIES

TECHNICAL UNIVERSITY OF LIBEREC
Faculty of Mechanical Engineering

4 SCIENTIFIC RESEARCH ACTIVITIES

4.1 Focus of the Scientific Research Activities

The scientific research base is formed by the traditional fields that accentuate the needs of applied research and development in the Czech Republic.

Developed areas:

- Energy accumulation and transfer.
- Competitive machines and equipment.
- Material engineering.
- Progressive technological and production processes.

In 2014, the Faculty's scientific research activities continued within the research programmes of the "Centre for Nanomaterials, Advanced Technologies, and Innovations" (hereinafter "CNATI"). Within this project, the Faculty develops two research programmes:

- Competitive engineering.
- Material research.

4.2 Institutional Support

In 2014, the Faculty received funding for institutional support in the amount of CZK 28.82 million, which represents approximately 45.5% of funds for R&D activities. This amount was allocated to departments to support research and stabilise research teams.

4.3 Competence Centre

In 2014, the activities of the Josef Božek Automotive Research Competence Centre, which is held by the Czech Technical University in Prague, continued. A team from the Department of Vehicles and Engines represents a co-solver. Research activities are conducted under the CNATI.
See Text Annex 4.3.

4.4 Scientific Research Projects

The Faculty scientific research activities were focused, as in previous years, mainly on the applied and experimental research and development. The faculty was involved as receivers and co-receivers in TA CR, MIT CR, MI CR, ME CR, GA CR projects.

Out of the total number of 17 R&D projects, 3 projects were solved at the Faculty of Mechanical Engineering in the position of the receiver and 14 projects in the position of the co-receiver. Out of the total number of projects solved, 2 new projects were initiated in 2014, and at the end of the year, 8 projects were successfully completed. The volume of targeted support for solution of scientific research projects was approx. CZK 28.85 million (of which CZK 5.92 million were provided to co-solvers), which represents approximately 44.7% of the total volume of funding for the scientific research activities.

The volume of targeted support transferred and acquired by academic staff members under CNATI of the Faculty of Mechanical Engineering amounted to 6.43 million (TA CR and MIT CR projects). In addition, The Faculty academic staff members are the bearers of the MEYS project – OP RDI Pre-seed and activities within the TA CR – GAMA project.

For overviews of projects and financial grants, see table and text annexes 4.4.

Overview of Scientific Research Projects

- TACR: TA04021338 – Applied research and development of a new air filter type
- TACR: TA03010852 – Development of a progressive cooling system for the glass moulding machine moulds
- Technology Agency of the Czech Republic: TA03010492 – Applied multidisciplinary research and development of progressive methods of cooling in technological processes
- Technology Agency of the Czech Republic: TA03011584 – Automatic sample feeder for dynamic measurements by the flow cytometry method

- Technology Agency of the Czech Republic: TA03030978 - Research and Development of the Delay-Free Shock-Absorber
- Technology Agency of the Czech Republic: TA 01020231 – Applied research aimed at increasing the heat efficiency of heat exchangers and operational verification in relation to renewable energy sources
- Technology Agency of the Czech Republic: TA 01020313 – Development of the air-to-air enthalpy heat exchanger
- Technology Agency of the Czech Republic: TA02021332 – Ecological machining fluids of new generation
- Technology Agency of the Czech Republic: TA 02020716 – Research of the ORC technology with the low-volume piston steam engine for small and waste heat sources
- Technology Agency of the Czech Republic: TA03010663 – New systems of monitoring of the length of end measures and evaluation of of their surface.
- MPO – TIP: FR-TI3/373 – Extension of life of traffic lanes stressed with impact load.
- MPO – TIP: FR-TI3/ 373 – Research and development of new subledeburitic tool steels for wood processing with increased performance
- MPO – TIP: FR-TI3/ 587 – Research and development of bio materials and technology of production of artificial replacements for bone defects treatment
- MV – PBV: VG20122014078 – Applied research of the new generation of protective masks with nano-filters for increased protection of persons from the design, technological, and material perspective
- Czech Science Foundation: P108/12/1452 – Optimisation of the high-temperature mechanical properties of Fe3Al type iron aluminides with carbide formers
- Czech Science Foundation: GA14-08888S – Control of current fields through fluid oscillations
- EU/ME: LIFE+ Demonstration of diesel exhaust emission monitoring during real operation

Projects submitted under FME – transferred under CNATI and solved by FME academic staff members

- MPO – TIP: FR-TI3/ 845 – Technology for inorganic nanofibre production

Projects submitted under CNATI – solved by FME academic staff members under CNATI

- Technology Agency of the Czech Republic TA04011009 – Research of usable properties and application options of light polymer composites for body construction
- Technology Agency of the Czech Republic TA02010992 – Development and verification of new numerical methods of welding and heat treatment, including simplified numerical prediction of service life of welded joints, for progressive materials used in power engineering, aerospace, and space industry
- Technology Agency of the Czech Republic TA02010992 – Technology of the injection moulding of bio-ceramic materials for implant components production
- Technology Agency of the Czech Republic TE01020020 – Josef Božek Automotive Industry Competence Centre
- MPO – TIP: FR-TI3/ 845 – Technology for inorganic nanofibre production
- MPO – TIP: FR-TI4/ 054 – Increasing the load capacity of spur gearing by optimising thermal, chemical-thermal, and mechanical processing

R&D results commercialisation projects filed under CNATI – solved by the FME academic staff members

- OP RDI Pre-seed: CZ.1.05./3.1.00/13.0291 – New technologies and special machine components
- TACR-GAMA: TG01010117 **–** PROSYKO **–** 2 sub-projects/activities

4.5 Student Grant Competition

As part of the Student Grant Contest, 16 projects were launched with a total financial support of CZK 6.25 million, which represented approximately 9.8 % of the total volume of funding for the scientific research activities. For an overview of projects, see Table Annex 4.5.

4.6 Contract Research and Development

Contractual research and development within supplementary activities form an important segment of the Faculty's activities. The revenue from the contract research of the Faculty of Mechanical Engineering in 2014 amounted to approx. CZK 12 million, of which approx. CZK 9.5 with results applied to the RIV database.

Contract research and development carried out by the academic staff members of the Faculty of Mechanical Engineering under CNATI amounted to approx. CZK 13 million, of which approx. CZK 12.6 million with results applied to the RIV database.

For an overview of revenues per workplaces, see Table Annex 4.6.

4.7 Centre for Nano-Materials, Advanced Technologies, and Innovations

The Faculty of Mechanical Engineering develops laboratories for two research programmes within the CNATI infrastructure.

Competitive Engineering	**Professional Guarantor**
Laboratory of Textile Machinery Innovation	Prof. Ing. Jaroslav Beran, CSc.
Laboratory of Advanced Industrial Technologies	Prof. Dr. Ing. Petr Lenfeld
Hydrodynamic Laboratory	Ing. Ladislav Ševčík, CSc.
Power Unit Laboratory	Ing. Robert Voženílek, PhD
Laboratory of Robotic Systems	doc. Ing. František Novotný, CSc.
Laboratory of Particle Technologies	doc. Ing. Jan Jersák, CSc.
Laboratory of Prototype Technologies and Processes	Petr Zelený, PhD
Material Research	
Laboratory of Nanolayer Evaluations	Prof. Ing. Petr Louda, CSc.

4.8 Results of the Scientific Research and Development Activities

Over the five-year period under review, there was again a significant increase in the number of points for the results applied in the RIV database – for the reference period (2008-2012) by approximately 15% compared to the previous period (2007-2011).

In 2014, the first results were published according to the new methodology for evaluating the results of research organisations, which was effective for the years of 2013-2015 (hereinafter referred to as the “Methodology 2013”). Based on this methodology, the Faculty of Mechanical Engineering obtained a total of 4,249 points in Pillar I, 545 points in Pillar III, and from the previous periods, a total of 6,916 points for the results applied in 2008-2011 were transferred. The Pillar II results were not evaluated in the period under review, and this pillar was initialised in this period by an allocation of 1/9 of the sum of Pillar I and Pillar III points and points allocated for the applied research results from past evaluations.

The overviews of the results and the point scores are provided in Table Annex 4.8. The results show that the results of applied research were an important factor in the performance of the Faculty of Mechanical Engineering in recent years. The 2013 evaluation (the year of the 2014 data collection) was not available before this report was finalised.

4.9 Commercialisation of Results and Outputs of the Scientific Research Activities

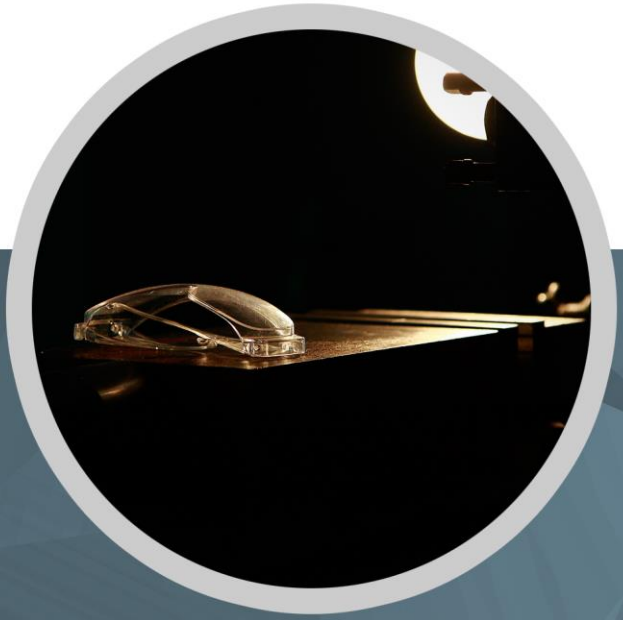
The strategy for the commercialisation of R&D results at FME is oriented at two main directions:

- Transfers of new technologies and machinery through contractual or collaborative research, and sales of licenses, or potentially sales of patents and utility models.
- For the implementation of “proof of concept” and “pre-seed” projects, see Text Annex 4.9:
  - In 2014, the Commercialisation of the results of research organisations and protection of their intellectual property project continued. Within the project, the Faculty of Mechanical Engineering staff solved a total of 4 activities leading to the commercialisation of R&D

results obtained primarily within the MSM467488501 Research Plan. The project is managed under CNATI.

- In 2014, two PROSYKO sub-projects were launched. The project is supported by the TACR/GAMA programme, Sub-Programme 1, aimed at supporting the verification of the practical applicability of R&D results generated by research organisations and having a high potential for application in new or improved products, production processes, or services with high added value and high likelihood of competitiveness strengthening. The project is managed under CxI.
- In 2014, the Faculty participated in a project of the Faculty of Textile supported by OP RDI – Nanofibrous materials for tissue engineering. As part of the project, the Faculty actively participated in the commercialisation of a Functional Equipment Sample for the production of artificial vascular implants with a small diameter.

INTERNATIONAL COOPERATION



TECHNICAL UNIVERSITY OF LIBEREC
Faculty of Mechanical Engineering

5 INTERNATIONAL COOPERATION

In the international cooperation field, activities focused on the mobility of students and academic staff members and the preparation of contracts for bilateral cooperation with other scientific research institutions prevailed. International cooperation in all the areas of the Faculty activities was based on 55 contractual relationships.

5.1 International Cooperation in Education

In the area of international cooperation in education, efforts were focused on establishing further international contacts and activities, and the ongoing activities had continued.

Educational Activities Carried out within the Projects

- The IRP FME TUL institutional development project was being solved – TUL as an important partner within the international educational space to strengthen the existing cooperation with Canadian and American partner universities.
- As part of the project, two study visits of Czech students to Canadian partner university, Conestoga Polytechnic were initiated in 2014, and one student visit at a partner university in the U.S.A. was conducted. Reciprocally, there were three stays of Canadian students at TUL FME. Within the project, two Canadian students were provided with the industrial experience for a period of 4 months.
- In 2014, one Czech student visited the University of Waterloo (supported by IRP TUL 2013).
- One-semester study stay of one student at the U.S. partner institution was conducted with the support of the Faculty scholarship.
- Six long-term stays of doctoral study programme students were carried out for the purpose of professional growth and to strengthen existing contacts with foreign partner institutions with the financial support of the TUL 2014 Institutional Development Plan of the Mobility Fund.
- In 2014, there were three stays of doctoral study programme students at foreign partner institutions lasting 2-3 months, with financial support from other sources (EC OP).

Educational Activities Carried out within the Mobility

- The total of 10 short-term stays and activities of the Faculty academic staff members accompanied with lecturing at partner institutions within the ERASMUS and CEEPUS programmes were carried out.

5.2 International Scientific Research Cooperation

- Three long-term scientific stays of young academic staff members with the support of the IRP TUL project for 2014 were carried out:
  - Ing. Jaromír Moravec, PhD from the Department of Mechanical Engineering Technology completed a one-month internship at the the Graz University of Technology, Institute of Materials Science and Welding, Austria.
  - Ing. Petr Lepšík, PhD of the Department of Machine Parts and Mechanisms completed a one-month internship at the Massachusetts Institute of Technology, School of Engineering, U.S.A.
  - Ing. Štěpánka Dvořáčková, PhD completed a one-month internship at the Trakia University, Faculty of Technics and Technologies of Yambol, Bulgaria.
- Two long-term scientific stays of young academic staff members were carried out with the support of the FTT project – Support of creation of excellent research and development teams at TUL:
  - Ing. Jiří Machuta, PhD completed a 1.5-month stay at the Technical University of Denmark, DTU Mechanical Engineering, Denmark.
  - Sneha Samal, PhD of the Department of Mechanics, Flexibility, and Strength completed a 89-day stay at Katholieke Universiteit Leuven, Belgium.
- Four short stays of young academic staff members were carried out for the purpose of professional growth and to strengthen existing contacts with foreign partner institutions with the financial support of the TUL 2014 Mobility Fund.

- Four short-term stays of academic staff members at foreign partner institutions were carried out with the financial support of IRP FME TUL – Employee Mobility in order to establish a cooperation network between TUL FME and foreign universities.
- Two short-term stays of foreign academic staff members from the partner university in Canada were carried out at the faculty with the financial support of IRP FME TUL – Receiving of foreign academic staff members at FME TUL workplaces (outside EU and EFTA).
- A one-month scientific stay of a foreign academic staff member was carried out at the Department of Production Systems with the financial support of a project of the Polish sending institution.

5.3 International Mobility

The mobility of students, academic staff members, and other FME staff members was realised mainly within the LLP ERASMUS, CEEPUS, and Institutional Development Programme. The mobility of foreign students and academic staff members at TUL was conducted within the LLP ERASMUS programmes. International students also took advantage of the IAESTE program.

The Faculty motivates students of all the study programmes to complete a study stay abroad. The priority is to increase the mobility of doctoral students. Since 2010, foreign study visits or internships have been included in the study plans of doctoral study programmes.

In 2014, the overall mobility of students, academic staff members, and other Faculty staff, as well as the mobility of foreign students and academic staff members, increased.

In 2014, the total number of **stays of foreign students and foreign academic staff members,** including other staff members within the Faculty mobility programmes, increased compared to 2013, while in the individual mobility categories, the increase was reported especially in stays of foreign students coming under the Erasmus and IAESTE programmes. Arrivals of students under CEEPUS were at the level of 2013, while arrivals of foreign academic staff members under CEEPUS decreased. Other activities of foreign students and academic staff members increased in comparison with 2013.

Foreign students who obtained a government scholarship of the Czech Republic to study the follow-up Master's program N2301 Mechanical Engineering, the Design of Machines and Equipment field, Power Equipment specialisation were newly accepted.

In 2014, the **foreign mobility of academic staff members and other Faculty staff members** within the programmes was at the 2013 level, and in addition to visits under the Erasmus and CEEPUS programmes, other sources, such as the TUL Mobility Fund and the Faculty's Institutional Development Programmes, were used. The international mobility of the Faculty students within programmes increased in 2014, while in individual mobility categories, the increase was reported especially in the students' visits within the Erasmus+ and Institutional Development Programmes. Student arrivals under CEEPUS were at the 2013 level. Other student activities increased compared to 2013, while they dropped among academic staff members compared to 2013.

- Twenty-four student study and work stays lasting one semester were carried out under the LLP Erasmus/Erasmus+ programmes, with more than half of the visits being the mobility of Bachelor's and follow-up study programmes.
- Ten academic staff member visits were carried out under the LLP Erasmus/Erasmus+ and CEEPUS programmes; short-term 5-day learning stays prevailed.
- There were 4 training visits in the category of other staff members under the LLP ERASMUS/Erasmus+ programmes.
- The total of 78 foreign students stayed at the Faculty of Mechanical Engineering from the European Area within the LLP Erasmus/Erasmus+, CEEPUS, and IAESTE programmes, 1 from China, 1 from Colombia, 1 from Mexico, and 1 from Japan under IAESTE.
- There were 17 short-term stays of foreign academic staff members at the Faculty of Mechanical Engineering under the LLP Erasmus/Erasmus+ and CEEPUS programmes, with arrivals of 5 days prevailing.
- Two short stays were conducted to train foreign academic staff members under the LLP Erasmus programme.

- There were 5 student visits abroad lasting several months under the TUL Mobility Fund and 1 long-term student long-term visit at the National Taiwan University was supported, also from the TUL Mobility Fund.
- One student stay for one semester was conducted at the University of Waterloo under IRP FME TUL (2013) "One-semester study stays at the University of Waterloo and Conestoga College."
- One-student one-semester stay at the NIU, U.S.A. was carried out, and 2-student one-semester stays under IRP FME TUL, "TUL as the important partner within the international education area – strengthening the existing cooperation with Canadian and American partner universities" was initiated.
- There were 3 foreign student stays at the Faculty under IRP FME TUL "TUL as the important partner within the international education area – strengthening the existing cooperation with Canadian and American partner universities" project was initiated.
- There were 3 stays of doctoral study programme students lasting 2-3 months at foreign partner institutions with financial support from other sources.
- One-semester study stay of one student at the U.S. partner institution was conducted with the support of the Faculty scholarship.
- There were four academic staff member visits under the IRP TUL Mobility Fund, 4 academic staff member visits under within the IRP FME "Mobility of employees to create a cooperation network between TUL FME and foreign universities", and 2 visits of academic staff members under IRP FME "Promotion of FME TUL study fields abroad"
- Two long-term scientific stays of young academic staff members were carried out with the support of the FT project – Support of creation of excellent research and development teams at TUL.
- There were two visits of foreign academic staff members under IRP FME "Receiving foreign academic staff members to the TUL FME (outside the EU and EFTA) project."
- The Faculty of Mechanical Engineering provided teaching of selected courses at KEZ, KMP, and KST for students within the Erasmus+ programme who came to FT in ZS 2014/2015.

Under the LLP ERASMUS+ Programme

- A total of 38 inter-institutional contracts were concluded with partner universities.

Within the European Area Cooperation

- One new contract was concluded with the Hof University of Applied Sciences for the purposes of admitting Hof University of Applied Sciences students for a one-semester study stay at the Faculty of Mechanical Engineering.
- One contract was concluded with Ostfold University College in Norway for the purposes of the project under the CZ07 Norway Grants and EEA Funds programmes.

Within the Transatlantic Cooperation

- One new bilateral agreement was concluded with Pontifícia Universidade Católica do Rio de Janeiro, Brazil.

Within Cooperation with Indonesia

- One bilateral agreement was concluded with Diponegoro University.

Negotiations started on concluding further bilateral agreements in the area of mutual exchanges of students and academic staff members, and in the area of science and research with the following universities:

- Universidad Internacional (Mexico).

Under the CEEPUS Programme

The Faculty of Mechanical Engineering was an active participant in the CIII-RS-0304 network, Technical Characteristics Researching of Modern Products in Machine Industry (Machine Design, Fluid Technics and Calculations) with the Purpose of Improvement Their Market Characteristics and Better Placement on the Market.

In 2014, the Faculty of Mechanical Engineering entered as a partner another CEEPUS programme network, CIII-BG-0722 "Computer Aided Design of Automated Systems for Assembling", coordinated by the Technical University of Sofia, Bulgaria.

The Faculty of Mechanical Engineering was approached by the University of West Bohemia with the offer of participation in the newly formed CEEPUS network, “Sustainable Production and Logistics Systems for Factories of the Future (FoF)”. Unfortunately, the network was not approved.

The Faculty of Mechanical Engineering was approached by a partner from Romania to join another CEEPUS network, CIII-RO-0013-10-1415 “Teaching and Research in the Environment – Oriented Technologies in Manufacturing” coordinated by the Technical University of Cluj-Napoca, Romania.

PARTNERSHIP AND COOPERATION

TECHNICAL UNIVERSITY OF LIBEREC
Faculty of Mechanical Engineering

6 PARTNERSHIP AND COOPERATION

Partnership and cooperation with scientific research institutions and industry partners represents one of the pillars of the Faculty's stability.

6.1 Membership in the Czech and Foreign Associations and Organisations

Membership in Institutions and Organisations of the Educational and Professional Nature

- Association of Deans of Technical Faculties
- Czech Society for Mechanics
- Automotive Industry Association
- Association for Engineering Mechanics
- Association of the Glass and Ceramics Industry – KSR is a collective member

Platforms and Clusters

- Czech Hydrogen Technology Platform
- Automotive Industry Association
- Czech Technology Platform Engineering, o.s.
- Josef Božek Competence Centre
- Centre of Excellence NANODIAM
- Centre of Excellence BÜHLER
- CENEN

6.2 Cooperation with Universities and Research Organisations

Forms of cooperation with universities and scientific research organisations include a wide range of activities.

Visit from Hochschule Hof

On 24 March, prof. Dr.-Ing. Herbert Reichel from Hochschule Hof visited the Faculty.
Historically, the cooperation with the Hochschule Hof took place primarily under the Erasmus programme. At the end of 2012, the Hochschule Hof representatives approached the Faculty of Mechanical Engineering with an offer to participate in the new DAAD-funded “International Mechanical Engineering” study programme. As part of this project, the Faculty of Mechanical Engineering has undertaken to provide selected English courses for students of the 3rd year of the Hochschule Hof who would apply for this one-semester international study programme. The first students from the Hochschule Hof will be welcomed at the Faculty of Mechanical Engineering in the 2015/2016 academic year. The purpose of prof. Reichel's visit rested in getting acquainted with the study environment at the Faculty, personal meeting with the Faculty management and with the heads of individual departments affected by the teaching, namely KSP and KVS. There were also personal meetings with teachers of individual subjects and a tour of the relevant departments. A contract between the Faculty of Mechanical Engineering and the Hochschule Hof is currently being prepared as an official confirmation of this cooperation.

Visit from the Lodz University of Technology

On 27 March, we welcomed the Dean and Vice-Deans of Lodz University of Technology at the Faculty of Mechanical Engineering. The subject of the meeting rested in discussions on the possibilities of deepening the existing cooperation between the Faculty of Mechanical Engineering TU of Liberec and the Faculty of Mechanical Engineering of the Lodz University of Technology, especially in the area of the mutual exchanges of material engineering students. Our colleagues from the Lodz University of Technology have experience with double degree projects, which should be one of the goals of the future cooperation between FME TUL and the Lodz University of Technology.

Visits at Conestoga Polytechnics and the University of Waterloo

In the period of 14 -16 April, the Dean, prof. Petr Lenfeld and the vice-dean, doc. Karel Fraňa, visited the Canadian Universities. The visit took place within the several-year cooperation between FME TUL and Conestoga Polytechnics and the University of Waterloo. The subject of the meeting

rested in an invitation to the June seminar held in Prague. The seminar was organised by FME TUL and CTU Innovation Centre. Other items on the agenda included sharing of experience in teaching and student exchange, cooperation in science, and discussions on prospective joint research projects. The Dean and the Vice-Dean also met with students – Miss Hulínská, Mr. Dorotka, and Mr. Průšek from FME TUL who were at the time studying Conestoga Polytechnics and the University of Waterloo within the student exchange programme.

Prof. Philippe Fraunié of the Université de Toulon at FME TUL
On 28 March, prof. Philippe Fraunié of the University of Toulon visited the Faculty of Mechanical Engineering and gave a lecture on "Stratified Flows and Environmental Mesoscale Turbulence". The lecture was conducted within the EC OP project "Building an excellent scientific team for experimental and numerical modelling in fluid mechanics and thermodynamics".

Canadian Mission at FME TUL – Cooperative Education in Canada
Under the patronage of the Canadian Ambassador to the Czech Republic, with the participation of representatives of the MEYS, MFA, MIT, representatives of selected industrial companies, and representatives of FME TUL and CTU, a seminar on cooperative education took place in Prague, on 9 June. The Faculty of Mechanical Engineering will be represented by the Dean, prof. Petr Lenfeld, and vice-deans. The Canadian mission continued on 11 June at FME TUL.

Sharing of experiences with technical education in the Czech Republic, Poland, and Bulgaria in the International Seminar held within the framework of the EC OP MOST project on 17–21 September, attended by 12 foreign experts of the total of 26 participants.

Canada-Central and Eastern Europe Roundtable on Higher Education Cooperation
On 15 September, a roundtable was held in Prague with representatives of Canadian and Czech universities and representatives of selected European universities. The meeting was held under the patronage of the Canadian Ambassador, Mr. Otto Jelínek. The subject of the meeting rested in discussing the possibility of intensified cooperation between the universities in the field of education and scientific activities. The meeting was also attended by representatives of the The meeting was also attended by representatives of the Ministry of Education, Youth and Sports, the Tertiary Learning Department. The meetings also included individual discussions between universities, within which the possibility of cooperation on specific activities was fine-tuned; in the case of TUL, it applied mainly to the student exchange area. Technical University of Liberec was represented by doc. Ing. Karel Fraňa, PhD, Vice-Dean for External Relations, FME TUL.

The Faculty established cooperation with Ostfold University College in Norway
The "Education collaboration in mechanical engineering" project was supported by the Norway Grants in the institutional cooperation section. Ostfold University College, Faculty of Mechanical Engineering, is the partner of FME TUL. The objective of the project rests in establishing and developing cooperation between both the institutions and in strengthening cooperation in the field of teaching and science. The project will include short-term exchanges of academic staff members and students with partner institutions. Students' participation in teaching and lectures of academic staff members will be included. On 21 October, an introductory meeting was held at Ostfold University College with the participation of the Dean of the Faculty of Mechanical Engineering, prof. Petr Lenfeld, and vice-deans, doc. Karel Fraňa and Dr. Ivo Matoušek. The meeting was attended also by the Vice-Dean, prof. Hong Wu, and with the Dean of the Faculty of Mechanical Engineering of Ostfold University College, prof. Kamil Dursun. The subject of the meeting rested in the mutual presentation of the institutions and discussion about the future cooperation.

Scientific Colloquium at the Brandenburg University of Technology Cottbus, Senftenberg, Germany
On 19 November, a scientific colloquium was held at the Brandenburg University of Technology Cottbus, Senftenberg, Germany, with the participation of representatives of the Faculty of Mechanical Engineering, doc. Ing. Karel Fraňa, PhD, Officer Ing. Marcela Válková, and students of the Department of Power Engineering Equipment, Ing. Jan Barák, Bc. Tomáš Kořínek, and Bc. Josef Egert. During the colloquium, there were active presentations made by Vice-Dean Karel Fraňa and students Bc. Tomáš Kořínek "CFD in Indoor Environment Quality" and Bc. Josef Egert "Numerical Simulation of Flow in a Room Heated With a Floor Convector". The subject of the next meeting rested in cooperation between the Faculty of Mechanical Engineering and the newly

established University of Brandenburgische Technische Universität Cottbus – Senftenberg. The contacts established in the past represent the potential for the development of the Czech Republic-Germany cross-border cooperation between the universities In addition to this cooperation, the Faculty of the Mechanical Engineering maintains active contacts and cooperation with the Technical University of Dresden and the Westsächsische Hochschule in Zwickau.

FME presented at King Mongkut's University of Technology North Bangkok
From 27 November to 04 December, representatives of the Faculty of Mechanical Engineering TU Liberec visited KMUTNB in Thailand. The subject of the meeting rested in consultations on the prospective cooperation in the field of exchanges and study visits of doctoral and Master's study programme students, as well as in the field of joint R&D projects, e.g. in plastics processing. On behalf of the Faculty of Mechanical Engineering, the meeting was attended by the Dean, prof. Dr. Ing. Petr Lenfeld, scientific staff member, Ing. Jiří Bobek, PhD, and doctoral programme students at the FME, Ing. Martin Borůvka and Ing. Jan Vácha, who are currently on a six-month study stay at KMUTNB. On behalf of KMUTNB, the meeting was attended by the President, prof. Dr. Teravuti Boonyasopon, Vice President for Research, prof. Dr. Ing. Suchart Siengchin, Vice President for International Cooperation, Ms. Sikan Kulchonchan, Dean, doc. Udomkiat Nontakaew, PhD, and Dean doc. Petch Jearanaisilawong, PhD. The meeting resulted in an agreement to conclude a Memorandum on Cooperation in the aforementioned areas.

Informal Cooperation of Faculty Departments
The departments cooperate with related workplaces in the Czech Republic and Slovakia at both the scientific research and pedagogical levels. The members of the departments regularly meet in committees for habilitation and during doctoral thesis defences, they publish joint publications, etc.

Meeting of the Departments of Automation
In September, a traditional meeting of the Departments of Automation took place. The event took place in Bratislava and Kočovce, with the participation of the Department of Applied Cybernetics of our Faculty.

Meeting of the Management of the Departments and Institutes of Mechanics, Elasticity, and Strength of the Czech Republic and Slovakia
The event organised by the Department of Mechanics of the Faculty of Mechanical Engineering, VŠB-TU Ostrava took place on 26–28 May, 2014, in the Hukvaldy Hotel.

Meeting of the Departments and Institutes of Mechanics, Elasticity a Strength and Seminars of Doctoral Students
It was held on 15–17 September, 2014, in Netolice near České Budějovice, with the participation of the KMP Department staff.

Scientific Research Cooperation Supported by Projects and Grants
Together with universities and research organisations, the Faculty participated in four scientific research projects.

Development Cooperation Supported by Projects and Grants
Together with other universities, the Faculty participated in two projects within Education for Competitiveness OP.

Accredited Cooperation in Education
Accreditation granted to the Faculty of Mechanical Engineering TU in Liberec for the implementation of the study program in cooperation with other institutions:

- Together with the Institute of Thermomechanics AS CR, v.v.i. for the Mechanical Engineering doctoral study programme, with the Applied Mechanics study field. Full-time and combined form, standard length of study – 4 years. For teaching both in Czech and English.
- Together with the Institute of Thermomechanics AS CR, v.v.i. for the Mechanical Engineering doctoral study programme, with the Material Engineering study field. Full-time and combined form, standard length of study – 4 years. For teaching both in Czech and English.

6.3 Conferences, Symposia, Fairs

SESIA 2014

On 16–18 September, the traditional Meeting of the Mechanical Engineering Faculties of the Czech and Slovak Republics took place in Prague. This year, the host faculty was the Faculty of Mechanical Engineering of the Czech Technical University in Prague – on the occasion of the 150th anniversary of the commencement of the mechanical engineering education in the Czech lands in 1864 at the Czech Technical University. The Deans discussed the future of promoting and supporting technical disciplines in relation to their teaching and research with the industrial application in the Czech Republic – together with the political representatives lead by Minister of Trade and Industry Jan Mládek, Deputy Prime Minister Pavel Bělobrádek, and Deputy Minister of Education Jaroslav Fidrmuc. The Faculty of Mechanical Engineering was represented by the Dean, prof. Petr Lenfeld, together with vice-deans.

56th International Engineering Fair in Brno from 29 September to 3 October, 2014

The Faculty of Mechanical Engineering has traditionally represented universities, together with the exposition of Brno UT and CTU Prague. The Faculty presented specific outputs of R&D activities – the prototype of 3D printer of own design for production of high-quality precision models from photo-polymers, demonstration of activities in the field of surface integrity evaluation, measurement of car seats properties in the interaction with humans, and practical demonstration of processing polymer materials with natural fillers.

IX. Experimental Fluid Mechanics 2014

Organised by the Department of Power Engineering Equipment in Český Krumlov on 18–21 November. The conference was focused on experimental research in the field of fluid mechanics and thermodynamics.

Number of participants: 164, of which 92 were from abroad (EU, U.S.A., Australia, Israel, Japan, China, South Korea, Egypt, Russia, Ukraine, Kazakhstan, UAE, Algiers, Turkey, etc.).

VIII. Manufacturing Systems Today and Tomorrow

Organised by the Department of Production Systems on 20–21 November at TUL. This year's event focused on the maintenance management.

Number of participants: 58, of which 15 were from abroad.

Glasstec 2014, Düsseldorf

The Department of Glass Machinery and Robotics actively participated at the 2014 Glasstec Trade Fair in Düsseldorf, Germany. During the Trade Fair, at the stand of SKLOPAN Liberec, a.s., the jointly developed Eco Sphere mechanical matting technology, as well as the ROBOTUL VERTICAL CLIMBER 02 service robot with the VERTICAL CLEANER 01 facade superstructure were presented.

6.4 Cooperation with the Industry

Forms of cooperation with the industry include scientific research and educational activities.

Scientific Research Cooperation with the Application Sphere Supported by Projects and Grants

The Faculty participated as a co-researcher or the main researcher in the implementation of 15 projects with industrial partners supported by TA CR, MI CR, MIT CR.

OP Enterprise and Innovation Projects

The Faculty participated in the solution of partial tasks within 1 project solved by an industrial entity and tasks within the Nanoprogress project/cluster (under CNATI/FTT).

Cooperation in Education Supported by Projects

The Faculty cooperated with industrial partners under the Education for Competitiveness OP projects.

Scientific Research Contract Activities

Scientific research supplementary activities represent an important segment of the Faculty's activities. For more details, see Chapter 4.6.

Training of Industry Workers
The education of workers from the industrial sphere is an important segment of activities of the Faculty of Mechanical Engineering. The total scope of lifelong learning was 1,283 lessons in 63 courses with a total of 890 participants. The volume of funds obtained by this activity amounted to approx. CZK 245 million.

Professional Practice of Students in Companies
All the students in the Faculty's Bachelor's and Master's, or follow-up to Master's study programmes have completed the compulsory subject Professional Practice in companies in the scope of 2–6 weeks, based on the individual fields.

Bachelor's and Master's Theses
Assigning Bachelor's and Master's theses in cooperation with experts from industrial companies is the standard activity of all the departments of the Faculty of Mechanical Engineering.

Excursion of Students to Industrial Companies and Institutes
In 2014, the individual departments organised student excursions to the following industrial companies:
Lucid spol. s r.o. Jablonec nad Nisou; Škoda Auto a.s. Mladá Boleslav; Modelárna Liaz spol. s r.o. Liberec; Komerční slévárna šedé a tvárné litiny Turnov a.s.; Ernst Brőer spol. s r.o. Hrádek nad Nisou; KSM Castings CZ a.s. Hrádek nad Nisou; Benteler ČR s.r.o. Chrastava; Matador Automotive ČR s.r.o. Liberec; Ronal ČR s.r.o. Jičín; Ferex – ŽSO spol. s r.o. Liberec; Preciosa Ornela a.s.(operations in Desná and Zásada); Ecomodula Písek; ZVVZ Milevsko; Municipal power plant Písek, hydraulic power plant Lipno, Temelín nuclear power plant; Mondi Štětí; Misan s.r.o.; Knorr-Bremse ČR; VUTS a.s; Johnson Controls s.r.o.; Sauer Žandov a.s.; Festool Česká Lípa s.r.o.; and Hoflana s.r.o.; TMT Chrudim s.r.o .; Benteler Maschinenbau CZ, s.r.o.; Institute of Physics AS CR; Aerodynamic Laboratory in Nový Knín (Institute of Thermomechanics AS CR workplace).

Hosting and Lecturing from Companies and Institutions
Lectures by experts from the practice represent the standard form of cooperation. In 2014, 15 external experts participated in the lessons.

Professional Events with Partners from the Industry and Academia

- **General possibilities Gleeble testing for material research and technological applications**
  Lecture of Dr. S. T. Mandziej on the topic of "Possibilities of using the Gleeble – simulator of thermal, deformation, and stress states for material research and technological applications" was organised by the Department of Mechanical Engineering Technology on 4 November.
  Dr. Mandziej is a leading expert in the physical simulation of technological processes using temperature-voltage simulators. Together with Dynamic System, Inc., he developed a new test method called ACT (Acceleration Creep Test). This method is used to predict the life of creep resistant materials under given working conditions (temperature, pressure).
  During his three-day stay at the Faculty of Mechanical Engineering, Dr. Mandziej presented the ACT method, including the physical test performance, to the professional community. The experimental testing was completed for the X22CrMoV12-1 material used in the power engineering sector.

- **Die objektive Notwendigkeit eines Zero Impact Emission Antriebs**
  The lecture by Dr.-Ing. Jensen Hadler on "The need to achieve a zero drive emissions impact" was organised by the Department of Vehicles and Engines on 10 November. Prof. Jensen Hadler of APL Automobil-Prüftechnik Landau GmbH (former head of the aggregate development unit at Volkswagen AG, Wolfsburg) is a regular guest at the Faculty of Mechanical Engineering. The lecture offered an overview of the issue of CO2 emissions, possibility of reducing them in the field of transportation means (engine modifications and new powertrain concepts) and discussed the new mobility trends.

- **Development of Motorcycle Engines**
  The lecture by Ing. Martin Molcar of Ricardo Prague s.r.o. was organised by the Department of Vehicles and Engines on 11 November. The lecturer presented all the available designs of internal combustion engines for two-wheeled vehicles and dwelled on all the main structural

parts in detail. The lecture was also attended by the high school students from Vysoké nad Jizerou.

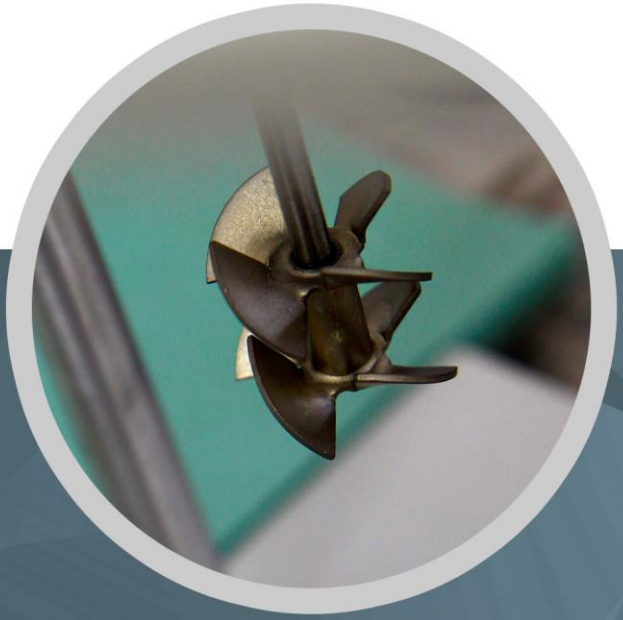
- **2014 NEWS**
  On November 14, Pramet Tools s.r.o. and the Department of Production Systems organised a seminar on the "Selection of news from the field of milling, machining, and turning". The innovations from the assortment of tools of the Pramet and Dormer Companies were introduced, and the activities of the Department of Production Systems were presented together with the possibility of cooperation with the industry. Practical demonstrations at laboratories were also part of the seminar. Its participants saw the examples of productive machining at the Mazak Integrex 100-IV machining centre, and the prototyping options using so-called additive technologies (Rapid Prototyping) were presented.

- **"New Rapid Prototyping Technologies" Seminar**
  On April 24, 2014, the Department of Production Systems co-organised its "New Rapid Prototyping Technologies" seminar for the industrial sphere with the Laboratory of Prototyping Technologies and Processes of the CNATI Institute. The possibilities of prototyping using so-called additive technologies (Rapid Prototyping) were presented. The seminar was attended by 40 firm representatives.

- **The concept of fully variable hydraulic valve train with emphasis for new approaches in air mass flow control for SI-engines**
  On 26 November, the Faculty of Mechanical Engineering was visited by Prof. Jörn Getzlaff, Dean of the Transport Technology Faculty of the University of West-Saxony in Zwickau (WHZ). On this occasion he gave a lecture on the "Development of hydraulically operated internal combustion engine valves". The development takes place at WHZ in close cooperation with the industry. Professor Getzlaff summarised the aspects that make variable valve control necessary and described in detail the process and logical sequence of development operations. He also presented the first prototype engine head with hydraulically operated valves. His lecture was held in a friendly spirit in presence of doctoral students in particular.

- **Manufacturing Systems Today and Tomorrow 2014 on 20–21 November**
  Traditionally, it provides space for experts from different professions to meet and exchange their experiences. This year's event focused on the maintenance management. The conference was attended by about 50 participants, mainly from the production field. Contributions were made by the representatives of Magna Exteriors & Interiors Bohemia s.r.o. Liberec, BOS Automotive Products CZ s.r.o. Klášterec n. O., ABB s.r.o. Jablonec n.N. or DZ Dražice. The lectures were supplemented by a workshop about the Risk management/RCM and presentation of the AviX SW tool.

FACULTY DEVELOPMENT



TECHNICAL UNIVERSITY OF LIBEREC
Faculty of Mechanical Engineering

7 FACULTY DEVELOPMENT

The faculty's own development took place in all the areas of its activities with the financial support of grants and projects.

7.1 Quality and Culture of the Academic Life

Internal Impulses for the Faculty Development

- Individual language courses and courses organised by CDV TUL.
- Education of academic staff in so-called academic skills and competencies during the EC OP projects.
- Education of academics in specialised courses.
- Courses in higher education.
- See Table Annex 7.1.

Quality Assurance of Activities

- There was a regular monthly board of the Dean, attended by Vice-Deans and Department Heads.
- Three meetings of the Scientific Board of the Faculty of Mechanical Engineering of TU in Liberec were held.
- There were 7 meetings of the Academic Senate of the Faculty of Mechanical Engineering of TU in Liberec.

7.2 Infrastructure

In 2014, building G was completed and handed over. Its completion started the phase of the transfer of workplaces of the Faculty of Mechanical Engineering (KMP, KSR) from building P and transfer of the Dean's Office from building A. Consequently, the concentration of all the worksites of the Faculty of Mechanical Engineering in the TUL Husova – Studentská campus was completed.

The investment development of the laboratories and classrooms of the Faculty of Mechanical Engineering took place thanks to the following sources:

- FRIM – departments total CZK 4.38 mil.
- MEYS – VVV premises for advanced technology (building G) – CZK 0.98 mil.
- Dedicated grants for R&D projects – CZK 1.96 mil.
- IRP TUL – CZK 0.88 mi.
- OP VK – small classroom equipment – didactic aids etc.

7.3 Development Projects

TUL Institutional Development Plan for 2014

The Faculty was responsible for 5 partial projects:

- Summer school with the comprehensive teaching of PhD and Mgr students focusing on technology of processing and evaluation of the structure of metallic materials.
- Individual growth and career development of young academics.
- Promotion of FME TUL study fields abroad.
- Support for students from countries undergoing their social and economic transformation.
- Mobility of employees in order to create a network of cooperation between FME TUL and foreign universities.
- TUL as an important partner in the international educational space – strengthening of the existing cooperation with Canadian and U.S. partner universities.
- Accepting foreign academic staff at FME TUL (outside EU and ESVO).
- Professional contribution of the new knowledge of processability and properties of composites with carbon nanotubes to the doctoral study programmes.

7.4 Projects Funded by the EU Structural Funds

In 2014, the involvement in projects funded by the European Union's Structural Funds continued.

OP Education for Competitiveness
The Faculty was involved in its 8 projects. In 4 projects as the recipient and in 4 projects as co-recipient. The total grant volume was approx. CZK 18.78 mil., see Text Annex 7.4.

OP Research and Development for Innovations
The implementation of R&D infrastructure was carried out in 2010–2013
Institute for Nanomaterials, Advanced Innovation, and Technology (CNATI), see Chapter 4.7.

In 2014, the Development of the Institute for Nanomaterials, Advanced Technologies and Innovations (CNATI ++) project was launched for the development of the built infrastructure. This solution is supported by the Faculty of Mechanical Engineering, see Text Annex 4.7.
In 2014, the New Technologies and Special Machine Components project continued, see Text Annex 4.9.

OP Enterprise and Innovations
The Faculty continued in solving its 2 OP EI projects, the Innovation Program, for the protection of industrial property rights, see Text Annex 7.4.

The faculty participates in solving a scientific-research project through the Nanoprogress cluster supported by the OP EI, which is run under CNATI.

EXTERNAL AND INTERNAL EVALUATION OF THE FACULTY

TECHNICAL UNIVERSITY OF LIBEREC
Faculty of Mechanical Engineering

8 External and Internal Evaluation of the Faculty

External Evaluation of the Faculty

- The basis of the external evaluation of the quality of education is mainly the accreditation procedure and interest in graduates of the Faculty of Mechanical Engineering and their application.
- In 2014, an accreditation procedure for the five-year Master's program M2301 Mechanical Engineering, Applied Mechanics field, took place.
- The demand for the graduates of the Faculty of Mechanical Engineering is high, and the demand for graduates exceeds the supply.
- Meeting of Deans SESIA 2014.
- Annual evaluation of technical faculties by the Hospodářské noviny editorial staff.

Internal Evaluation of the Faculty

- A regular annual evaluation of the results of activities of individual departments of the faculty was submitted, which submit annual reports on the activities of the departments.
- The study departments organised by the Student Union of TU in Liberec were evaluated.
- During the year, the structure of the faculty was discussed, and the Academic Senate approved the merger of the Department of Applied Cybernetics with the Department of Production Systems. Effective from 1 January, 2015, the Department of Production Systems and Automation will start its operations.

Faculty Management and Control Activities

- Following Act No. 320/2001 Coll., Act on Financial Control, Implementing Decree No. 416/2004 Coll. and the Rector's directive on the internal control system, all the types of management control, i.e. preliminary, continuous, and subsequent, were carried out at the Faculty of Mechanical Engineering.
- This is evidenced by minutes from meetings of the faculty management and leaders, reports on the individual controls, and reports on the Departments' control activities for 2014.
- The faculty secretary conducted her regular training of the department budget administrators.
- Continuous and follow-up controls of selected projects were carried out at the departments and processes were checked, e.g. inventory taking.
- The annual reports on the Faculty's activities and the Faculty's financial management in 2013 were approved by the Academic Senate of the Faculty of Mechanical Engineering, TU of Liberec on 10 June 2014.

Awarding Commemorative Medals for Merit and Development of the TUL

The Silver Commemorative Medal for the Merit and Development of the University was awarded on 9 December by the Rector of the Technical University of Liberec im memoriam to Professor Viktor Mikeš and Professor Vladimir Prášil.

Professor Viktor Mikeš was a recognised expert in metal forming. He was the founder of a specialised research centre for tribological processes for the processing of thin sheets, the only one of its kind in the Czech Republic, built in cooperation with Škoda Auto a.s. Mladá Boleslav. He received a few awards for his work on the higher education development. He devoted much of his life to the education of the young technical generation and also applied his practical experience in broad cooperation with the industry.

Professor Vladimír Prášil was a leading figure in the Czech textile engineering and recognised expert in the field of preparation machinery. His excellent design career began at the Research Institute of Textile Engineering first at a branch in Brno, and he later moved to the main worksite of the Institute directly to Liberec. There he led the design work on the development of a number of new preparation machines. One of the most important results of his work is the design of the AUTOSUK automatic winding machine. He also worked for several years as the Deputy Director for Research and Development. In 1980, he took advantage of his knowledge and experience at the University of Mechanical and Textile in Liberec, where he became the professor of textile technology and textile machines. He worked in a number of academic positions, including the Dean of the Faculty of Mechanical Engineering in 1987–1990 and the Head of the Department of Textile and Clothing Machines.

CONCLUSION

TECHNICAL UNIVERSITY OF LIBEREC
Faculty of Mechanical Engineering

9 CONCLUSION

The faculty's activities were very extensive and diverse in 2014 and covered a wide range of activities, which are mentioned in the previous chapters and in the following Annexes. In most activities, there was an increase, in addition to the number of applicants and, consequently, the number of students enrolled. In this area, the maximum activity was developed during 2014 to increase the number of study applicants. The legislation updating was introduced at the faculty.

From the faculty point of view, I consider the instability of the planning system in relation to the volume of allocated funds to be a problematic area. This very often leads to the orientation of some, especially younger, academic staff towards the European projects at the expense of their vocational training and skills growth. The age and qualification structure of the faculty is then a relatively significant obstacle to the faculty's development. The administrative burden of the faculty's worksites and academic staff, which in some cases borders on common sense and bullying, continues to exist and grows, instead of decreasing. Excessive administration, lack of concept, quality of services, impact of legal norms put a heavy burden on the faculty, hampering its development and carrying out activities that the faculty has to fulfill by its nature regardless of the centralisation of activities.

Finally, I would like to thank all the members of the academic community who, with their work, their activities and their efforts, took care of the development of the faculty and the university, for which they deserve, despite all the pitfalls, great thanks and appreciation.

Liberec, 15 April 2015

prof. Dr. Ing. Petr Lenfeld
Dean of the Faculty of Mechanical
Engineering TU of Liberec

The Annual Report was approved by the Academic Senate
of the Faculty of Mechanical Engineering TU of Liberec on 15 April, 2015.

TABLE ANNEXES

TABLE ANNEXES

2.3 Personnel Structure of the Faculty

Table 2.3.1 Average full-time equivalent number of employees and qualification structure of employees as of 31 December of the respective year

Year	Academic staff					Scientific staff	Other staff	Total
	Professors	Senior Lecturer	Specialised assistants	Assistants	Lecturers			
2000	8.6	29.7	47.4			–	39.6	125.4
2001	8.7	33.7	47.3			6.6	37.7	134.0
2002	8.5	34.4	50.9			5.4	31.4	130.6
2003	10.1	31.4	52.0			7.7	26.3	127.5
2004	11.6	29.2	22.5	31.1		3.1	26.2	123.7
2005	12.1	28.4	31.3	17.4		13.2	29	131.4
2006	11.7	28.0	34.3	19.6		5.8	25.5	124.9
2007	10.1	27.5	48.9	5.3		1.1	29.7	122.5
2008	9.7	26.7	51.5	6.9		1.6	32.4	128.8
2009	12.6	24.9	50.3	7.7		5	34.6	135.1
2010	14.9	28.4	46.7	7.7	9.9	3	41.0	151.6
2011	16.5	26.4	51.7	6.2	8.8	0	34.2	143.8
2012	14.6	21.94	47.0	6.5	7.9	0	34.8	132.7
2013	13.5	23.5	43.3	6.8	6.5	0	44.2	136.8
2014	12.65	22.35	43.15	5.1	2.75	2.5	37.3	125.8

Table 2.3.2 Number of employees (physical) and the qualification structure of the Faculty staff

Year	Academic staff					Scientific staff	Other staff	Total
	Professors	Senior Lecturer	Specialised assistants	Assistants	Lecturers			
2008	19	33	65	12	0	9	46	184
2009	24	32	60	10	0	10	52	188
2010	24	33	60	13	0	5	54	189
2011	23	31	55	10	14	0	47	180
2012	22	27	54	8	11	0	43	165
2013	22	27	50	8	8	0	54	169
2014	21	28	52	7	4	3	50	165

Table 2.3.3 The age Structure of the Faculty academic staff as of 31 December, 2014

Age	Academic staff										Scientific staff	
	Professors		Senior Lecturer		Specialised assistants		Assistants		Lecturers			
	Total	Wom.	Total	Wom.	Total	Wom.	Total	Women	Total	Wom.	Total	Wom.
Under 29							1		1		1	
30 – 39			4		31	5	2		3		2	
40 – 49	1		5	1	15	4						

50 – 59	4		8	1	3	1	1	1				
60 – 69	8	2	6		2		2	1				
Above 70	8		5		1		1					
Total	21	2	28	2	52	10	7	2	4		3	

Table 2.3.4 Structure of the Faculty Academic Staff (Employment Contracts) based on the Full-Time Equivalent Percentage as of 31 December, 2014

Full-time equivalent %	Total	Professors	Senior Lecturers	Other Academics	DrSc.	CSc.	Dr., PhD ThD
Under 30	21	9	2	9	1		
from 31 to 50	18	4	5	8	1		
From 51 to 70	8	1	2	4	1		
from 71 to 100	6	3	2	0	1		
100	65	6	17	35	7		
PS Total	118	23	28	56	11		
FO Total	112	21	28	52	11		

Note: Other academics – lecturers, assistants, fellows, scientists
EC – employment contract;
NP – Natural Person;
Following the introduction of the new TUL wage regulation, several members of the academic staff have two employment contracts (C and D category); therefore, they are reported in Table 2.3.4 as two natural persons.

3.1 Accredited Degree Programmes and Fields

Table 3.1.1 Overview of the Accredited Programmes and Fields Guaranteed by the FME

STUD PROG	Study Programme	KKOV	Study field	Accreditation to	Standard length of study Form of study			
					B	M,N	P	F, A
B 2341 *	Mechanical Engineering	2302R022	Machines and Equipment	31/10/2014	3			P, K
		3911R018	Materials and Technologies	31/10/2014	3			P, K
		2301R030	Production Systems	31/10/2014	3			P, K
B 2301	Mechanical Engineering			01/03/2019	3			P, K A
N 2301 (three-year)	Mechanical Engineering	2303T002	Mechanical Engineering Technology *	31/10/2016		3		P, K A
		2302T002	Machines and Equipment Design*	31/10/2016		3		P, K A
		2301T030	Production Systems *	31/10/2016		3		P, K A
		3902T021	Automated Machinery Control Systems *	31/10/2016		3		P, K A
		3901T003	Applied Mechanics *	31/10/2016		3		P, K, A
N 2301 (two-year)	Mechanical Engineering	3909T010	Innovative Engineering	01/11/2020		2		P, K A
		2302T002	Machines and Equipment Design	31/07/2020		2		P, K A

		2301T048	Engineering Technologies and Materials	31/07/2020		2		P, K, A
		2301T049	Production Systems and Processes	31/07/2016		2		P, K, A
M 2301	Mechanical Engineering	2303T002	Mechanical Engineering Technology *	31/10/2014		5		P, K
		2302T010	Machines and Equipment Design*	31/10/2014		5		P, K
		2301T030	Production Systems*	31/10/2014		5		P, K
		3902T021	Automated Control Systems in Mechanical Engineering*	31/10/2014		5		P, K
		3901T003	Applied Mechanics	31/03/2020		5		P, K, A
P 2301	Mechanical Engineering	3901V003	Applied Mechanics	01/03/2018			4	P, K A
		2301V031	Production Systems and Processes	10/02/2018			4	P, K A
		3911V011	Material Engineering	10/02/2018			4	P, K A
P2302	Machines and Equipment	2302V010	Machines and Equipment Design	31/12/2017			4	P, K A
P2303	Mechanical Engineering Technology	2303V002	Engineering Technology	10 Feb, 2018			4	P, K A

STUDPROG – Study programme codes
KKOV – field of study code
B – Bachelor's study programme
N – Master´s Study Programme Connected to the Bachelor's study programme
M – the Master's study programme
P – Doctoral study programme
* – Only for study programme completion
F – Study form: P – Full-time study, K – Combined study form
A – Study programmes (study fields) offered also in English

3.2 Offer of Study in English

Table 3.2.1 Overview of the Accredited Programmes and Fields in English

STUD PROG	Study Programme	KKOV	Study field	Accreditation to	Standard length of study Form of study			
					B	N	P	F, A
B2301	Mechanical Engineering			01/03/2019	3			P, K A
N2301 (3 years)	Mechanical Engineering	2303T002	Engineering Technology *	31/10/2016		3		P, K A
		3901T003	Applied Mechanics *	31/10/2016		3		P, K A
		3902T021	Automated Control Systems in Mechanical Engineering *	31/10/2016		3		P, K A
		2301T030	Manufacturing Systems *	31/10/2016		3		P, K A
		2302T010	Machines and Equipment Design *	31/10/2016		3		P, K A
N2301 (2 years)	Mechanical Engineering	3909T010	Innovation Engineering	01/11/2020		2		P, K A
		2301T048	Engineering Technology and Materials	31/07/2020		2		P, K A

		2302T010	Machines and Equipment Design	31/07/2020		2		P, K A
		2301T049	Manufacturing Systems and Processes	31/07/2016		2		P, K A
M2301	Mechanical Engineering	3901T003	Applied Mechanics	31/03/2020		5		P, K A
P2301	Mechanical Engineering	3901V003	Applied Mechanics	01/03/2018			4	P, K A
		2301V031	Manufacturing Systems and Processes	10 Feb, 2018			4	P, K A
		3911V011	Material Engineering	10 Feb, 2018			4	P,K A
P2302	Machines and Equipment	2302V010	Machines and Equipment Design	31/12/2017			4	P,K A
P2303	Engineering Technology	2303V002	Engineering Technology	10 Feb, 2018			4	P,K A

STUDPROG – Study programme codes
KKOV – field of study code
B – Bachelor's study programme
N – Master´s Study Programme Connected to the Bachelor's study programme
M – the Master's study programme
P – Doctoral study programme
* – Only for study programme completion
F – Study form: P – Full-time study, K – Combined study form
A – Study programmes (study fields) offered also in English

3.3 Interest in Studies and the Admission Procedure

Table 3.3.1 Applicants for the Bachelor's and Master's Study Programmes in the 2014/2015 Academic Year

Code	Study programme	Number of study				
		applicants	Accepted for study	Accepted after the decision review	Total accepted	Enrolled
B2301	Mechanical Engineering (K)	173	162	0	162	132
B2301	Mechanical Engineering (P)	462	379	0	379	299
N2301	Mechanical Engineering (K)	51	25	8	33	33
N2301	Mechanical Engineering (P)	75	60	2	62	59
M2301	Mechanical Engineering (P)	8	8	0	8	7
P2301	Mechanical Engineering (K)	2	2	0	2	2
	Mechanical Engineering (P)	6	6	0	6	6
P2302	Machines and Equipment (K)	6	6	0	6	6
	Machines and Equipment (P)	3	3	0	3	3
P2303	Mechanical Engineering Technology (K)	8	7	0	7	6
	Mechanical Engineering Technology (P)	3	3	0	3	1

Faculty of Mechanical Engineering in Total	**797**	**661**	**10**	**671**	**554**

Note: P – full-time study, K – combined study form, PŘ – decision review

3.4 Numbers of Students and Graduates

Table 3.4.1 Number of Enrolled Students as of 31 October, 2014

KKOV	Study Programme	Czech Republic			Foreign nationals			Total		
		P	K	Total	P	K	Total	P	K	Total
B2301	Mechanical Engineering	471	171	642	57	13	70	528	184	712
M2301	Mechanical Engineering	7	0	7	0	0	0	7	0	7
N2301	Mechanical Engineering	171	87	258	34	2	36	205	89	294
P2301	Mechanical Engineering	34	17	51	10	4	14	44	21	65
P2302	Machines and Equipment	23	16	39	2	1	3	25	17	42
P2303	Engineering Technology	12	20	32	2	0	2	14	20	34
FME in Total		**718**	**311**	**1,029**	**105**	**20**	**125**	**823**	**331**	**1,154**

Table 3.4.2 Number of enrolled foreign students as of 31 October, 2014

Type	Form	Year							Total
		1st	2	3	4	5	6	7	
Bachelor's	K	3	4	6					13
	P	30	8	19					57
Follow-up	K	1	0	1					2
	P	24	6	4					34
Master's	K	0	0	0					0
	P	0	0	0					0
Doctoral	K	2	2	0		1			5
	P	4	4	2		1	2	1	14
Total	**P + K**	**64**	**24**	**32**		**2**	**2**	**1**	**125**

Table 3.4.3 Number of students as of 31/10/2014, and number of graduates in 2014 (from 01/01/2014 to 31/12/2014)

Study Programme	Number of students		Number of graduates	
	Full-time	Combined	Full-time	Combined
Bachelor's study programme	528	184	76	31
Master's study programme + NMP	212	89	17	16
Doctoral study programme	83	58	44	18

Total	**823**	**331**	**137**	**65**

Table 3.4.4 Summary of Graduate per Study Length

Study Programme	Form	Completion date	Number of graduates	Average study length
MSP	P	Feb 2014	0	–
	P	June 2014	0	–
	K	Feb 2014	4	10.75
	K	June 2014	6	9.83
MSP Total			**10**	**10.20**
NMSP	P	Feb 2014	9	4.11
	P	June 2014	40	3.30
	K	Feb 2014	3	4.00
	K	June 2014	10	2.80
NMSP Total			**62**	**3.37**
MSP + NMSP Total			**72**	
BSP	P	Feb 2014	12	5
	P	June+ August 2014	64	4.16
	K	Feb 2014	15	6.13
	K	June+ August 2014	16	5.50
BSP Total			**107**	**4.73**
DSP	P	2014	17	6.41
	K	2014	6	9.17
DSP Total			**23**	**7.13**
Total Graduates (BSP, MSP, NMSP, and DSP)			**202**	

Table 3.4.5 Numbers of Graduates of Study Programmes and Specialisations in 2004–2014

Programme Field Specialisation	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
B2341 Mechanical Engineering	**18**	**36**	**40**	**54**	**38**	**53**	**103**	**114**	**129**	**130**	**77**
Field Materials and Technologies	**6**	**15**	**27**	**37**	**18**	**20**	**40**	**41**	**53**	**60**	**30**
Specialisation Material Engineering	6	6	12	13	4	6	16	16	13	12	4
Specialisation Machining and Assembly	–	1	2	–	2	–	7	4	20	14	7
Specialisation Engineering Metallurgy	–	2	2	2	3	4	5	12	5	11	5
Specialisation Metal and Plastic Moulding	–	6	11	22	9	10	12	9	15	23	14
Field Machines and Equipment	**6**	**15**	**8**	**10**	**13**	**15**	**27**	**28**	**51**	**47**	**18**

Specialisation Transport Machines and Equipment	5	8	5	5	7	11	11	21	22	28	9
Specialisation Power Engineering Machines and Equipment	–	2	2	2	–	2	8	6	9	5	1
Specialisation Glass Machinery	–	–	–	–	2	1	2	1	5	2	6
Specialisation Machine Design	1	5	1	3	4	1	6	10	15	12	2
Field Production Systems	**6**	**6**	**5**	**7**	**7**	**18**	**36**	**35**	**25**	**23**	**29**
Specialisation Engineering Informatics	–	–	1	1	–	–	2	1	3	2	1
Specialisation Production Control	6	5	4	6	5	15	16	14	17	12	14
Specialisation Production Systems	–	1	–	–	2	3	18	20	5	9	14
B2301 Mechanical Engineering										**6**	**30**
M2301 and N2301 Mechanical Engineering	**117**	**133**	**87**	**112**	**110**	**103**	**96**	**68**	**64**	**65**	**72**
Field Applied Mechanics	**5**	**5**	**6**	**5**	**3**	**4**	**6**	**4**	**1**	**6**	**9**
Specialisation Engineering Mechanics	1	4	5	4	1	4	6	2	–	4	8
Specialisation Fluid Mechanics and Thermodynamics	4	1	1	1	2	–	–	2	1	2	1
Field Automated Machinery Control Systems	**10**	**14**	**10**	**2**	**7**	**4**	**4**	**3**	**4**	**3**	**1**
Specialisation Automation of Engineering Works	10	14	10	2	7	4	4	3	4	1	–
Specialisation Automatic Control of Technical Processes	–	–	–	–	–	–	–	–	–	2	1
Field Machines and Equipment Design	**46**	**41**	**36**	**46**	**33**	**22**	**34**	**18**	**15**	**19**	**19**
Specialisation Wheeled and transport/handling machines	12	18	14	18	12	10	14	6	5	7	4
Specialisation Machining and Assembly Machinery	8	5	–	3	2	2	1	3	2	1	1
Specialisation Piston Combustion Engines	9	9	8	7	3	5	6	3	4	3	5
Specialisation Glass-Production and Ceramic Machinery	6	4	1	7	–	4	6	3	1	1	–
Specialisation Heat Technology	8	3	6	10	10	–	3	2	3	3	4
Specialisation Textile Machinery	3	2	7	1	6	1	4	1	–	4	5
Field Engineering Technology	**50**	**61**	**30**	**56**	**55**	**50**	**32**	**24**	**23**	**17**	**20**
Specialisation Material Engineering	9	19	17	8	13	8	15	8	4	2	5
Specialisation Machining and Assembly	6	19	7	11	9	13	8	6	2	9	5

Specialisation Engineering Metallurgy	5	7	5	10	16	9	7	6	3	2	3
Specialisation Metal and Plastic Moulding	20	18	10	22	22	13	9	9	14	4	7
Field Flexible Production Systems for Engineering Production	**6**	**12**	**5**	**3**	**8**	**10**	**11**	**9**	**11**	**7**	**10**
Field Innovative Engineering	**–**	**–**	**–**	**–**	**4**	**13**	**9**	**10**	**10**	**13**	**13**
Product innovation focus	–	–	–	–	4	13	9	10	10	13	13
Process innovation focus	–	–	–	–	–	–	–	–	–	–	-
TOTAL P2301 + P2302 + P2303	**13**	**12**	**21**	**9**	**16**	**9**	**17**	**12**	**14**	**5**	**23**
P2301 Mechanical Engineering	**6**	**1**	**7**	**5**	**6**	**3**	**8**	**9**	**5**	**1**	**10**
Field Applied Mechanics	**4**	**–**	**4**	**3**	**1**	**–**	**5**	**4**	**2**	**–**	**3**
Specialisation Engineering Mechanics	2	–	4	3	–	–	5	3	1	–	2
Specialisation Fluid Mechanics and Thermodynamics	2	–	–	–	1	–	–	1	1	–	1
Field Material Engineering	**–**	**–**	**–**	**1**	**3**	**2**	**2**	**4**	**3**	**–**	**5**
Field Production Systems and Processes	**2**	**1**	**3**	**1**	**2**	**1**	**1**	**1**	**0**	**1**	**2**
Specialisation Applied cybernetics	–	1	1	2	–	–	1	–	–	1	1
Specialisation Automation of the production technical preparation	–	–	–	–	–	–	–	–	–	–	1
Specialisation Automation of machines and production processes in mechanical engineering	–	–	1	–	–	–	–	–	–	–	–
Specialisation Manufacturing systems with industrial robots	1	1	1	–	–	1	1	–	–	–	–
P2302 Machines and Equipment	**2**	**7**	**6**	**2**	**5**	**2**	**3**	**1**	**3**	**3**	**10**
Field Machines and Equipment Design	**2**	**7**	**6**	**2**	**5**	**2**	**3**	**1**	**3**	**3**	**10**
Specialisation Machine parts and mechanisms	–	–	2	2	1	–	1	–	2	1	1
Specialisation Wheeled transport and handling machines	–	2	–	–	–	1	1	1	–	1	4
Specialisation Machining and Assembly Machinery	–	–	1	–	–	–	–	–	–	–	1
Specialisation Piston Combustion Engines	1	–	–	–	2	1	1	–	1	–	1
Specialisation Glass-Production and Ceramic Machinery	1	3	–	–	2	–	–	–	–	–	–
Specialisation Technical Machine Diagnostics	–	–	1	–	–	–	–	–	–	–	–

Specialisation Textile and clothing machines	–	2	2	–	–	–	–	–	–	–	3
Specialisation Thermal Engineering Equipment	–	–	–	–	–	–	–	–	–	1	–
P2303 Engineering Technology	**5**	**4**	**8**	**2**	**5**	**4**	**6**	**2**	**6**	**1**	**3**
Field Engineering Technology	**5**	**4**	**8**	**2**	**5**	**4**	**6**	**2**	**6**	**1**	**3**
Specialisation Material Engineering	2	1	3	1	–	–	–	–	–	–	–
Specialisation Machining and Assembly	–	–	–	–	–	1	1	–	–	–	1
Foundry Industry specialisation	1	–	3	1	2	1	1	2	3	–	1
Welding specialisation	–	–	–	–	1	–	2	–	–	–	–
Metal Forming specialisation	2	3	2	–	1	2	2	–	3	–	–
Specialisation Plastics Processing	–	–	–	–	1	–	–	–	–	1	1
Total per year	**148**	**181**	**148**	**175**	**164**	**165**	**216**	**194**	**207**	**206**	**202**

Table 3.4.6 Numbers of Students in Doctoral Study Programmes in 2014(as of 31/10/2014)

Department	Full-time	Combined	Total	Defended in 2014
KMP	4	0	4	2
KSP	11	17	28	2
KMT	18	7	25	5
KEZ	12	6	18	1
KKY	7	0	7	1
KST	6	4	10	1
KOM	3	4	7	1
KVM	14	8	22	5
KSR	1	1	2	0
KTS	4	2	6	3
KVS	3	9	12	2
Total	**83**	**58**	**141**	**23**

3.6 Scholarships

Table 3.6.1 Scholarships Paid to Students in 2014

Scholarship type	Number of students
For the academic merit	108
For outstanding research, development, or other creative results contributing to knowledge deepening	85
In a difficult social situation	113
Accommodation scholarship	202
In support of study abroad	9

In support of study in the Czech Republic	526
Doctoral study programme students (DSP)	14
Total	66
	64
	1,187

Table 3.6.2 Scholarships Amounts Paid in 2014

Scholarship Funding Sources	Scholarship type	Amount (thous. CZK)
State budget	To DSP students	4,594
State budget	To foreign students	147
FS TUL Scholarship Fund	Of which:	7,230
	Academic merit scholarships	2,449
	Special scholarship	2,149
	To support studies abroad	299
	To support studies in the Czech Republic	826
	To DSP students	1,507
Other (SGS, IP, grants, gifts)		2,441
Total		14,412

3.9 Teaching Quality

Table 3.9.1 FME Publishing Activities in 2014

Year	Number of titles published							
2013	Book Czech	Book English	Instructional Text	Website Application	Text books Czech	Text books Foreign language	Didactic aid	Exp. equipment
Total	2	–	7	3	21	–	9	3

Documented in detail in the annual reports of the individual departments.

3.10 Lifelong Learning

Table 3.10.1 Lifelong learning courses in 2014 – corporate sector education

Technical sciences and disciplines		
Scope of the course	Number of courses	Number of participants
Up to 15 hours	34	313
16–100 hours	28	559
101 or more hours	1	22

4.1 Scientific Research Specialisation

Table 4.1.1 Summary of subsidies for scientific research activities in 2014

Sources	Share (%)	Grant (thous. CZK)		
		NIV	INV	Total
Institutional support	44.6	28,820	–	28,820
Grant Support	44.7	25,585	2,760	28,345
Specific research grant support (SGS)	9.7	6,240	–	6,240
Total		**60,645**	**2,760**	**63,504**

Table 4.1.2 Development of Funds for the Scientific and Research Activities

Year	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
(thous. CZK)	70.0	69.3	74.1	79.1	76.2	64.9	73.7	57.1	59.7	63.5
of which INV					4.9	3.9	5.8	2.9	4.7	2.8
of which non-public					2	1.8	2.1	0.9		0.5

4.4 Scientific Research Projects

Table 4.4.1 Overview of Scientific Research and Development Projects Solved in 2014

Provider	Programme	FME TUL in the position		Of which in 2014	
		Recipient	Co-recipient	End of solution	Beginning of the solution
Czech Science Foundation (GACR)	GA - Standard Projects	–	2	–	1
Technology Agency of the Czech Republic	ALFA (2011-2016)	2	8	4	1
MoI of the Czech Republic	Security research	1	–	1	–
Ministry of Industry and Trade of the Czech Republic	FR-TIP (2009-2017)	–	3	3	–
EU/ME	LIFE+	–	1	–	–
Total		**3**	**14**	**8**	**2**

4.4.2 Grant for the Scientific Research Projects in 2014 – FME TUL

Provider	Programme	Grant (thous. CZK)		
		NIV	INV	Total
Czech Science Foundation	GA - Standard Projects	1,682	0	1,682

Technology Agency of the Czech Republic	ALFA (2011-2016)	12,454	2,034	14,488
MoI of the Czech Republic	Security research	7,081	0	7,081
Ministry of Industry and Trade of the Czech Republic	FR-TIP (2009-2017)	2,577.5	0	2,577.5
ME of the Czech Republic / EU	LIFE+	1,790	726.5	2,516.5
Total Funding		**25 584,5**	**2 760,5**	**28 345**
Of which, transferred to co-solvers				**5,916**

4.4.3 Grant for the Scientific Research Projects in 2014 – under CNATI TUL

Provider	Programme	Grant (thous. CZK)		
		NIV	INV	Total
Technology Agency of the Czech Republic	ALFA (2011-2016)	3,384.8	–	3,384.8
Technology Agency of the Czech Republic	TE Competence Centres (2012-2019)	1,322	–	1,322
Ministry of Industry and Trade of the Czech Republic	FR-TIP (2009-2017)	1,720	–	1,720
Total		**6,426.8**	**–**	**6,426.8**

Note: Projects solved by the FME TUL academic staff – submitted under CNATI or transferred under CNATI from FME.

Table 4.4.4 Development of the Special-Purpose Grant for the Scientific Research Projects (Grants and Specific Research)

Source (thous. CZK)	Year								
	2006	2007	2008	2009	2010	2011	2012	2013	2014
FME Grant	6,768	10,269	19,552	76,186	63,783	49,431	39,349	35,884	34,590
Of which non-public sources	1,800	1,800	1,200	2,000	900	749	900	*	499

* Note: In previous years, the contractual KSR, VZ, and Centre research project of the was solved and factored in.

4.5 Student Grant Competition

Table 4.5.1 Overview of Student Grant Competition Projects in 2014

Int. No.	Project name Solver	Project period	Grants (thous. CZK)
21000	Experimental and numerical research in the fluid mechanics, thermodynamics, and heat transfer Ing. Petra Dančová, PhD	2013-2015	536
21001	Research and development of pneumatic, hydraulic and electrical elements Ing. Radek Votrubec, PhD	2014-2016	263
21002	Research of new materials and medical procedures for use in the medical practice, shape memory structures, composites, and optimisation of mechanical and mechatronic systems Ing. David Cirkl, PhD	2013-2015	345
21003	Modern trends in the material engineering prof. Ing. Petr Louda, CSc.	2013-2015	464
21004	Research of machining and assembly processes in terms of improving their quality Ing. Jaroslav Votoček	2013-2015	216
21005	Research on effects of process quantities on quality of resulting products of technological processes. doc. Ing. Heinz Neumann, CSc.	2013-2015	762
21006	Research and development in the field of automation, robotics, and glass machines Ing. Vlastimil Hotař, PhD	2013-2015	279
21007	Product and equipment innovation in the mechanical engineering practice Prof. Ing. Ladislav Ševčík, CSc.	2013-2015	503
21008	Research on the textile structures and processes and single-purpose machines Ing. Jiří Komárek	2013-2015	391
21009	Development and testing of vehicles and their parts Ing. Robert Voženílek, PhD	2013-2015	592
21010	Complex optimisation of production systems and processes Ing. Petr Zelený, PhD	2013-2015	283
21011	Determination of changes in mechanical properties of structural materials in various climatic conditions Ing. Rudolf Martonka, PhD	2013-2015	201
21012	Research and development of nanofibre production equipment Ing. Jan Valtera	2013-2015	424
21013	Possibilities of using higher alcohols as a quick substitute for benzine Ing. Martin Pechout	2013-2015	308
21014	Monitoring large objects via 3D scanning and scan evaluations Ing. Radek Havlík	2013-2015	249
21015	Utilisation of waste heat in thermoacoustic equipment	2014-2016	281

	Ing. Martin Veselý		
28310	SGS – DFS organisation	2014	150
Faculty of Mechanical Engineering Total			**6,239**

4.6 Scientific Research Contractual and Supplemental Activities

Table 4.6.1 Overview of Revenues from the Supplemental Activities in 2014

Department	FME contractual research (thous. CZK)		CNATI contractual research (thous. CZK)		Contractual res. total (thous. CZK)	DČ (thous. CZK)
	N	U	N	U		
KMP	44	350	0	0	394	40.1
KSP	564	2,214	245	1,066	4,089	0
KMT	54	.0			54	199
KEZ	188	2,310	0	0	2,498	0
KKY	0	.0	0	0	0	15
KST	45	373.3	53.2	348.5	820	0
KOM	0	66.7	0	0	66.7	36
KVM	0	2,080.2	0	2,769.7	4,849.9	211.3
KSR	64.7	276.9	0	823	1,164.6	0
KTS	409.7	1126.5	0	4,037.5	5,573.7	0
KVS	417	676	160	3,541	4,794	0
DFS	0	0	0	0	0	257.8
Total	1 786,4	9 473,6	458.2	12 585,7	24 303,9	759.2

Note: U – Results will be applied to RIV; N – Results will not be applied to RIV

Table 4.6.2 Development of Funds Obtained from the Supplemental Activities

Year	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Revenue (thous. CZK)	14,026	13,502	11,720	11,597	9,499	9,600	8,171	8,131	9,373	12,115
Profit share in revenue (%)		10.6	16.9	17.7	16.5	22.2	22.1	22	29	21.5

4.8 Results of the FME TUL Scientific Research and Development Activities

Table 4.8.1 Evaluation of Results based on the Methodology in 2013 (Evaluated Period 2008-2012)

Evaluation of Research Organisation Results in 2013			
Export data for the organisation: Technical University of Liberec / Faculty of Mechanical Engineering			
	Number of results	Score points	Points modified according to Annex 8 to the Methodology
Pillar I	353.260	3,825.014	4,249.186
Pillar II *			1,309.393
Pillar III			545.578
H12apl	232.463	10,645.182	6,915.977

Overall evaluation	13,015.234
* Pillar II was initialised in 2013 by an allocation of 1/9 of the sum of the Pillar I and Pillar III points and points for results of applied research from past evaluations.	

Table 4.8.2 Allocation of Points among the Faculty Departments according to the 2013 Methodology (evaluated period 2008-2012)

Department	Year					Total	Share (%)
	2008	2009	2010	2011	2012		
DAM	71.70	204.49	173.30	197.93	273.92	921.35	7.96
DET	101.41	115.20	931.54	738.39	229.88	2116.41	18.28
DMS	31.11	321.33	264.56	302.24	328.22	1247.46	10.78
DPE	96.64	102.42	312.30	390.6	112.90	1014.86	8.77
DAC	55.68	462.40	113.83	216.86	6.21	854.98	7.39
DMM	122.62	417.55	319.66	279.74	50.26	1189.83	10.28
DMA	46.80	123.34	55.25	75.89	55.82	357.10	3.08
DVE	243.42	425.48	152.10	574.69	148.62	1544.32	13.34
DGR	100.44	425.73	210.81	125.29	24.51	886.77	7.66
DTD	278.21	394.80	132.37	205.93	79.00	1090.31	9.42
KSA	32.16	136.67	59.32	124.66	0.00	352.82	3.05
Total	1180.2	3129.4	2725.0	3232.2	1309.3		100
	11576.19						

Table 4.8.3 Allocation of Points among the Faculty Departments according to the 2013 Methodology (evaluated period 2012)

Division of results into individual departments for the results of 2012					
	Pillar I	Pillar III Patents	Pillar III Projects	Total	Share (%)
DAM	143.0	30.0	100.9	273.9	21
DET	111.6	10.0	108.3	229.9	18
DMS	246.4	0.0	81.8	328.2	25
DPE	0.0	0.0	112.9	112.9	9
DAC	6.2	0.0	0.0	6.2	0
KST	25.8	5.0	19.5	50.3	4
DMA	55.8	0.0	0.0	55.8	4
DVE	148.6	0.0	0.0	148.6	11
DGE	24.5	0.0	0.0	24.5	2
DTD	16.2	26.7	36.1	79.0	6
DMA	0.0	0.0	0.0	0.0	0
Total	778.1	71.7	459.5	1,309.3	100

Table 4.8.4 Allocation of points among the Faculty departments according to the FME Methodology (evaluated period 2012)

Publication results according to FME Methodology for 2012										
Depart.	Type of result in RIV									
	B Scientific book	C Chapter in the book	D Article in proceedings			J Article in a scientific periodical				Total sum
			D	neu	Total	Jimp		neu	Total	
DPE	20.0			9.0	9.0		20.0	2.3	22.3	51.3
DAC			6.2	0.6	6.8			1.0	1.0	7.8
DAM			17.0	2.5	19.6	125.9		2.2	128.1	147.7
DMS			26.0	4.0	30.1	148.3	72.1	6.0	226.4	256.5
DMA	17.1	1.2					37.5	11.0	48.5	66.8
DET	58.0		6.2	6.3	12.5	9.5	37.9	9.0	56.3	126.9
DGR			7.8	0.5	8.3		16.7	5.0	21.7	30.0
DMM	1.6		9.8	17.2	27.1	14.3		5.8	20.2	48.9
DTD				3.5	3.5	16.2		1.0	17.2	20.7
DVE			6.2	5.2	11.4	119.1	24.4	3.7	147.1	158.5
DMA				3.5	3.5			1.0	1.0	4.5
Total sum	96.7	1.2	79.4	52.5	131.9	433.3	208.5	48.0	689.8	919.6

5.1 International Cooperation in Education

Table 5.1.1 Overview of the Cooperation based on the Inter-University Contracts in 2014

Contract type Country	Partner institution
Inter-University Cooperation	
Brazil	Pontifícia Universidade Católica do Rio de Janeiro
Bulgaria	Technical University of Sofia
France	Université de Franche-Comté Besancon
Indonesia	Diponegoro University
Norway	Ostfold University College
Romania	„Gheorghe Asachi“ Technical University of Iasi
Slovak Republic	Trenčianska univerzita Alexandra Dubčeka
Serbia	University of Novi Sad
Germany	Hof University of Applied Sciences
India	Kumaraguru College of Technology
Taiwan	National Taiwan University

U.S.A.	Northern Illinois University
Canada	University of Waterloo, Ontario
Canada	Conestoga College Institute of Technology and Advance Learning, Ontario
Vietnam	Nha Trang University, Faculty of Mechanical Engineering
Contracts with Institutes	
Poland	Institute for Engineering of Polymer Materials and Dyes, Torun
U.S.A.	ATCC – Negotiations on Material Transfer Agreement are in progress
Erasmus – bilateral treaties	
See Table 5.3	38 institutions
Total	**55**

5.2 International Projects

Table 5.2.1 International Projects

Provider	Programme	Number	Foreign partner	Cooperation type
MEYS	7MB	1	Technical University in Košice	Mobility R&D
MEYS	Norway Grants	1	Ostfold University College	Institutional

Note: Mobility projects aiming at R&D and institutional cooperation.

5.3 International Mobility

Table 5.3.1 Foreign Mobility within the Programmes in 2014

Programme	ERASMUS			CEEPUS	IAESTE
	C	U	Z		
Number of students sent	24*	6	18	0	0
Number of students received	69**	43	26	4***	10
Number of academic/other staff members sent	12****	12	0	2	0
Number of academic/other staff members received	16*****	16	0	3	0
Total	**121**	**77**	**44**	**9**	**10**

C – Total, U – Finished, Z – Started
* of which 3 PhDs, 2 visits shorter than 28 days in 2014
** of which, 1 arrival shorter than 28 days in 2014
*** of which 1 PhD, 2 arrivals shorter than 28 days, but according to the CEEPUS rules
**** of which 4 other staff members, 7 visits 5 days long, 3 visits shorter than 5 days
***** of which 14 arrivals, 5 days each
Note: Student stays started in the previous year and stays shorter than 4 weeks (28 days) and stays of academics/other staff members lasting less than 5 days are included.

Table 5.3.2 Other Foreign Activities outside of the Programmes in 2014

Activity	Conference Active attendance	Conference Passive attendance	Cooperation negotiation	Lectures	Other
Students sent	7	0	7	0	56*
Students accepted	0	0	0	0	5**
Academic/other staff members sent	27	14	29	0	17***
Academic/other staff members received	0	0	10	3	16****
Total	**34**	**14**	**46**	**3**	**93**

* Fairs, professional course, internship, concurrent study, various

** 5x internship

*** Training, excursion, fairs, colloquium, measurement, excursions, various

**** Seminar, consultation, scientific stay, other

Table 5.3.3 Mobility within Government Scholarships, Development Projects, and Other Sources in 2014

Programme	Government scholarships	Development projects	Other sources	Self-payers (new)
Number of students sent	0	10*	7**	0
Number of accepted students	3***	3****	0	4
Number of academic/ other staff members sent	0	13*****	3******	0
Number of academic/ other staff members received	0	2*******	1********	0
Total	**3**	**28**	**11**	**4**

* 6 students from TUL IRP Mobility Fund 2014 supported, 1 student from IRP FME 12062 (2013) was sent, 3 students from IRP FME 12146 were supported

** 4 internships within EC OP, 1x internship with the Faculty scholarship support, 1x internship within the Surface Integrity project, 1 visit within SGS

*** Selma Kunosic, Mohamed Kabl, Anjelynn Guanlao

**** Students who arrived under IRP FME 12146 were not financially supported from the project

***** 4 academic staff members were supported from the TUL IRP Mobility Fund, 4 academic staff members from IRP FME 12140, 3 academic staff members from IRP FME 12108, 2 academic staff members from IRP FME 12136

****** 1 departure within the Visionair projects, 2 departures within the post doc projects

******* Arrivals within IRP FME 12149, of which 2 arrivals were shorter than 5 days

******** 1 arrival within the post doc project

Table 5.3.4 Mobility Within the Programmes per Countries in 2014

Country	Number of students sent	Number of students received	Number of staff members sent	Number of staff members received
Belgium			1 (FOM) + 1 (other sources)	
Bosnia and Herzegovina		1 (government scholarship)		

Bulgaria		2 (Erasmus)	3 (FOM) + 1 (IRP 12108)	5 (Erasmus, stay = 5 days)
China		1 (IAESTE)		
Denmark			1 (other sources – post doc)	
Egypt		1 (government scholarship)		
Philippines		1 (government scholarship)		
Finland	3 (other sources)			
France	1 (Erasmus) + 1 (other sources)	14 (Erasmus)	2 (Erasmus, stays length = 5 days)	1 (Erasmus)
Croatia		1 (IAESTE)		
India	1 (FOM)	1 (self-payer)		1 (other sources, post doc)
Ireland	1 (Erasmus)			
Japan		1 (IAESTE)		
Canada	1 (IRP 12062) + 2 (IRP 12146)	3 (IRP 12146)	2 (IRP 12140)	2 (IRP 12149, stays shorter than 5 days)
Colombia		1 (IAESTE)		
Kosovo		3 (CEEPUS, of which 1 for less than 28 days)		
Cyprus		1 (IAESTE)		
Lithuania		3 (Erasmus)		
Hungary	1 (other sources)	1 (IAESTE)		
Mexico		1 (IAESTE)		
Germany	1 (Erasmus) + 1 (FOM)	1 (self-payer)	2 (Erasmus, stays length = 5 days)	
Oman		1 (IAESTE)		
Poland		5 (Erasmus) + 1 (self-payer)	1 (Erasmus, admin worker, stay shorter than 5 days) + 1 (other sources)	3 (Erasmus, of which 2 stays = 5 days long) + 1(CEEPUS)
Portugal	8 (Erasmus) + 1 (other sources)	13 (Erasmus)		
Austria			1 (IRP 12108)	
Romania				1 (CEEPUS)
Greece		1 (Erasmus)		
Slovakia	1 (Erasmus)	4 (Erasmus, of which 1 stay less than 28 days long) + 1 (CEEPUS, less than 28 days)	1 (Erasmus) + 2 (Erasmus, admin worker, less than 5 days) + 2 (CEEPUS)	1 (CEEPUS)
United States of America	1 (IRP 12146) + 1 (other sources)		1 (IRP 12108) + 1 (IRP 12140)	
Serbia		1 (IAESTE)		

Spain		7 (Erasmus) + 1 (IAESTE)	2 (Erasmus, of which 1 stays = 5 days long)	2 (Erasmus, stays lengths = 5 days)
Sweden	2 (Erasmus, stays lengths shorter than 28 days)			
Switzerland	1 (FOM)			
Thailand	2 (FOM)	1 (self-payer)	2 (IRP 12136)	
Taiwan	1 (FOM)			
Turkey	10 (Erasmus)	20 (Erasmus)	1 (Erasmus, 5 days) + 1 (Erasmus, admin worker, 5 days)	5 (Erasmus, 5 days)
Vietnam			1 (IRP 12140)	
Total	**28**	**77**	**33**	**28**

Note: Student stays started in the previous year and stays shorter than 4 weeks (28 days) and stays of academics/other staff members lasting less than 5 days are included.

Table 5.3.5 Foreign Mobility Development

Activity	Number of departures and arrivals in the year								
	2008	2009	2010	2011	2012	2013	2014		
	Total	Total	Total	Total	Total		P	OA	C
Students sent	70	56	80	91	56	68	41*	70	111
Students accepted	28	25	44	54	52	78	93**	5	98
Academic / other dispatched workers	111	120	147	95	108	137	30***	87	117
Academic / other workers received	32	63	71	229	31	50	22****	29	51
Total	**241**	**264**	**342**	**469**	**247**	**333**	**186**	**191**	**377**

C – Total
P – within the programmes *of which 10 departures – IRP and 7 departures – other sources
OA – other activities ** of which 3 government scholarships, 3 arrivals – IRP, 4 arrivals – self-payers
*** of which 13x IRP, 3x other sources
**** of which 2x IRP, 1x other sources

7.1 Quality and Culture of the Academic Life

Table 7.1.1 Further Education Courses for the Staff of the FME in 2014

Nature of the courses	Number of courses	Number of participants
Oriented at pedagogical skills	4	13
Courses oriented at general skills, including language skills*	32	62
Professional courses	12	30

* Language courses prevail.

7.3 Development and Investment Projects Funded by the Ministry of Education, Youth, and Sports CR

Table 7.3.1 TUL Institutional Development Plan for 2014 – FME TUL Sub-Projects

Int. No.	FME TUL project name Solver/Department	Allocated funds (thous. CZK)		
		INV	NIV	Total
12102	Summer school with the comprehensive teaching of PhD and Mgr students focusing on technology of processing and evaluation of the structure of metallic materials Ing. Pavel Hanus / Department of Power Engineering Equipment	881	119	1,000
12108	Individual growth and career development of young academics RNDr. Iveta Lukášová / DFS	0	300	300
12121	Professional contribution of new knowledge of processability and properties of composites with carbon nanotubes by doctoral study programmes Ing. Jan Vácha / Department of Mechanical Engineering Technology	0	100	100
12129	Support of gifted students from developing countries at TUL Ing. Marcela Válková / DFS	0	155	155
12136	Promotion of FME TUL study fields abroad RNDr. Iveta Lukášová / DFS	0	202	202
12140	Mobility of employees in order to create a network of cooperation between FME TUL and foreign universities doc. Ing. Karel Fraňa, PhD / DFS	0	250	250
12146	TUL as an important partner in the international educational space – strengthening of the existing cooperation with Canadian and U.S. partner universities Ing. Marcela Válková / DFS	0	200	200
12149	Accepting foreign academic staff at FME TUL (outside EU and ASVO) doc. Ing. Karel Fraňa, PhD / DFS	0	130	130
FME TUL Total		**881**	**1,456**	**2,337**

7.4 Projects Funded by the EU Structural Funds

Table 7.4.1 Involvement in the EC OP – TUL (FME) projects – Recipient

Registration Number	Project name	Implementation
CZ.1.07/2.2.00/28.0311	Increasing the technical competences of graduates for the industrial practice	2013-2015
CZ.1.07/2.2.00/28.0321	CREATex	2012-2015
CZ.1.07/1.1.22/01.0001	Behind the school	2012-2015
CZ.1.07/2.2.00/28.0316	TECHNOMAT	2012-2014

Table 7.4.2 Involvement in the EC OP – TUL (FME) Projects – Co-Recipient

Registration Number	Project name	Implementation
CZ.1.07/2.3.00/45.0030	Educational bridge	2014-2015
CZ.1.07/2.3.00/20.0139	Building an excellent scientific team for experimental and numerical modelling in fluid mechanics and thermodynamics	2012-2014
CZ.1.07/2.4.00/17.0116	Partnership in the new generation nuclear power engineering	2011-2014
CZ.1.07/2.3.00/20.0037	Educational system for the human resource development for research and development in the area of modern trend of surface engineering – surface integrity	2011-2014

TEXT
ANNEXES

TECHNICAL UNIVERSITY OF LIBEREC
Faculty of Mechanical Engineering

TEXT ANNEXES

2.4 Professorship and Habilitation Procedures

Name and surname:	**doc. Ing. Petr Paščenko, PhD**
Workplace:	Jan Perner Transport Faculty, University of Pardubice
Field:	Applied Mechanics
Procedure commencement:	18/11/2013 – 2014 was in progress

Name and surname:	**Ing. David Cirkl, PhD**
Workplace:	Faculty of Mechanical Engineering TU of Liberec, Department of Mechanics, Elasticity, and Strength
Field:	Applied Mechanics
Habilitation thesis title:	Measurement, evaluation and modelling of mechanical properties of polyurethane foam
Habilitation thesis topic:	Design of loading device for determination of amplitude frequency characteristics of vibro-insulating materials
Start - defence date:	12 Dec, 2012 – 22 Jan, 2014
Date of appointment:	3 June, 2014

Name and surname:	**Ing. Michal Moučka, PhD**
Worksite:	Faculty of Mechanical Engineering of TU Liberec, Department of Applied Cybernetics
Field:	Production Systems and Processes
Habilitation thesis title:	Linear pneumatic drive model
Habilitation thesis topic:	Operating system equipment drivers
Start date:	8 June, 2012 – 2013 proceedings took place
End date:	4 June, 2014

Name and surname:	**doc. Michal Vojtíšek, M.Sc., PhD**
Worksite:	Faculty of Mechanical Engineering of TU Liberec, Department of Vehicles and Engines
Field:	Machines and Equipment Design
Habilitation proceedings worksite:	Czech Technical University in Prague
Date of appointment:	1 July, 2014

3.4 List of Doctoral Study Programme Graduates in 2014

Name and surname:	**Ing. Jiří Marján**
Study field:	2302V010 Machines and Equipment Design
Specialisation:	Wheeled transport and handling machines
Training worksite:	Department of Vehicles and Engines
Lecturer:	doc. Dr. Ing. Pavel Němeček
Dissertation thesis topic:	Manual drive
Defense date:	7 January, 2014

Name and surname:	**Ing. Nguyen Thanh Tuan**
Study field:	2302V010 Machines and Equipment Design
Specialisation:	Piston Combustion Engines
Training worksite:	Department of Vehicles and Engines
Lecturer:	Prof. Ing. Stanislav Beroun, CSc.
Dissertation thesis topic:	Injection of liquid LPG into the engine intake manifold
Defense date:	7 January, 2014

Name and surname:	**Mgr. Zdeněk Michalčík**
Study field:	3911V011 Material Engineering
Specialisation:	Material Engineering
Training worksite:	Department of Materials
Lecturer:	Prof. RNDr. Petr Špatenka, CSc.
Dissertation thesis topic:	Study of the influence of selected factors on the photocatalytic activity of thin films deposited by the PVD method
Defense date:	9 January, 2014

Name and surname:	**Ing. František Koblasa**
Study field:	2301V031 Production systems and processes
Specialisation:	TPV Automation
Training worksite:	Department of Production Systems
Lecturer:	doc. Dr. Ing. František Manlig
Dissertation thesis topic:	Application of heuristic optimisation methods in the area of engineering production planning for medium and small enterprises
Defense date:	22 January, 2014

Name and surname:	**Ing. Michal Vrba**
Study field:	2303V002 Engineering Technology
Specialisation:	Foundry works
Training worksite:	Department of Mechanical Engineering Technology
Lecturer:	Prof. Ing. Iva Nová, CSc.
Dissertation thesis topic:	Influence of oxygen activities on the production of spheroidal graphite cast iron
Defense date:	30 January, 2014

Name and surname:	**Ing. Pavel Kejzlar**
Study field:	3911V011 Material Engineering
Training worksite:	Department of Materials
Lecturer:	Prof. RNDr. Petr Kratochvíl, DrSc.
Dissertation thesis topic:	Structure and high-temperature mechanical properties of ternary intermetallic alloys of the Fe-Al-Zr type
Defense date:	13 Feb, 2014

Name and surname:	**Ing. Jiří Šafka**
Study field:	2302V010 Machines and Equipment Design
Training worksite:	Department of Production Systems
Lecturer:	Prof. Ing. Přemysl Pokorný, CSc.
Dissertation thesis topic:	Methods of processing general surface shapes
Defense date:	18 Feb, 2014

Name and surname:	**Ing. Monika Hejnová**
Study field:	2302V010 Machines and Equipment Design
Training worksite:	Department of Textile and Special Purpose Machines
Lecturer:	Prof. Ing. Jaroslav Beran, CSc.
Dissertation thesis topic:	Loop spinning system analysis
Defense date:	18 Feb, 2014

Name and surname:	**Ing. Vlastimil Votrubec**
Study field:	3901V003 Applied Mechanics
Training worksite:	Department of Mechanics, Elasticity, and Strength
Lecturer:	Prof. Ing. Miroslav Václavík, CSc.
Dissertation thesis topic:	Reducing the vibrations of mechanisms and machines through balancing with a special emphasis on sewing machines
Defense date:	19 March, 2014

Name and surname:	**Ing. Václav Rychtář**
Study field:	2302V010 Machines and Equipment Design
Training worksite:	Department of Vehicles and Engines
Lecturer:	Prof. Ing. Celestýn Scholz, PhD
Dissertation thesis topic:	Engine cylinder unit at extreme loads
Defense date:	7 April, 2014

Name and surname:	**Ing. Zdeněk Krabs**
Study field:	2302V010 Machines and Equipment Design
Training worksite:	Department of Vehicles and Engines

Lecturer:	Prof. Ing. Celestýn Scholz, PhD
Dissertation thesis topic:	The use of emission measurements for vehicle ignition engine diagnostics
Defense date:	7 April, 2014

Name and surname:	**Ing. Zdeněk Varga**
Study field:	2301V031 Production systems and processes
Training worksite:	Department of Applied cybernetics
Lecturer:	Prof. Ing. Miroslav Olehla, CSc.
Dissertation thesis topic:	Properties of artificial pneumatic muscles
Defense date:	24 April, 2014

Name and surname:	**Ing. Luboš Běhálek**
Study field:	2303V002 Engineering Technology
Training worksite:	Department of Mechanical Engineering Technology
Lecturer:	Prof. Dr. Ing. Petr Lenfeld
Dissertation thesis topic:	Research of unconventional methods of cooling thin-walled polypropylene sprays
Defense date:	23 April, 2014

Name and surname:	**Ing. Phan Thanh Nhan**
Study field:	3901V003 Applied Mechanics
Training worksite:	Department of Mechanics, Elasticity, and Strength
Lecturer:	Prof. Ing. Bohdana Marvalová, CSc.
Dissertation thesis topic:	Experimental and analytical significance of thermo-mechanical properties of composite materials formed by the polymer-reinforced fabric matrix
Defense date:	29 April, 2014

Name and surname:	**Ing. Věra Jahodová**
Study field:	3911V011 Material Engineering
Training worksite:	Department of Materials
Specialisation:	Material Engineering
Lecturer:	Prof. Ing. Petr Louda, CSc.
Dissertation thesis topic:	Phase S coatings stabilised with nitrogen for the food industry
Defense date:	30 April, 2014

Name and surname:	**Ing. Stanislava Hlebová-Rusnáková**
Study field:	3911V011 Material Engineering
Training worksite:	Department of Materials
Lecturer:	Prof. Ing. Ladislav Pešek, CSc.
Specialisation:	Textile Machines
Dissertation thesis topic:	Material characteristics of high-strength steel sheets in dynamic conditions
Defense date:	21 May, 2014

Name and surname:	**Ing. David Vejrych**
Study field:	2302V010 Machines and Equipment Design
Training worksite:	Department of Machine Parts and Mechanisms
Specialisation:	Machine parts and mechanisms
Lecturer:	Prof. Ing. Ladislav Ševčík, CSc.
Dissertation thesis topic:	Research of nodal elements of the modified nanofibre layer production machine
Defense date:	6 June, 2014

Name and surname:	**Ing. Huynh Le Hong Thai**
Study field:	2302V010 Machines and Equipment Design
Training worksite:	Department of Vehicles and Engines
Lecturer:	doc. Dr. Ing. Pavel Němeček
Dissertation thesis topic:	Identification and prediction of vehicle vibration and noise sources

Defense date:	6 June, 2014

Name and surname:	**Ing. Jan Valtera**
Study field:	2302V010 Machines and Equipment Design
Training worksite:	Department of Textile and Special Purpose Machines
Specialisation:	Textile Machines
Lecturer:	Prof. Ing. Jaroslav Beran, CSc.
Dissertation thesis topic:	Optimisation of the rotary spinning machine distribution rod
Defense date:	3 July, 2014

Name and surname:	**Ing. Petr Žabka**
Study field:	2302V010 Machines and Equipment Design
Training worksite:	Department of Textile and Special Purpose Machines
Specialisation:	Textile Machines
Lecturer:	Prof. Ing. Jaroslav Beran, CSc.
Dissertation thesis topic:	Mechatronic system of yarn distribution
Defense date:	3 July, 2014

Name and surname:	**Ing. Jan Kolář**
Study field:	3103V003 Applied Mechanics
Training worksite:	Department of Power Engineering Equipment
Specialisation:	Fluid Mechanics and Thermodynamics.
Lecturer:	doc. Ing. Václav Dvořák, PhD
Dissertation thesis topic:	Aerodynamic optimisation of the ejector drive nozzle
Defense date:	31 Oct, 2014

Name and surname:	**Ing. Zuzana Andršová**
Study field:	3011V011 Material Engineering
Training worksite:	Department of Materials
Specialisation:	Material Engineering
Lecturer:	doc. Ing. Břetislav Skrbek, CSc.
Dissertation thesis topic:	Non-destructive structureoscopy of isothermally hardened cast iron
Defense date:	20 Nov, 2014

Name and surname:	**Ing. Lucie Schmidová**
Study field:	2303V002 Engineering Technology
Training worksite:	Department of Machining and Assembly
Specialisation:	Machining and Assembly
Lecturer:	doc. Ing. Jan Jersák, CSc.
Dissertation thesis topic:	Evaluation of surface integrity parameters and utilisation of findings for greater gear machining effectiveness
Defense date:	10 Dec, 2014

4.3 Competence Centre

Josef Božek Automotive Industry Competence Centre
Innovations in the design of vehicles and powertrains with internal combustion engines and electric motors to reduce fossil fuel consumption and emissions, maximise safety, comfort and driving pleasure, adapt to regulatory requirements and interact with infrastructure and other vehicles, and compete in the emerging markets. Dual order of innovations being developed for immediately applicable output or basis for subsequent development. Use of knowledge database as an integrating element of complex topic and a wide team

Provider:	Technology Agency of the Czech Republic
Programme:	TE Competence Centres (2012-2019)
Project identification code:	TE01020020
Recipient:	Czech Technical University in Prague
Other project participants:	Technical University of Liberec, CNATI VŠB-TU Ostrava Brno University of Technology

Companies:	Škoda Auto a.s.; Honeywell, spol. s r.o.; ČZ a.s.; Ricardo Prague s.r.o.; AICTA Design Work, s.r.o.; MOTORPAL, a.s.; BRANO a.s.; TATRA, a.s.; TÜV SÜD Czech s.r.o.
Project period:	2012-2017
TUL guarantor:	Prof. Ing. Celestýn Scholz, PhD, Department of Vehicles and Engines
Internal TUL number:	17880
CNATI 2014 grants:	Total / INV /NIV – CZK 1,322,000 / 0 / 1,322,000

4.4 Scientific Research Projects

Technology Agency of the Czech Republic – ALFA

Development of the CDF code for desulphurisation plant design

Provider:	Technology Agency of the Czech Republic
Programme:	ALFA (2011-2016)
Project identification code:	TA04021338
Recipient:	DIZ Bohemia s.r.o.
Co-recipient:	TUL, Faculty of Mechanical Engineering
Co-recipient solver:	doc. Ing. Tomáš Vít, PhD, Department of Power Engineering Equipment
Internal TUL number:	17855
Project period:	2014-2017
FME 2014 grants:	Total / INV / NIV – CZK 615,000 / 0 / 615,000

Development of a progressive cooling system for the glass moulding machine moulds

Provider:	Technology Agency of the Czech Republic
Programme:	ALFA (2011-2016)
Project identification code:	TA03010852
Recipient:	Sklostroj Turnov CZ, s.r.o.
Co-recipient:	TUL, Faculty of Mechanical Engineering
Co-recipient solver:	doc. Ing. Václav Dvořák, PhD, Department of Power Engineering Equipment
Internal TUL number:	17871
Project period:	2013-2015
FS 2014 grants:	Total / INV / NIV – CZK 1,000,000 / 0 / 1,000,000

Applied multidisciplinary research and development of progressive methods of technological processes cooling

Provider:	Technology Agency of the Czech Republic
Programme:	ALFA (2011-2016)
Project identification code:	TA 01010879
Recipient:	TUL, Faculty of Mechanical Engineering
Recipient solver:	doc. Ing. Heinz Neumann, CSc., (until 2013), Ing. Iva Nováková, PhD (from 2014), Department of Mechanical Engineering Technology
Co-recipient:	GDK spol. s r.o.; KOH-I-NOOR PONAS s.r.o.; KSM Casting CZ a.s.
Internal TUL number:	14120
Project period:	2013-2016
Grant 2014:	Total / INV / NIV – CZK 3,660,000 / 0 / 3,660,000
of which FME:	Total / INV / NIV – CZK 2,170,000 / 0 / 2,170,000
Of it co-recipient:	Total / INV / NIV – CZK 1,490,000 / 0 / 1,490 000

Automatic sample feeder for dynamic measurements by the flow cytometry method

Provider:	Technology Agency of the Czech Republic
Programme:	ALFA (2011-2016)
Project identification code:	TA 01010879
Recipient:	Wolf & Daniel s.r.o.
Co-recipient:	TUL, Faculty of Mechanical Engineering

Co-recipient solver:	Prof. Ing. Jaroslav Beran, CSc., Department of Textile and Single Purpose Machinery
Internal TUL number:	17810
Project period:	2013-2014
FME 2014 grants:	Total / INV / NIV – CZK 2,315,880 / 0 / 2,315,880

Research and Development of the Delay-Free Shock-Absorber

Provider:	Technology Agency of the Czech Republic
Programme:	ALFA (2011-2016)
Project identification code:	TA 01010879
Recipient:	Brano a.s.
Co-recipient:	CTU, Faculty of Mechanical Engineering
Co-recipient solver:	Prof. Ing. Jan Šklíba, CSc., Department of Mechanics, Elasticity, and Strength
Internal TUL number:	17800
Project period:	2013-2016
FME 2014 grants:	Total / INV / NIV – CZK 1,313,000 / 0 / 1,313,000

Applied research aimed at increasing the heat efficiency of heat exchangers and operational verification in relation to renewable energy sources

Provider:	Technology Agency of the Czech Republic
Programme:	ALFA (2011-2016)
Project identification code:	TA 01020231
Recipient:	CTU, Faculty of Mechanical Engineering
Recipient solver:	doc. Ing. Karel Fraňa, PhD, Department of Power Engineering Equipment
Co-recipient:	Licon Heat s.r.o.
Internal TUL number:	14020
Project period:	2011-2014
2014 recipient grants:	Total / INV / NIV – CZK 2,395,333 / 0 / 2,359,333
of which FME:	CZK 359,333 / 0 / 359,000
Of which for the co-solvers:	CZK 2,000,000 / 0/ 2,000,000

Development of the air-to-air enthalpy heat exchanger

Provider:	Technology Agency of the Czech Republic
Programme:	ALFA (2011-2016)
Project identification code:	TA 01020313
Recipient:	2w s.r.o.
Co-recipient:	TUL, Faculty of Mechanical Engineering
Co-recipient solver:	doc. Ing. Václav Dvořák, PhD, Department of Power Engineering Equipment
Internal TUL number:	17570
Project period:	2011-2014
FME 2014 grants:	Total / INV / NIV – CZK 1,280,000 / 125,000 / 1,155,000

Ecological New Generation Machining Fluids

Provider:	Technology Agency of the Czech Republic
Programme:	ALFA (2011-2016)
Project identification code:	TA02021332
Recipient:	PARAMO, a.s.
Co-recipient:	CTU, Faculty of Mechanical Engineering
Co-recipient solver:	doc. Ing. Jan Jersák, CSc., Department of Machining and Assembly
Internal TUL number:	17840
Project period:	2012-2014
FME 2014 grants:	Total / INV / NIV – CZK 888,000 / 0 / 888,000
Non-public sources of 2014:	CZK 144,000

Research of the ORC technology with the low-volume piston steam engine for small and waste heat sources

Provider:	Technology Agency of the Czech Republic
Programme:	ALFA (2011-2016)
Project identification code:	TA02020716
Recipient:	PolyComp, a.s.
Co-recipient:	CTU, Faculty of Mechanical Engineering
Co-recipient solver:	doc. Ing. Karel Fraňa, PhD, Department of Power Engineering Equipment
Internal TUL number:	17870
Project period:	2012-2015
FS 2014 grants:	Total / INV / NIV – CZK 706,000 / 0 / 706,000

New systems for the checking of the length of end gauges and evaluation of their surface quality

Provider:	Technology Agency of the Czech Republic
Programme:	ALFA (2011-2016)
Project identification code:	TA 03010663
Recipient:	Institute of Scientific Instruments AS CR, v.v.i. (Brno)
Co-recipient:	TUL, FME
Other co-recipients:	ČMI, Mesing s.r.o.
Co-recipient solver:	Ing. Štěpánka Dvořáčková, PhD, Department of Mechanical Engineering Technology
Internal TUL number:	17861
Project period:	2013-2016
FME 2014 grants:	Total / INV / NIV – CZK 315,000 / 0 / 315,000
Non-public sources of 2014:	CZK 170,000

MIT CR – TIP

Extension of the lifecycle of conveyor belts stressed with impact load

Provider:	MIT CR
Programme:	FR - TIP (2009-2017)
Project identification code:	FR-TI3/373
Recipient:	IDIADA CZ a.s.
Co-recipient:	CTU, Faculty of Mechanical Engineering
Co-recipient solver:	doc. Ing. Iva Petríková, PhD
Internal TUL number:	17670
Project period:	2012-2014
FME 2014 grants:	Total / INV / NIV – CZK 1,070,000 / 0 / 1,070,000

Research and development of new subledeburitic tool steels for wood processing with increased performance

Provider:	MIT CR
Programme:	FR - TIP (2009-2017)
Project identification code:	FR-TI3/373
Recipient:	SVÚM a.s. Prague.
Co-recipient:	TUL, Faculty of Mechanical Engineering
Co-recipient solver:	Prof. Ing. Petr Louda, CSc., Department of Materials
Internal TUL number:	17950
Project period:	2011-2014
Grant FME 2014:	Total / INV / NIV – CZK 810,000 / 0 / 810,000

Research and development of bio materials and technology of production of artificial replacements for bone defects treatment

Provider:	MIT CR
Programme:	FR - TIP (2009-2017)
Project identification code:	FR-TI3/587
Recipient:	LASAK s.r.o.
Co-recipient:	TUL, Faculty of Mechanical Engineering

Co-recipient solver:	doc. Ing. Lukáš Čapek, PhD, Department of Mechanics, Elasticity, and Strength
Internal TUL number:	17940
Project period:	2011-2014
FS 2014 grants:	Total / INV / NIV – CZK 697,500 / 0 / 697,500

MoI CR – BV

Applied research of the new generation of protective masks with nano-filters for increased protection of persons from the design, technological, and material perspective

Provider:	MoI CR
Programme:	Security Research Programme of the Czech Republic
Project identification code:	VG20122014078
Recipient:	CTU, Faculty of Mechanical Engineering
Recipient solver:	Prof. Dr. Ing. Petr Lenfeld, Department of Mechanical Engineering Technology
Co-recipient:	NANOVIA s.r.o.
Internal TUL number:	16400
Project period:	2012-2014
Total 2014 grants:	Total / INV / NIV – CZK 7,081,081 / 0 / 7,081,810
Of which FME 2014:	Total / INV / NIV – CZK 4,655,081 / 0 / 4,655 081
of which DET:	CZK 2,132,081 / 0 / 2,593,000
of which DTD:	CZK 1,756,000 / 0/ 1,756,000
of which FME TUL:	CZK 767,000 / 0 / 767,000
Co-recipient grant:	Total / INV / NIV – CZK 2,426,000 / 0 / 2,426,000

Czech Science Foundation (GACR)

Optimisation of the high-temperature mechanical properties of Fe3Al type iron aluminides with carbide formers

Provider:	Czech Science Foundation
Programme:	GA - Standard grant project
Registration Number:	P108/12/1452
Recipient:	Institute of Physics of Materials of the Czech Academy of Sciences, v.v.i. Brno
Co-recipient:	CTU, Faculty of Mechanical Engineering
Co-solver:	RNDr. Věra Vodičková, PhD, Department of Materials
Internal TUL number:	17660
Project period:	2012-2015
Grant FME 2014:	Total / INV / NIV – CZK 671,000 / 0 / 671,000

Control of current fields through fluid oscillations

Provider:	Czech Science Foundation
Project:	GA – Standard Projects
Project identification code:	GA14-08888S
Recipient:	Institute of Thermomechanics of the Czech Academy of Sciences, v.v.i.
Other participant:	Technical University of Liberec
TUL solver:	doc. Ing. Tomáš Vít, PhD, Department of Power Engineering Equipment
Internal TUL number:	17269
Project period:	2014-2016
Grant FME 2014:	Total / INV / NIV – CZK 1,011,000 / 0 / 1,011,000

EU/ME of the Czech Republic

Demonstration of diesel exhaust emission monitoring during real operation

Provider:	EU/ME
Programme:	LIFE+
Registration Number:	17650

Project designation:	MEDETOX
Recipient:	CTU, Faculty of Mechanical Engineering
Solver:	Michal Vojtíšek M.Sc. PhD, Department of Vehicles and Engines
Co-recipient:	Institute of Experimental Medicine of the CAS
Internal TUL number:	17650
Project period:	2011-2016
Grant FME 2014:	Total / INV / NIV – CZK 2,516,487 / 726,487 / 1,790,000

Science and Research projects solved under CNATI

NPÚ – EYS CR

See 4.7

OP VaVpI – Commercialisation of results

See 7.4.3

Technology Agency of the Czech Republic – Competence Centres

See 4.3

Technology Agency of the Czech Republic – ALFA

Research of usable properties and application options of light polymer composites for body construction

Provider:	Technology Agency of the Czech Republic
Programme:	ALFA (2011-2016)
Project identification code:	TA04011009
Recipient:	TUL, CxI
Co-recipient:	Magna Exteriors & Interiors s.r.o.
Recipient solver:	Prof. Dr. Ing. Petr Lenfeld, Ph.D., Department of Mechanical Engineering Technology
Internal TUL number:	14141
Project period:	2014-2017
2014 recipient grants:	Total / INV / NIV – CZK 1,800,000 / 0 / 1,504,800
Of which CNATI:	Total / INV / NIV – CZK 1,214,800 / 0 / 1,204,800
Of it co-recipients:	Total / INV / NIV – CZK 290,000 / 0 / 290,000

Development and verification of new numerical methods of welding and heat treatment, including simplified numerical prediction of service life of welded joints, for progressive materials used in power engineering, aerospace, and space industry

Provider:	Technology Agency of the Czech Republic
Programme:	ALFA (2011-2016)
Project identification code:	TA 02010992
Recipient:	MECAS ESI s.r.o.
Co-recipient:	TUL, CxI
Co-recipient solver:	Ing. Jaromír Moravec, PhD, Department of Mechanical Engineering Technology
Project period:	2012-2015
Internal TUL number:	17860
CNATI 2014 grants:	Total / INV / NIV – CZK 945,000 / 0 / 945,000

Technology of the injection moulding of bioceramic materials for implant components production

Provider	Technology Agency of the Czech Republic
Programme:	ALFA (2011-2016)
Project identification code:	TA 02010992
Recipient:	Czech Technical University in Prague
Co-recipient:	TUL, CxI
Co-recipient solver:	Dr. Ing. Daniel Šída, Department of Materials
Project period:	2013-2016

Internal TUL number: 17862
CNATI 2014 grants: Total / INV / NIV – CZK 935,000 / 0 / 935,000

MIT CR – TIP

Technology for inorganic nanofibre production

Provider: MIT CR
Programme: FR - TIP (2009-2017)
Project identification code: FR-TI3/845
Recipient: ELMARCO s.r.o.
Co-recipient: TUL, Faculty of Mechanical Engineering, Project transferred under CxI
Co-recipient solver: Prof. Ing. Ladislav Ševčík, CSc., Department of Machine Parts and Mechanisms
Internal TUL number: 17930
Project period: 2011-2014
CNATI 2014 grants: CZK 742,000 / 0 / 742,000

Increasing the load capacity of spur gearing by optimising thermal, chemical-thermal, and mechanical processing

Provider: MIT CR
Programme: FR - TIP (2009-2017)
Project identification code: FR-TI4/054
Recipient: Wikov MGI a.s.
Co-recipient: TUL, CxI
Co-recipient solver: Prof. Ing. Petr Louda, CSc., Department of Materials
Internal TUL number: 17780
Project period: 2012-2014
Grant FME 2014: Total / INV / NIV – CZK 978,000 / 0 / 978,000

Non-public sources

Innovation of machines and equipment and implementation of advanced technologies in the process of automated production and processing of flat glass

Provider: Sklopan Liberec, a.s.
Programme: Industrial grant funded through private sources
Recipient: TUL, CNATI
Solver: doc. Ing. František Novotný, CSc. KSR
Project period: 2012-2014
Internal TUL number: 19800
Grant 2014: CZK 800,000

4.7 Centre for Nano-Materials, Advanced Technologies, and Innovations

Development of the Institute for Nanomaterials, Advanced Technology, and Innovations (CNATI++)

The main objective of the project is to support the utilisation of the newly built research infrastructure (see above) – the CNATI university worksite, a new building, acquired high-end instruments and equipment and research teams. The implementation of the submitted CNATI ++ project will significantly contribute to the efficiency of the use of this infrastructure, its stability, long-term sustainability and its further systematically managed development while maintaining the set structure of the professional profile of the University Centre. The project deals with seven research topics, which are solved by the academics of the Faculty of Mechanical Engineering.

A total of 35 academics of the Faculty of Mechanical Engineering participated in the project in 2014 with the total volume of approximately 8 part-time jobs.

Grant provider: MEYS
Support programme: NPU
Recipient: Technical University of Liberec, CNATI

Registration Number**:** LO1201
Total Project grants: CZK 175,711
Completion period: 2014-2018
Internal TUL number: 16001

4.9 Commercialisation of R&D Outputs and Results

New Technologies and Special Machinery Components
Provider MEYS
Programme: VaVpI
Project type: VaVpI Pre-seed
Project identification code: CZ.1.05./3.1.00/13.0291
Recipient: TUL, C
Responsible solver: doc. Ing. František Novotný, CSc., DGR
Project period: 2012-2015
Total grants: CZK 44,884,000
Internal TUL number: 16240
Individual Activities: Activity solver / grant

- Service robots for inspection and technological functions on vertical walls
  Ing. Marcel Horák, PhD CZK 2,145,783
- Application and processing of polymeric materials with natural fillers
  Prof. Dr. Ing. Petr Lenfeld / CZK 1,673,242
- Progressive technology of production of self-supporting bottom coils for sewing of car seat covers Prof. Ing. Jaroslav Beran, CSc. / CZK 1,422,997
- Machine for production of special 3D textiles ROTIS II
  Prof. Ing. Ladislav Ševčík, CSc. CZK 4,500,000

PROSYKO – Proactive System of Commercialisation at TUL Liberec
Provider Technology Agency of the Czech Republic
Programme: GAMA, Sub-programme 1
Project type: "Proof of concept stage"
Project identification code: TG01010117
Recipient: TUL, CNATI
Responsible solver: Ing. Stanislav Petrík, PhD
Project period: 2014-2018
Total grants: CZK 541,500
Internal TUL number: 17862

- Partial internal number: 14155
  Partial project period: 2014-2016
  Grant 2014 FME/CNATI: CZK 263,198
  Partial project FME: Device for determining the sheet deformation limit states
  Solver: doc. Ing. Pavel Solfronk, PhD
  Partial internal number: 14153
- Partial project period: 2014-2016
  Grant 2014 FME/CNATI: CZK 217,193
  Partial project FME: Device for determining the sheet deformation limit states
  Solver: Ing. Jan valtera, PhD

Nano-fibre materials for tissue engineering
Provider MEYS CR
Programme: VaVpI
Project type: VaVpI Pre-seed
Project identification code: ED3.1.00/14.0308
Recipient: TUL, CNATI
Responsible solver: Ing. Jana Drašarová, PhD
Project period: 2014-2015
Internal TUL number: 16112
Individual activity FME participates in the solution

- IA 02 - Vascular nanofibrous prosthesis – Functional sample of small diameter artificial vascular prosthesis production equipment
  doc. Ing. Lukáš Čapek, PhD CZK 231,584

5.1 International Cooperation in Education

TUL as an important partner in the international educational space – strengthening of the existing cooperation with Canadian and U.S. partner universities

Provider	MEYS CR
Programme:	Institutional Development Plan
Solver:	CTU, Faculty of Mechanical Engineering
Internal TUL number:	12146
Grant 2014:	CZK 200,000
Period:	2014

Project goal:
The project goal was to conduct motivational study stays of selected students of the Faculty of Science at its partner Canadian and American universities. The long-term goal is to maintain and further develop contacts and activities with these universities.

5.2 International Projects

Education collaboration in mechanical engineering

Provider	MEYS
Programme:	CZ07 – Scholarship Programme and Bilateral Scholarship
Registration Number:	NF-CZ07-ICP-1-030-2014
Partner Organisation:	Ostfold University College Institutions at the tertiary level of education Faculty of Engineering
Recipient:	CTU, Faculty of Mechanical Engineering
Solver:	doc. Ing. Karel Fraňa, PhD
Internal TUL number:	18413
Period:	2014-2015
Total grants:	CZK 649,530

Modelling and simulation of electro-pneumatic mechatronic systems based on pneumatic muscles

Provider	MEYS
Programme:	7AMB, International R&D Cooperation in the support of the mobility of researchers
Partner Organisation:	Technical University in Košice
Recipient:	TUL, Faculty of Mechanical Engineering
Solver:	Ing. Michal Moučka, PhD
Internal TUL number:	18413
Period:	2014-2015
Grant 2014:	CZK 68,000

5.3 International Mobility

In 2014, specifically since the 2014/2015 academic year, the successful LLP Erasmus programme was followed by the new European Union Education Programme 2014-2020 Erasmus+, which promotes cooperation and mobility in all the areas of education, training, sports, and youth.
In the context of the new Erasmus+ programme, inter-institutional agreements have been concluded with partner universities, with which cooperation on student exchanges has been actively pursued, and academics over the past 3 years and have agreed to resume their cooperation.

New inter-institutional contracts concluded in 2014 under ERASMUS+ for the following academic years:

- Universiteit Gent (Belgie)
- Technical University of Sofia(BG)

- Aalto University of Technology TKK (FI)
- Université de Bourgogne (FR)
- University of Angers (FR)
- INSA Rennes (FR)
- Université de Franche-Comté Besançon (FR)
- Université de Technologie de Belfort-Montbéliard (FR)
- Technische Universität Dresden (DE)
- The University of Applied Sciences Emden/Leer (DE)
- Hochschule Hof (DE)
- WestsächsischeHochschule Zwickau (DE)
- Technische Universität Darmstadt (DE)
- Chemnitz University of Technology (DE)
- RWTH Aachen University (DE)
- Hochschule Zittau/Görlitz (DE)
- Budapest University of Technology and Economics (HU)
- Vilnius College of Technologies and Design (LT)
- Koszalin University of Technology (PL)
- Technical University of Lodz (PL)
- Wroclaw University of Technology (PL)
- Universidade de Coimbra (PT)
- Universidade do Porto (PT)
- Universidade do Minho (PT)
- Universidade da Beira Interior (PT)
- University of Žilina (SK)
- Technical University of Košice (SK)
- Universita Alexandra Dubčeka Trenčín (SK)
- Universidad Politécnica de Valencia (ES)
- Universidade de Oviedo Gijón (ES)
- Universidad del Pais Vasco, Bilbao (ES)
- Erciyes University (TR)
- Osmaniye Korkut Ata University (TR)
- Karadeniz Technical University (TR)
- Cukurova Universitesi (TR)
- Trakya Universitesi (TR)
- Istanbul University (TR)
- USAK University (TR)

New bilateral agreements concluded in 2014 for the cooperation on exchanges of students, and academics in the area of science and research:

- Hof University of Applied Sciences (Germany)
- Diponegoro University (Indonesia)
- Pontifícia Universidade Católica do Rio de Janeiro (Brasil)
- Ostfold University College (Norsko, Programme CZ07 Norwegian Funds and EHP Funds)

Valid bilateral agreements for cooperation in the area of mutual exchange of students, and academics in the area of science and research in 2014:

- University of Waterloo (CAN)
- Conestoga College Institute of Technology and Advance Learning, Ontario
- Northern Illinois University (U.S.A.)
- Nha Trang University

Negotiations started on concluding further bilateral agreements in the area of mutual exchanges of students and academics in the area of science and research with universities:

- Universidad Internacional (Mexico)

7.4 Projects Funded by the EU Structural Funds

7.4.1 OP Education for Competitiveness

Bridge of Education, Science, and Practice

Recipient:	SVÚM a.s.
Co-recipients:	Technical University of Liberec, Faculty of Mechanical Engineering
Recipient solver:	Prof. Ing. Petr Louda, CSc., Department of Materials
Provider:	Ministry of Education - OP VK
Priority Axis:	2 – Tertiary education, research, and development
Support area:	2.3 – Human resources in research and development
Registration Number:	CZ.1.07/2.3.00/45.0030
Internal TUL number:	17170
Total grants:	CZK 4,561,014
Project period:	2014-2015
Grant FME TUL 2014:	CZK 1,610,149

TK MOST– Increasing the technical competences of graduates for their industrial practice

Recipient:	Technical University of Liberec, Faculty of Mechanical Engineering
Co-recipients:	none
Recipient solver:	doc. Ing. Tomáš Vít, PhD, Department of Power Engineering Equipment
Provider:	Ministry of Education – OP EC
Priority Axis:	2 – Tertiary education, research, and development
Support area:	2.3 – Human resources in research and development
Registration Number:	CZ.1.07/2.2.00/28.0311
Internal TUL number:	16820
Total grants:	CZK 23,194,344
Project period:	2013-2015
Grant FME TUL 2014:	CZK 7,557,139

Building an excellent scientific team for experimental and numerical modelling in fluid mechanics and thermodynamics

Recipient:	University of West Bohemia, Pilsen
Co-recipients:	Technical University of Liberec, Faculty of Mechanical Engineering
Co-recipient solver:	doc. Ing. Karel Fraňa, PhD, Department of Power Engineering Equipment
Provider:	Ministry of Education – OP EC
Priority Axis:	2 – Tertiary education, research, and development
Support area:	2.3 – Human resources in research and development
Registration Number:	CZ.1.07/2.3.00/20.0139
Internal TUL number:	17150
Total TUL grants:	CZK 1,800,000
Project period:	2012-2015
Grant FME TUL 2014:	CZK 1,064,691

CREATex – Excellence in the methods of systematic creativity at the macro and micro levels

Recipient:	Technical University of Liberec, Faculty of Mechanical Engineering
Recipient solver:	Ing. Petr Lepšík, PhD, Department of Machine Parts and Mechanisms
Provider:	MEYS – OP EC
Priority axis:	2 – Tertiary education, research, and development
Support area:	2.2 – University education
Registration number:	CZ.1.07/2.2.00/28.0321
Internal TUL number:	16190
Total grants:	CZK 10,885,171
Project period:	2012-2015
Grant FME TUL 2014:	CZK 2,500,000

TECHNOMAT
Innovation of Study Programmes to Increase the Competitiveness of Technical Fields

Recipient:	Technical University of Liberec, Faculty of Mechanical Engineering
Recipient solver:	Ing. Jiří Sobotka, Ph.D., Department of Mechanical Engineering Technology
Provider:	MEYS – OP EC
Priority axis:	2 – Tertiary education, research, and development
Support area:	2.2 – University education
Registration number:	CZ.1.07/2.2.00/ 28.0316
Internal TUL number:	16180
Total grants:	CZK 15,560,843
Project period:	2012-2014
Grant FME TUL 2014:	CZK 3,732,324

Behind the school

Recipient:	TUL, Faculty of Mechanical Engineering
Recipient solver:	Ing. Štěpánka Dvořáčková, PhD, Department of Mechanical Engineering Technology
Provider	MEYS – OP EC – Global grant from the Liberec Region
Priority axis:	1 – Initial education
Support area:	1.1 – Improving quality of education
Project registration number:	CZ.1.07/1.1.22/01.0001
Project period:	2012-2015
Internal TUL number:	15050
Total grants:	CZK 5,859,058
Grant FME TUL 2014:	CZK 1,951,389

Partnership in the new generation nuclear power engineering

Recipient:	CTU in Prague
Co-recipients:	Technical University of Liberec, Faculty of Mechanical Engineering University of West Bohemia, Pilsen Mining University – TU Ostrava Brno University of Technology
Co-recipient solver:	doc. Ing. Karel Fraňa, PhD, Department of Power Engineering Equipment
Provider:	MEYS – OP EC
Priority Axis:	2 – Tertiary education, research, and development
Support area:	2.4 – Partnerships and networks
Registration Number:	CZ.1.07/2.4.00/17.0116
Internal TUL number:	17140
Total grants:	CZK 29,951,042
Total FME TUL grant:	CZK 2,875,499
Project period:	2011-2014
Grant FME in 2014:	CZK 362,224

TUL/REK, FTT, CNATI

System support of the cooperation among employers and universities in the area of internship programmes

Recipient:	Technical University of Liberec, REK
Recipient solver:	doc. Dr. Ing. Pavel Němeček, Department of Vehicles and Engines
Co-solver:	Institute of Industry of the Czech Republic
Provider	MEYS – OP EC
Priority axis:	2 – Tertiary education, research, and development
Support area:	2.4 – Partnerships and networks
Registration Number:	CZ.1.07/2.4.00/17.0108
Internal TUL number:	16160

Total grants: CZK 22,694,731
Project period: 2011-2014
Project under REK TUL

Support of the creation of excellent research and development teams at TUL
Recipient: TUL, Textiles Faculty
Provider MEYS – OP EC
Priority axis: 2 – Tertiary education, research, and development
Support area: 2.3 – Human resources in research and development
Registration Number: CZ.1.07/2.3.00/30.0065
Expert project guarantor: doc. Ing. Miroslav Malý, CSc.
Internal TUL number: 16230
Total grants: CZK 36,211,059
Project period: 2012-2015

Project under FTT TUL
KA 1 professional guarantor Ing. David Cirkl, PhD, DAM FME TUL
Key activity A 1: Supporting the creation of high-quality research and development teams and their further development, especially initialisation and start-up jobs.

Educational system for the human resource development for research and development in the area of modern trend of surface engineering – surface integrity
Recipient: University of West Bohemia in Pilsen, Faculty of Mechanical Engineering
Co-recipient: Technical University of Liberec, Faculty of Mechanical Engineering – transferred under Cxl
Co-recipient solver: Prof. Ing. Petr Louda, CSc., Department of Materials
Provider MEYS – OP EC
Priority axis: 2 – Tertiary education, research, and development
Support area: 2.3 – Human resources in research and development
Registration Number: CZ.1.07/2.3.00/20.0037
Internal TUL number: 17030
Total grants: CZK 4,688,612
Project period: 2011-2014
Grant CNATI TUL 2014: CZK 1,998,912

Theory in practice
Recipient: TUL, CNATI
Recipient solver: doc. Ing. Dora Kroisová, PhD, Department of Materials
Provider MEYS – EC OP – Global grant from the Liberec Region
Priority axis: 1 – Initial education
Support area: 1.1 - Improving quality of education
Project registration number: CZ.1.07/1.1.22/02.0006
Project period: 2012-2015
Internal TUL number: 15060
Total grants: CZK 5,845,000
Grant CNATI TUL 2014: CZK 2,192,776

7.4.2 OP Enterprise and Innovations

Vehicle wheel suspension
Project solver: doc. Ing. Miroslav Šír, CSc.
Grant provider: MIT CR – OP PI
Programme: Innovation – Patent
Total grants: CZK 4,234,000
Internal TUL number: 16630
Project registration number: 4.1 INP02/152
Project period: 2010 – till patent award time
2014 grant: CZK 40,568

Method and equipment for tying a fishing lure and fishing lure

Project solver:	Prof. Ing. Jaroslav Beran, CSc.
Grant provider:	MIT CR – OP PI
Programme:	Innovation – Patent
Internal TUL number:	16650
Project period:	2011 – till patent award time
2014 grant:	CZK 21,520

7.4.3 OP Research and Development for Innovations

Development of the Institute for Nanomaterials, Advanced Technology, and Innovations (CNATI++)
See 4.7

New Technologies and Special Machinery Components
See 4.9

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