SLOVAK
UNIVERSITY
OF TECHNOLOGY
IN BRATISLAVA
Faculty
of Materials
Science
and Technology

ANNUAL REPORT 2008

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2008

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PREFACE



Ladies and gentlemen,

A new year has come, it is time to sum up past events in the life of our institution and to plan the Faculty development in near and far future. The previous year was not easy, but now we can retrospectively look at the period with a feeling of pride and growing self-confidence.

- 1. MTF STU became an awarded finalist in competition "National Prize for Quality SR" and Faculty deputies obtained this high acknowledgement personally from Ivan Gasparovic, President of SR; such a prize is a commitment for the future. We have beaten our competitors by more than 40 per cent in the points system.
- 2. In hard conditions of common European research area we participated in 2 projects within the 7th Framework programme,
- 3. With highly positive responses we organized the 19th World Symposium DAAAM with more than 500 participants from five continents in the Faculty campus.
- 4. We submitted 4 significant projects worth a total of more than 6.6 million €; 3 of them dedicated to construction of excellent workplaces and the 4th one is a common project of STU aimed at university development wherein we participate with an amount of 2.6 million €.

In the nearest future, we are going to create two centres of excellence- two of three submitted projects were successful. Within the STU, which includes 6 approved centres of excellence, one third of all STU projects are submitted by our Faculty – that is a giant success- our centre of excellence will be devoted to materials science and forming technologies . In Slovakia 45 projects were approved in this category.

Probably very soon we will obtain professional assessment results of other projects and so an opportunity for their implementation. In this connection I again would like to express my thanks to the teams who participated in preparing these projects, while others were enjoying their holidays.

I would like to focus on this fact. It is highly probable that the challenge will not come again. All follow-up projects can be submitted only by workplaces, which succeeded in the first round and the discussed amount of an irretrievable grant is 5-8 million €.

- 5. I assure you that we prepared new projects for the challenges of 2009 and following years not only in the first consideration stage; we already have defined project goals and nominated teams for project development and later implementation. Possible obstacles or partial failures can not discourage us.
- 6. The Concept of the SLOVAKION project (Ion and Plasma Centre) has been clearly outlined in these days. Construction documentation is available and has been forthwith submitted for approval procedures to obtain a building permit in the first half-year of 2009.
- 7. The working team of the Accreditation Committee, which started with an intensive complex accreditation of the University and our Faculty based on the accreditation file submitted in February, did not express any objections or doubts related to our highly positive and optimistic self-evaluation during meetings with the Faculty management and students. We wish to proceed actively to integration of the Slovak University of Technology into the highest rank of Slovak universities and to become a Faculty with this predicate. Results of complex accreditation of both the University and our Faculty should appear already in the next month.
- 8. Results from the ARRA Agency for the year 2007 confirmed our position of the previous year, however we gained in the total evaluation of technology faculties 5 points more than in 2006. ARRA will remain an important indicator of school quality in Slovakia in the future and we will understand it in context of a complex practical academic environment, including its economic aspects.
- 9. In the last term the Faculty management could decrease weekly pedagogic duty in all teaching categories by one hour a week, and another reduction by a minimum of one hour is expected from 1 September 2009, when

starting the education also in the second class of the first and second level according to the new accreditation. At the same time in the spring term 2008-2009 we are going to test the new unified and transparent system of scientific research results of our teachers and researchers. It is based on general criteria taken into consideration not only by rating and ranking agencies but also by our Ministry for calculation of additional funds for individual faculties and universities.

- 10. As far as salary administration, we continued to differentiate salaries of individual groups of employees and also inside of individual groups on one hand, and to increase salaries of all employees globally on the other hand. During the pevious two calendar years we were able to increase the salaries of our employees by 35% on average.
- 11. The Culture of the workplace where we and our students spend daily a minimum of 8 hours is one of substantial elements. Last year we finished reconstruction of the restrooms in MTF STU pavilions; we finalized migration of persons and provided for monitored entry.
- 12. We are proud of the extraordinary activities of employees in Prof. Balog's Institute, which enabled integration of funds from three resources to recultivate visibly the former arboretum and fence it, which will protect the area from devastation. Other projected plans for this place are not secret and were broadly presented when the first revitalization phase was completed. We also have to draw atention to the new parking place in Bottova street including drainage and lighting. I am sure that the parking place is a trump-card of this year for the Faculty image being used by our staff and students, and has been noticed by hundreds and thousands of Trnava citizens. Its capacity of 100 parking places is enough at present.
- 13. Information systems have become an integral part of our life in our workplaces. We are working on their improvement and integration but don't want to be their slaves. I am under the impression that our relation to students is quite improving also due to transparency enforced by global use of the academic information system. Information provided to users by all of our IS are nowadays essential for efficient and successful Faculty functioning.
- 14. Foreign cooperation provided us equipment for our workplaces in the amount of nearly 200 000, − € last year. To mention at least the most important partners out of the university sector: we continue to lean on our traditional partners in Germany (FZD, IFW), Austria (Boehler) and Belgium (Beakert), having bilateral scientific and research agreements with them. This year our Faculty gained new partners institutions in the Korean Republic and in Cuba.
- 15. By our joint effort the Faculty is changing outside and inside. It's up to us to determine the tempo and quality of these changes. Neither now nor in future do we intend to compare ourselves with the weak ones, the best ones must be our challenge. In every area. We have a vision of an advanced research faculty at the campus on Bottova street, including rebuilding and 3-4 new modern buildings with the most upgraded equipment for science and research and with half the number of current students or with double the number of lecturers and researchers. This vision is not fantasy. EU funds will still be available for 4-5 years as noticed by our Ministry. Simply, we must learn to be successful.
- 16. To do so we need a sufficient number of good projects. There are construction projects and our construction preparations. On websites there was published the reconxstruction study of our buildings in Bottova and Razusova streets. Based on the published study the Faculty management decided to elaborate ground plans for our built up areas and thereafter to proceed to development of construction documentation.

The pedagogical and scientific results summarized in this annual report are paramount for every university institution. During the past year, scientists at our Faculty were able to push forward in entirely unknown territories and to discover new effects.

We thank our sponsors, curators, advisory council members and all partners for the constructive collaboration in the year 2008, and we are happy to fulfill new tasks, challenges and tackle future projects together!

Prof.Dr. Ing. Oliver Moravčík Dean of Faculty

MANAGEMENT OF THE FACULTY



Oliver Moravčík, Professor, PhD. Dean of the Faculty

INSTITUTES OF THE FACULTY

Institute of Materials Science Department of Materials Engineering Department of Physics

Institute of Production Technologies
Department of Welding
Department of Machining and Assembly
Department of Foundry
Department of Forming

VICE-DEANS



Jozef Peterka, Professor, PhD.

- Development
- Information Technologies
- Know-how Transfer
- Prognostics

Institute of Production Systems and Applied Mechanics Department of Applied Mechanics Department of Technological Devices and Systems



Mária Mišútová, Assoc. Professor, PhD.

- Bachelor Degree
- Accreditation of Bachelor Degree
- Motivation Scholarship
- Study Promotion

Institute of Industrial Engineering, Management and Quality

Department of Industrial Engineering

Department of Management

Department of Quality Engineering



František Horňák, Assoc. Professor, PhD.

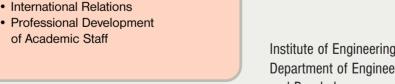
- Engineering and PhD Degrees
- Accreditation of Engineering and PhD Degrees

Peter Grgač, Professor, PhD.

- Student Social Affairs
- Education Quality, Educational Process Inspection

Institute of Safety and Environmental Engineering Department of Environmental Engineering Department of Safety Engineering Department of Industrial Safety

Institute of Applied Informatics, Automation and Mathematics
Department of Mathematics
Department of Applied Informatics and Industrial Automation



Institute of Engineering Pedagogy and Humanities
Department of Engineering Pedagogy
and Psychology
Department of Humanities
Department of Professional Language Communication
Department of Physical Education and Sports



Jozef Sablik, Professor, PhD.

- Internal Relations
- Public Relations

Research

- Security System
- Publishing Activity
- Social Programmes for Staff
- ALUMNI

DETACHED WORKPLACES

Nitra Detached Workplace Brezno Detached Workplace Komárno Detached Workplace Dubnica Detached Workplace

DIVISIONS OF THE FACULTY

Division of Academic Activities

Registrar's Department Section of Research and International Relations

Division of Knowledge Management

Academic Library
Publishing House
Section of Public Relations

Division of Economical and Estate Activities

Section of Economy Section of Operation and Maintenance Section of Estate Management

Division of Communication and Information Systems

Section of Information Systems Operation Section of System and Technical Services

Division of Personnel and Administration Activities

Department of Personnel and Social Affairs
Dean's Secretariat
Department of Work Economy
Department of Safety Systems

Centre for Technologies Transfer

Student Hostel and Canteen

Student Hostel Student Canteen

SCIENTIFIC BOARD

Chair: Oliver Moravčík, Professor, PhD. Vice-chair: Peter Grgač, Professor, PhD.

Members

Karol Balog, Professor, PhD.
Pavel Cyrus, Professor, PhD.
Miloš Čambál, Assoc. Prof., PhD.
Alexander Čaus, Professor, DrSc.
František Horňák, Assoc. Prof., PhD.
Stanislav Hostin, Assoc. Prof., PhD.
Roman Hrmo, Assoc. Prof., PhD.
Alexander Chaus, Professor, PhD.
Jozef Janovec, Professor, DrSc
Ján Kalužný, Professor, PhD.

Mária Mišútová, Assoc. Prof., PhD.
Jozef Peterka, Professor, PhD.
Jozef Sablik, Professor, PhD.
Peter Sakál, Professor, PhD.
Peter Schreiber, Assoc. Prof., PhD.
Milan Turňa, Professor, PhD.EWE
Koloman Ulrich, Professor, PhD.
Pavel Važan, Assoc. Prof., PhD.
Karol Velíšek, Professor, PhD.

Miroslav Badida, Professor, PhD.
Aleš Gregar, Assoc. Prof., PhD.
František Janíček, Professor, PhD.
Matej Korec, MSc. Eng.
Peter Kostka, Assoc. Prof., PhD.
L'udovít Kupča, Assoc. Prof., PhD.
Tibor Mikuš, MSc. Eng.
Fratišek Simančík, PhD.
Štefan Schmidt, MSc.Eng.
Miroslav Solava, MSc. Eng.
Róbert Riedlmaier, PhD.

ACADEMIC SENATE

Chair: Peter Schreiber, Assoc. Prof., PhD.

Academic Staff Chamber

Karol Balog, Professor, PhD.
Miloš Čambál, Assoc. Prof., PhD.
Jaroslav Červeňanský, Assoc. Prof., PhD.
Roman Hrmo, Assoc. Prof., PhD.
Marián Merica, Assoc. Prof., PhD.
Juraj Miština, MSc.
Milan Naď, PhD.
Pavol Tanuška, Assoc. Prof., PhD.
Karol Velíšek, Professor, PhD.
Kóbert Riedlmajer, PhD.
L'ubomír Čaplovič, Assoc. Prof., PhD.
Koloman Ulrich, Professor, PhD.
Helena Vidová. PhD.

Student Chambre

Eva Zibrínová Zuzana Kelemenová Kamil Vidlička Linda Kubecová Monika Lukáčová Michal Čavrčka Michal Ondruška

ACCREDITATIONS

MTF STU is authorised to grant:

The academic title "bachelor" to the graduates of 13 study programmes, the academic title "engineer" (corresponding to master degree) to the graduates of 16 study programmes, the academic title "philosophiae doctor" to the graduates of 6 study programmes in both study formats, full-time and part-time.

In February 2008, the Faculty submitted the accreditation file regarding the accreditation of new study programmes and the enforcement of appointing associate professors and professors for the following 6-year period. The results of complex accreditation of STU, including STU MTF, as well as the ranking of Faculty and University within the hierarchy of the tertiary education institutions in Slovakia will be announced in the first half of the year 2009.

Study system and organisation

The credit system introduced in STU has been implemented in all three degrees of university education in STU MTF in compliance with the law and accreditation within the defined standard length of study in both full-time and part-time study formats:

Degree 1: bachelor studies, completed by granting the academic title "bachelor" - Bc. Having successfully passed the State exam and gaining the academic title of "bachelor" (Bc.), the graduates can either continue the study in degree 2, or leave the Faculty.

Degree 2: master studies, accomplished by gaining the academic title of engineer - Ing. (corresponding to MS)

Degree 3: doctorate studies- both full-time and part-time formats, while the defined standard length of study in full-time format is 3 years and in part-time format 5 years. The study is accomplished by gaining the academic title of "philosophiae doctor".

All of the above mentioned programmes can be studied either full-time or part-time, or externally in the case of PhD. study.

In the academic year concerned, the Academic information system (AIS) was introduced to STU. Despite some piloting problems, the AIS implementation has improved the operational effectiveness of the student – teacher – registrar contacts. Its full utilisation can be expected in the near future.

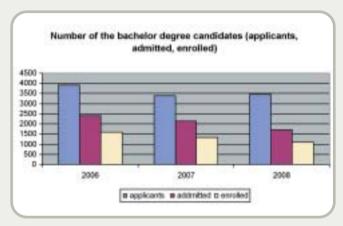
Complementary teacher training

Along with the engineering study at the Faculty, students can enroll in complementary teacher training, which is a special type of university study enabling the students to gain pedagogical qualifications entitling them to teach the subjects the contents of which is related to the Faculty study programmes and the defined graduate profiles.

Faculty provided the complementary teacher training in a parallel form for the students of all STU faculties, and in a serial form for the STU graduates. In the academic year 2007/08, 223 students enrolled in complementary teacher training. The Faculty thus remarkably contributed to the improvement of secondary education.

Interest in study

The Faculty had quite stable interest in study within individual degrees. A partial decrease in the number of the students admitted and enrolled was due to the change in financing of universities by the Ministry of Education SR, and consequently the changed policy of the Faculty management's policy.

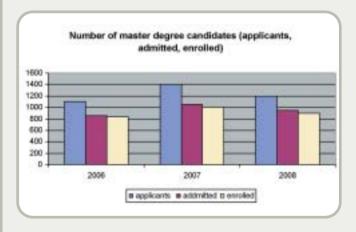


Graph No. 1. Number of the bachelor degree candidates (applicants, admitted, enrolled) within the last three years

Admission procedure varies according to the degree.

The admission procedure for the bachelor degree is based on the criteria of the applicant's secondary school results, i.e. without entrance examination.

Besides the results from the bachelor degree, the admission procedure for the master degree considers the results of the entrance examinations in 3 profile subjects within the programme studied.



Graph No. 2. Number of master degree candidates (applicants, admitted, enrolled) within the last three years

Besides the MTF Bc graduates interested in master studies, there is a high number of candidates from other universities.

Tab. No.1 Master degree candidates: graduates of MTF and other universities in the year 2008

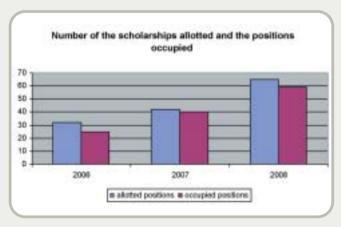
Applicants	MTF graduates	785
	of other universities	419
	Total	1204
Enrolled	MTF graduates	663
Newly admitted	of other universities	248
	Total	911

The admission procedure in doctorate degree comprises the entrance examination consisting of a foreign language test (English or German) and a discourse regarding the chosen topic of the doctorate thesis.

Tab. No.2 Number of PhD candidates in the last three years

	2006		2007		2008	
	Full-	Part-	Full-	Part-	Full-	Part-
	time	time	time	time	time	time
applicants	39	52	56	45	61	52
enrolled	25	29	40	37	59	33

The number of fulltime PhD students is influenced by the financial policy of the Ministry of Education SR, where the number of scholarships allotted to a university is based upon the criterion of the university's achievements in research (domestic grants, foreign grants, internal PhD candidates having passed the dissertation exam, number of PhD graduates and a share of publication activity). In long term horizon, Faculty succeeded in increasing the number of allotted scholarships via influencing the entrance criteria (see Graph No.3).



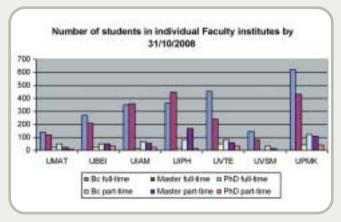
Graph No.3 Comparison of the number of the scholarships allotted and the positions occupied

STUDENTS

Regarding the premises and administration, the study conditions in the Faculty are favourable. There were 210 teachers providing education last academic year.

Besides study, the students can be involved in institutional research activity either by participating in research projects and the Student Research Conference, or working as a research student-helper. The Student Research Conference provides the students of degrees 1 and 2 with a chance to get acquainted with research methods, to analyse a research task and articulate the attained research results in both oral and written forms, and to defend his/her opinion in a professional forum. PhD students can present partial results of their research projects in the International Doctoral Seminar, an annual event organized by the Faculty and attended also by the PhD students of foreign universities and research institutes.

Besides the students of Slovak citizenship, there are also foreign students studying at MTF. Unfortunately, the Faculty is failing in attracting a higher number of foreign students, so their percentage is quite low so far.



Graph No.4: Number of students in individual Faculty institutes by 31/10/2008

Abbreviations used:

UMAT- Institute of Materials

UBEI- Institute of Safety and Environmental Engineering

UIAM- Institute of Applied Informatics, Automation and Mathematics

UIPH- Institute of Engineering Pedagogy and Humanities

UVSM- Institute of Production Systems and Applied Mechanics

UPMK- Institute of Industrial Engineering, Management and Quality

We managed to improve the access to textbooks by implementing the model of electronic textbooks available for all the Faculty students free of charge. Trying to meet the students' requirements, we introduced Saturday office hours in the Registrar's Office and the academic library. Regarding social policy, the study at the detached workplaces in Komárno, Dubnica nad Váhom and Nitra (the first two years of bachelor and master studies) is quite significant.

QUALITY OF EDUCATION

Education efficiency and quality can be assessed by various criteria and parameters, such as placement rate of graduates, and the unemployment rate regularly announced by the Ministry of Labour, Social Affairs and Family, SR. The fact that STU belongs to the universities with the lowest unemployment rate is justified by the education quality and interest of social practice in the STU faculties' graduates.

Tab. No.3: Number of Faculty graduates in the academic years 2006/07 and 2007/08

	Ing/M.	Bc.	PhD.	Total
2006/2007	412	695	20	1127
2007/2008	547	687	32	1266

The aim of the educational process is the training of graduates for their future profession. Its efficiency is measured by various methods, the most important of which is the method of feedback mapping the students' opinions regarding the study contents, activities of the education process implementation, study environment and teaching strategies. Besides this tool of education quality improvement, the Faculty carries out a survey regarding the students' satisfaction with the aim to identify weaknesses in the education process, teaching strategies, as well as administration and organisation.

The Faculty management analysed the results of the questionnaire and recently has introduced measures to eliminate the imperfections. This act justified the acceptance of students' opinions and consequently motivated their involvement in further inquiries. Though there was the option of responding to the questionnaire electronically, only 3% of part-time and full-time students used it, which the Faculty management does not find satisfactory.

SOCIAL MATTERS

Accommodation and board are provided for students in the Student Hostel of M. Uher and the adjacent cafeteria and snack bars. Students appreciate mainly the quite high standard of comfort including free Internet connection, as well as availability of sports facilities such as the fitness centre, gym, indoor swimming pool, tennis courts, and softball and baseball fields directly on the campus.

Besides the above-mentioned facilities, students can take advantage of social scholarships and other bonuses such as the ones for study achievements and motivational, study loans and consultancy in the Career centre. All this is considered when designing the time schedule, length of a training unit, arrangements of subjects, administrating the student agenda via AIS, PC connection, medical care and the possibility of arranging one's matters in the Registrar's and Academic library on Saturdays, etc.

As amended by law, the social system includes both enforceable and non-enforceable scholarships provided within the framework defined by the Act on Universities or internal University and Faculty legislation.

Authorized by Ing. Jana Štefánková

STUDY PROGRAMMES

Bachelor programmes (Bc.)

Applied Informatics and Automation in Industry

Technical Materials

Non-Metallic Materials

Manufacturing Equipment and Systems

Computer Aided Production Technologies

Production Technologies

Industrial Management

Personnel Policy in Industrial Plant

Quality of Production

Environmental Engineering

Occupational Health and Safety

Teacher Training of Practical Subjects in Technical Majors Mechatronics of Manufacturing Equipment and Systems

Master programmes (M/Ing.)

Process Automation and ICT Implementation in Processes

Technical Materials

Non-metallic Materials

Manufacturing Equipment and Systems

Machining and Assembly

Computer Aided Design and Production

Forming

Welding and Joining Materials

Engineering of Coordination and Inspection in Welding

Industrial and Art Casting

Powder Metallurgy

Surface Engineering

Industrial Management

Quality of Production Engineering

Environmental and Safety Engineering

Teacher Training of Technical Vocational Subjects

Postgraduate programmes (PhD.)

Technical Materials

Industrial Management

Integrated Safety

Didactics of Technical Vocational Subjects

Mechanical Engineering Technologies and Materials

Process Automation and ICT Implementation in Processes

GRADUATE PROFILE

BACHELOR PROGRAMMES (Bc.)

Applied Informatics and Automation in Industry

The graduate of this major will have deep knowledge of automation and informatics and will be able to implement it in computer-aided systems. Knowledge and skills in the field of machine technology, automation and ICT implementation in processes as well as fundamentals of diagnosing, collecting, processing and transferring data, along with the experience in programming, computer modelling and simulation, and operation of the automatic measuring, control and information systems, all contribute to the graduate's ability to solve problems regarding the implementation and utilisation of computational and automation technology. The graduate will successfully operate in the jobs connected with the implementation, operation and maintenance of control and information systems for technological processes control and data processing in various fields of industry.

Technical Materials

The graduate of this major will have deep knowledge of basic kinds, properties and utilisation of technical materials. S/he will gain knowledge on production and processing technologies such as welding, forming, machining, casting, heat-hardening and surface-finishing, along with the knowledge of work organisation and safety, informatics and management of industrial plant. The graduate will be able to identify and evaluate mechanical and technological properties of materials, and also operate the devices used in defectoscopic tests. S/he will successfully perform in industrial plants, particularly in the field of materials production and processing, as well as the fields of servicing, maintenance, purchase, sale and quality control.

Non-Metallic Materials

The graduate will understand production, testing, processing, selection, exploitation and degradation of non-metallic materials such as plastics, ceramics, glass and rubber, as well as relationships between the structure and properties of non-metallic materials. He will gain knowledge of machine technology disciplines, information and automation systems. He will be able to specify, design and implement the methods and devices used in mechanic and defectoscopic tests of materials.

The graduate will successfully operate traditional and modern technologies (essential for the production and processing on non-metallic materials) in the field of material's quality control, purchase, sales and servicing, and also maintenance in the industrial plant oriented on the non-metallic materials' production and processing.

Production Devices and Systems

The graduate of this major will understand machine technologies and tools, and have the knowledge of fundamentals of plant economy, management and marketing. This will enable him to solve problems in the field of technical materials and their properties, as well as machine mechanics. He will be prepared either for the Master degree study programme of production devices and systems, or for postgraduate degree in the same field, as well as for entering the job

market. The graduate will design automated production systems and devices, work as a technologist or entrepreneur in engineering services and various production sections.

Computer-Aided Production Technologies

The graduate will be able to perform the job of a production technologist able to operate computational technology CAx systems and Cax technologies used in production preparation and control. The graduate will be able to prepare technical documentation and construct and design programs for CNC production machine tools, model complex 3D products and simulate preparation of their production. The graduate is also able to implement and operate production and technological systems in a position of a CAD/CAM technologist, constructor of production tools and a programmer of NC technology using appropriate computer systems and software.

Production Technologies

The graduate will understand theoretical and practical issues in production technologies and systems. He will be able to solve creatively the tasks in the field of production, seek new progressive technology procedures in the production of parts and technology units, using modern technology devices and information systems. He will be prepared either to continue his study within the Master degree study programme, or to enter the job market as a technologist or a team member in various areas of industry in both private and public sectors.

Industrial Management

The graduate will understand social and technical systems integrating human resources, information, materials, devices and processes within complex life cycle of products and services. He will possess fundamental knowledge of natural sciences, technical, technological and humane disciplines, as well as knowledge of informatics and specific knowledge of industrial engineering oriented on plant management, economy, production management, marketing, accounting etc., with emphasis on practical application of the above mentioned knowledge. He will be able to apply the acquired knowledge and skills in practice, mainly as a team-leader or team-member in the middle management. He will also be able to set and run small businesses or companies.

Personnel Policy in Industrial Plant

The graduate will understand the strategy of personnel management and its connection with theory and practice of market mechanics as well as related social and economic development processes in organisations and entrepreneurial subjects. The set of knowledge and skills will create a supposition for successful performance in managerial practice and creative management of human resources. The knowledge pool will also comprise solid computer literacy and the ability to individually create or utilise foreign databases. The graduate will successfully perform as a personnel manager or finance manager in small and medium-sized companies, and a member of middle management of larger companies, agencies as well as in both governmental/non-governmental and profit/non-profit organisations.

Production Quality

The graduate will understand the issues of quality management in industrial plants and quality management systems, application of basic tools and techniques of quality management, including statistical methods. He will gain detailed knowledge of quality management, basic knowledge of natural science disciplines (mathematics, physics), machine technologies and management of machine production. General knowledge of industrial plant management together with basic computer literacy will create a supposition of successful communication with research staff as well as management and organisation structures of staff in economic organisations. He will be able to collaborate in operating quality management systems and process related documentation and other regulation documents. He will be employed as a manager responsible for quality assurance in individual structures of industrial plant, or an expert in quality management. He can also utilise his knowledge of machine technologies in technical inspection of mechanical engineering plants.

Environmental Engineering

The graduate will gain theoretical knowledge in the field of technical and natural sciences as a basis for solving specialised environmental tasks, focusing on protection. He will master the fundamentals of industrial technologies and their impact on environment. He will also gain theoretical and practical knowledge of environmental protection from adverse influence of engineering production, technological procedures and other potential sources of negative environmental factors. He will also gain knowledge of monitoring the environment, handling wastes, toxicology, safety and environmental management. He will also get insight into the jurisdiction of environmental science. The graduate will be either prepared to continue his study for the master degree, or perform as an expert in middle management.

Work Safety and Health Protection

The graduate will gain theoretical knowledge of natural, economic and social sciences. During the study, he will develop the knowledge of technical sciences with orientation on safety and reliability of production technologies, safety of work environment and environmental protection. He will also learn how to assess safety of technical systems, production technologies, analysis of failures and disasters, risk identification and quantification, suggestion of preventive measures aimed at the staff and safety improvement and health protection. The graduate will also gain knowledge in the field of legislative tools for managing dangerous activities. testifying and certification of materials and products and application of safety and technological procedures and parameters of materials. The graduate will work as a safety officer in industry, organisations, governmental bodies, insurance companies, or an advisor/consultant in the engineering organisations dealing with designing and assessing safety systems. He will successfully contribute to designing a safe and healthy working environment.

Teaching Practical Subjects in Engineering Majors

The graduate will get familiar with organisational characteristics of educational systems and institutional rules of schools as well as the basic structure of technology and material disciplines, principles of designing, implementation

and evaluation of teaching process. He will be able to teach practical professional and vocational subjects aimed mostly at developing skills in technical subjects in secondary technical and vocational schools, or work as a manager providing practical training in professional education, or an instructor in extra-curricular activities. The graduate will be prepared to either continue his study for the master degree, or enter the job market.

Mechatronics of Technological Devices and Systems

The graduate of this major will has mastered the fundamentals of mechanical systems and managed to solve problems in mechatronics' implementation. He has gained knowledge of mechanical and electrotechnical components and modules, management theories and informatics in application to modern technological systems and devices. He will be familiar with modern products supporting the implementation of engineering operations with controlling algorithms based on methods of artificial intelligence in technological processes.

The graduate will successfully work in designing, manufacturing, controlling, running and maintaining mechatronic systems and devices integrating precise mechanics, electro-technology and electronics with an intelligent computer control, such as CNC machines, robots, technological automatic machines and assembly machines, mobile machines, means of transport and manipulation, devices, specialised technology as well as micro-electro-mechanical systems (MEMS). He will also perform in the fields of monitoring, diagnostics, and visualisation, automated evaluation of production quality and control of technological processes.

MASTER PROGRAMMES (MSc., Eng.)

Automation and ICT Implementation in Processes

The graduate will gain deep knowledge of theoretical and applied sciences necessary to understand the laws of physical, technological, information, automation and control processes. He will master control systems of technological and production processes so as to be able to design their hardware, algorithmic and software solutions. He will be familiar with the systems of information collecting, processing and transfer, from process up to managerial control level. He will successfully work in the fields of development, design and utilisation of automated control systems in industrial plants, in project and consultancy institutions designing control and information systems, as well as in schools and educational institutions.

Technical Materials

The graduate will have deep knowledge of the types kinds, properties and utilisation of a wide spectrum of conventional and advanced technical materials. He will master experimental study methods of evaluating materials structure and properties, and understand relations between chemical composition, production technology and structure, as well as technological and utility properties of materials. With the knowledge of production, processing technology, testing, operational diagnostics, and degradation and recycling of materials, he will be qualified to assess the impact the type

and parameters of processing technology have on mechanical, technological and utility properties of semi-products and products. He will be able to design material solutions for various sectors for engineering practice. The graduate will successfully operate in industrial plants, particularly in the field of materials production and processing to semi-products and products, or the field of materials research and development.

Non-Metallic Materials

The graduate will gain complete bachelor degree education in the field of non-metallic materials such as primary plastics, ceramics and glass. He will understand production, technological process, examination, exploitation and degradation of non-metallic materials such as plastics, ceramics, glass, rubber and some special kinds of materials, relation between the structure and properties of the above mentioned materials, as well as the inspection of their quality and operational diagnostics. He will have knowledge of production, processing, quality control, application, recycling and secondary processing of the abovementioned materials, methods, techniques and means of properties analysis, selection and application of non-metallic materials.

He will work as a team leader or team member in the field of materials engineering (research, development, production or implementation of non-metallic materials), project leader, entrepreneur or a manager in related fields of industrial production.

Production Devices and Systems

The graduate will gain a complete bachelor degree education in the field of production technology and materials, production processes and production systems. He will understand the function of machines and constructions of production equipment. He will have knowledge in the field of production machines and materials used in the process of manufacturing. He will be able to solve the tasks of machines' mechanics, mechanisation and automation. He will recognize the social, moral, legal and economic impacts of his profession. He will be prepared either to continue his study in post-graduate degree, building his scientific career in the wide scale of production technology and systems, and implementing advanced methods and techniques of design and development, or to enter the job market immediately as an expert in production, project and development organisations in solving conceptual technical and organisational tasks of complex automation of production processes.

Machining and Assembly

The graduate will gain complete bachelor degree education in production of machinery products and implementation of the latest technologies in the field of chip and chipless machining and products assembly in particular. He will understand the subject, from the material origin up to the change of its properties after machining, and to the phase of its assembly into larger units. He will have deep theoretical knowledge in the field of production technologies (machining, welding, forming, foundry and assembly), materials and tools, the application of production machines and equipment supported by the knowledge of CAx technologies. He will perform as a production technologist, tool technologist, CNC technologist and assembly technologist, as well

as a leader in the sectors of technological preparation of production.

Computer-Aided Design and Production

The graduates will master the complex field of CA systems and CA technologies used in production preparation and control. He will be able to meet special requirements and design specialised applications, form and lead the teams implementing engineering computer analyses, simulations of production processes, design computer-aided production units, lead the teams using computer technology in the field of technical preparation of production, or work as managers and entrepreneurs in the field computational technology and CA systems' implementation in production support.

Forming

The graduate will gain complete university education in the major of Production Technologies with the orientation on Technology of Forming and its implementation in manufacturing practice. He will understand fundamentals of various production technologies, processes of metallic materials' transformation, functions of forming tools and forming machines, as well as application of mechanisation and automation in forming.

He will be able to design technological procedures and design forming tools, deal with work safety, utilise calculations of force and energetic strain parameters and control calculations for the construction of individual parts of tools, implement the knowledge of utility properties of forming machines, and solve automation in forming.

He will successfully perform as a production manager in the fields of technology development and manufacturing practice in various sectors of automobile, consuming, machine and electro-technical industry, as well as in private sector.

Welding and Joining Materials

The graduate will be able to assess the choice of materials and modern progressive products made by welding, cutting and other joining technologies using computational technology and simulations of thermal processes with the aim to minimise degradation of the materials used, defend safety aspects and provide expertise for economical assessment of a product.

He will successfully perform in top production, and research, atengineering universities both at home and abroad and in managerial positions requiring the knowledge of materials and their further processing.

Engineering of Co-ordination and Inspection in Welding

The graduate will receive university education in the field of theory of welding, designing constructions, technological processes and equipment, engineering manufacturing applications and quality assurance in welding and related processes. He will also master the knowledge of European and national standards, safety regulations and engineering applications in production, along with deep theoretical knowledge in the field of technological processes, welding, standards development, certification and inspection, enabling him to co-ordinate working teams with the aim to assure production quality in engineering projects and bear responsibility for complex solutions. The graduate will have

a chance to win a certificate of the European Welding Federation (EWF) and International Institute of Welding (IIW), currently recognised within EU and possibly all over the world, in the later stage. He will work as a team manager or a team leader in various sectors of industry, and in staff education and training.

Industrial and Art Foundry

The graduate will gain complex knowledge of technological processes of liquid metal preparation, production of moulds for industrial and art castings with high-precision and high-quality surface. He will have theoretical knowledge of metallurgy of casting materials, processes, design of castings' form, forms manufacturing, and apertures of castings. He will be able to work with computational technology, software for simulation of casting processes, computer-aided design of castings' shape, prediction of castings' properties and in the phase of production preparation. He will autonomously design technological procedures and control production in foundry. He will successfully perform in public and private sectors, research, as well as in construction and project workplaces.

Powder Metallurgy

The graduate will gain complete engineering education in the field of production of metal powder materials and technologies of their processing to compact parts, technological procedures, computer simulation of sintering processes, construction of tools for powder metallurgy technologies, chemical and thermal treatment of such parts for various fields of application and diagnostics of their defects. He will understand the basic principles of production of metal powder materials and technologies of their further processing, enabling the utilisation of the whole scale of progressive solutions based on the latest scientific achievements. He will have developed computer literacy and deep theoretical and practical knowledge of interdisciplinary metallurgy. He will be capable of finding and presenting his own solutions to the tasks of engineering practice and research.

Engineering of Surfaces

The graduate will gain complete engineering education in classical and specialised technologies of formation of functional surfaces of components with the aim of increasing the lifecycle and aesthetic features of the parts produced. He will understand physical and chemical principles of surface engineering technologies such as galvanisation, chemical and heat treatment, hard surfacing, various depositions (PVD, CVD) as well as methods of quality control of layers. His expertise will enable him to select appropriate technologies for formation of surfaces with required parameters, to optimise technological processes and to simulate thermal processes, all with the aim to improve the surface properties and base material – deposited layer interface, as well as to assess tribological and other aspects of functional surfaces in the conditions of engineering practice.

Industrial Management

The graduate will gain complete university education in the field, focused on planning, designing, implementing and managing production systems, as well as creativity development in engineering projects or processes. He will have

deep knowledge of natural sciences, technical, technological disciplines and humanities, along with expertise in industrial management, company management, and production management and plant economy, and theoretical knowledge of operation and system analysis, logistics, personnel, investment, finance, innovation, information management, etc.

The graduate will be ready either to continue his study in a postgraduate degree and develop his research career in a wide scale of industrial management while implementing progressive methods and techniques, or to enter the job market immediately. He will successfully perform as a middle or top manager in organisations within various sectors of industry requiring the synergy of managerial, economical, technical and soft skills and knowledge.

Engineering of Production Quality

The graduate will understand basic technological and managerial issues of an industrial plant and servicing company, as well as designing, maintaining and implementing quality management systems. He will master the subject matter of international standards for quality management and intellectual property. He will have deep knowledge of natural sciences and specific areas of plant management, particularly in designing maintaining, implementing and improving quality management systems, total quality management (TQM) approaches, as well as modern tools and methods of quality management. He will be able to develop and implement quality management systems.

Environmental and Safety Engineering

The graduate will gain knowledge in the field of environmental and safety risks management. He will be able to control the activities within work and environment safety, carry out risk analysis and related documentation, and propose system measures to increase the efficiency of control systems of integrated safety.

The graduate will be successful in administration, labour inspectorates, technical inspection and environmental inspection, and also in the positions of a leader and consultant in engineering organisations dealing with designing and assessing the safety systems in industry, insurance companies and manufacturing.

Teaching Technical Professional Subjects

The graduate will gain complex university education in the field, with orientation on teaching related technical professional subjects in secondary and tertiary educational institutions. He will be able to participate in the development of methodology materials for practice, and will be aware of social, moral, legal and economical professional issues. The graduate will be ready either to continue his study in post-graduate degree, or to enter the job market immediately, particularly as a teacher in secondary technical and vocational schools, methodology instructor and expert in administration and educational institutions in the field of specialised engineering education and training.

POSTGRADUATE PROGRAMMES (PhD.)

Technical Materials

The graduate has mastered research methods, process-solving procedures in the field of technical materials as well as the principles of individual and team research. He will grasp the philosophy of material research-development-production-utilisation-recycling, and legal and environmental aspects of new material products. He will be prepared to build his own research career, or enter the job market immediately as a researcher in research institutes, universities and large industrial plants in the sector of materials manufacturing and technologies.

Industrial Management

The graduate will gain complex university education in Industrial Management oriented to knowledge development in the field of managerial activities, tools and methods applied in various types of companies. He has mastered research and development methods for gaining knowledge autonomously. He will be able to develop creative methods in the field of industrial management and design, provide social, technical and managerial systems in various types of companies, accelerate the development of innovative processes, and apply various management improvement approaches.

The graduate will be successful in the top managerial positions in various types of organisations, consulting companies and universities, in both research and teaching careers.

Integrated Safety

The graduate will master the research and experimental methods within safety and security administration systems and safe working environment. He will be able to develop theory in accordance with the requirements of practice, focusing on technical and humane aspects of the man-machine-environment system. He will be able to carry out scientific research in teams, bringing his own solutions to complex tasks of theory and practice, risk management, safe working environments, fire protection and other related sectors.

The graduate will operate as a highly qualified expert in institutions of base and applied research, a researcher and teacher in universities, an advisor and consultant in the engineering organisations dealing with designing and assessing safety systems, as well as in insurance companies.

Didactics of Technical Professional Subjects

The graduate is capable of lecturing in university, identifying, analysing and solving demanding empirical and conceptual tasks, as well as planning, organising and evaluating the research tasks in the field of Major Didactics. He will successfully perform as a teacher in teacher-training faculties, concept and programme fellow in governmental administration and education, as well as research and development fellow in research and development institutions.

Machine Technologies and Materials

The graduate will gain wide theoretical knowledge in the field of metallurgy, progressive technologies of chipless and chip processing of materials, computer support and appli-

cations of CA technological systems, simulations and automation of technological processes, as well as possibilities of their application in companies, and qualitative, technical, economical and environmental aspects of various types of production.

The graduate will master scientific methods of research and development in production processes, particularly in technologies of machining, welding, forming, foundry, machine metrology, assembly, powder metallurgy and CA technologies. The graduate will find jobs in research and development institutes in managerial positions in the field of sophisticated production technologies, and in engineering universities. He will be able to autonomously articulate and solve research tasks and lead a research team.

Automation and ICT Implementation in Processes

The graduate will have expertise in modern fields of automation and control processes utilising information technologies in the development of new methods, algorithms and procedures. Depending on the choice of elective subjects, he can specialise in the control of complex systems utilising information technologies, quality and reliability assessment of control systems software, utilisation of multimedia and virtual reality in management, or in intelligent control methods with elements of artificial intelligence, i.e. application of information technologies in automated control systems. He will grasp the relations of automation and control with related natural sciences, as well as the physical nature of original solutions implemented in the field of automated and automatic control in the field of information technologies, experiment preparation and control, modelling, simulation, visualisation and prognostics. He can successfully perform as a development researcher in top scientific, research and academic institutions in both the domestic and foreign job markets.

SCIENTIFIC PROFILE OF THE FACULTY

The research orientation of the STU Faculty of Materials Science and Technology corresponds with its pedagogic profile and the long-term STU orientation. As amended by section 30, paragraph 1, subparagraph c of Act 131/2002 of the Coll. on Universities and as amended by other acts, the Faculty Scientific Board evaluates the Faculty's activity in the field of science and technology once a year.

Orientation of the research

The scientific and research activity of STU MTF research staff is carried out in the following forms:

- research and pedagogical projects within VEGA and KEGA grant agencies
- projects solved within international programmes
- projects of international collaboration
- projects of applied research and development
- projects of contractual research and development.

The research content is oriented to the following fields:

 materials research with a focus on the research, development and technological processing of the basic kinds of technical materials,

- research and development of new technologies of industrial production oriented particularly on the technological processing of modern technical materials and ecologically clean products,
- process identification, automation and control, as well as information support for technological, production and organization systems,
- research and verification of managerial control principles and their organization structures,
- quality control and certification of processes and products,
- safety and reliability of technological equipment and systems, while emphasising the analysis methods and systems synthesis,
- humanities and social sciences with emphasis on the improvement and innovation of the teaching methods and forms in the training of technical intelligentsia.

Established in 2002, the Agency for Science and Technology Support manages the governmental research programmes involving the Faculty researchers.

INSTITUTIONAL MEMBERSHIP OF MTF

The Faculty of Materials Science and Technology, STU, is a member of:

- Automobile Cluster
- · Slovak Society for Quality
- Slovak Chamber of Commerce and Industry
- Internationale Gesellschaft fur Ingenierpädagogik IGIP
- · Association of Industrial Ecology in Slovakia
- Slovak Natural Gas and Crude Oil Union

AWARDS 2008

Granting the Slovak Republic Quality Award 2008

On 3 November 2008, 5:00 pm, in the Mirror hall of the Primatial Palace, Ivan Gašparovič, President of the Slovak Republic, granted the STU MTF representatives the "Awarded Finalist" prize within the SR National Quality Award 2008 in the category C3 – other organisations of the public sector. The National Quality Award is the premier award an organisation can achieve in the field of quality management systems. The prestigious competition is recognized as a benchmarking tool both in Slovakia and abroad. As Dr. Ing. Oliver Moravčík stated:

This prestigious competition presented the top challenge in the field for the selected team of key middle and top management Faculty staff. Elaborating the analytical report, we frequently recognised the actual situation in particular fields of the Faculty activities, which automatically made us reflect and plan corrective measures or seek new solutions. The main contribution of the competition for our institution is evidently in the possibility to discuss and defend our solutions with the commission on-site. Each independent opinion of experienced experts provides an impulse for our systematic and continuous improvement in all the fields of our activity.

Karol Balog, Professor of the Year 2008 in STU MTF Prof. Ing. Karol Balog, PhD. of STU MTF was granted the "Professor of the Year 2008" award by Professor Vladimír Báleš, his magnificence and STU Rector.



MTF students awarded by STU rector

On the occasion of the Student Day, the STU rector granted the "Student of the Year" award to the following MTF students: L'ubomír Šmid – for outstanding achievements within the Bachelor degree, Bc. Marián Samák - for outstanding achievements within the Master degree, Ing. Peter Szabófor outstanding achievements within the final year of PhD degree, Bc. Eva Zibrínová - for considerable and beneficial activity for STU and Bc.Zuzana Kelemenová - for considerable and beneficial activity for STU.

Special Bounty of the Literary Fund for the best projects within the Student Research Conference 2008 Upon the proposal of the Faculty dean, the Section for scientific and professional literature and computer programs of the Literary Fund, in its meeting of 25 September 2008, awarded the following participants for the best contributions to the Student Research Conference in the academic year 2007/08: Ján Líška, Ondrej Herchl, Alexandra Görtlerová, Miroslav Valíčková and Martina Homolová.

Awarded theses

During the European Quality Week 3 – 7 November, an international conference by the title "Accountability of the organisations and sustainable development" was held in Žilina on 4 – 5 November 2008.

Ing. Michal Marton of MTF was awarded the prize for the best Master thesis in the field of quality management and total quality management (TQM): Proposal of the DOE application methodology in a company.

Ing. Tomáš Boleman of MTF won the Prize of Dexia Bank for the best Master thesis: Utilising water flows for alternative energy and environment. On 10th May 2008, prof. Ing. Karol Balog, PhD. was awarded the international prize *Honorary Medal* of the Czech National Fire Brigade.

On 13th October 2008, prof. Ing. Karol Balog, PhD. took The Red Cock Medal - Czech National Award for the public fire protection support.

SCHEDULE OF MTF STU ACTIVITIES IN 2008

10 January 2008

New-year's meeting of the MTF staff and friends

15 January 2008

Ivan Gašparovič, President of the Slovak Republic, appoints new professors: Jozef Janovec in the major of Materials and Ivan Baránek in the major of Machine Technologies and Materials

18 January 2008

Univ.Prof.Dipl.-Ing. Dr.tech.Dr.mult.h.c. Branko Katalinič of Technical University of Vienna visits MTF with the aim to negotiate the possibility of organising DAAAM 2008 World Symposium in Trnava in co-operation with STU MTF

25 January 2008

Open-Door Day in STU MTF in Trnava

7 February 2008

Conference on Environmental Aspects of Fires and Failures

12 February 2008

Launch of the electronic admission application

14 February 2008

Seminar: Slovak language in scientific and administrative style

13-15 February 2008

STU MTF negotiations with BEKAERT/Belgium

27 February 2008

MTF participates in the "Graduate and Practice" Fair

28-29 February 2008

Visit from the partnering FOI Varazdin University of Zagreb

1 March 2008

Reception of Prof. Ing. Jozef Bača CSc. at the occasion of 50 anniversary of his joining STU

4-5 March 2008

MTF in the "Slovak Tertiary Education Presentation 2008" in Žilina

10-20 March 2008

A questionnaire inquiry aimed at the STU MTF staff's satisfaction

12-13 March 2008

"Science closer to students" – a meeting with secondary school students at MTF

18 March 2008

STU Rector and Chair of STU Academic Senate visit STU MTF

27 March 2008

Dies iovis occursus – a Thursday afternoon session on Technocratic government of society

27 March 2008

Workshop on information and communication systems and technologies in the university environment

1 April 2008

12th ESAB seminar on welding; with international participa-

1 April 2008

A company of Mühlbauer, Germany, visits STU MTF

4 April 2008

MTF Day – annual meeting of the MTF staff at the occasion of the Teacher Day

4 April 2008

Dr.h.c. Prof. Ing. Anton Čižmár, CSc., Rector of Technical University of Košice, appoints Peter Košťál an associate professor. His Magnificence Prof. Ing. Vladimír Báleš, DrSc., Rector of Slovak University of Technology, appoints Mária Dománková associate professor

4 April 2008

Faculty Dean congratulates Prof. Dr. Ludwig Schultz of Dresden, the newly appointed IFW director

10 April 2008

Sun Ray 2 Platform at STU MTF- piloting operation launched

11 April 2008

Students of Vocational schools of Trnava visit the Faculty within the science popularisation scheme

12-18 April 2008

A visit from the Izhevsk State Technical University

16 April 2008

A visit of the BEKAERT technical manager at STU MTF

23 April 2008

Promotion of BEKAERT Company for MTF students in Trnava

24 April 2008

Dies iovis occursus – a Thursday afternoon session devoted to Albert Einstein – a scientist, personality and legend

29 April 2008

Municipal television of Trnava presents a discussion forum with MTF representatives

2 May 2008

NONSTOP - football match

18-20 May 2008

International Doctoral Seminar 2008

22 May 2008

Dies iovis occursus – a Thursday afternoon session on the topic of Technical activity and law

22-23 May 2008

A meeting of MTF management and staff

26-30 May 2008

"Lecture series on the Ion Beam Research in Materials Science", a project of the STU MTF Institute of Materials in co-operation with the Slovak Physical Society a Forschungszentrum, Rossendorf, Germany

29 May 2008

Final meeting of partners and participants of the project "Establishing a technology and consultancy laboratory for the solar energy utilisation and subsequent promotion", carried out within the initiative programme of INTERREG IIIA AT-SR Association

3 June 2008

A memorandum on co-operation of STU MTF and the city of Dubnica nad Váhom signed

6 June 2008

MTF presented in the Hospodárske noviny daily

10 June 2008

Seminar - Enhancing the preparation of project managers

17 June 2008

A visit of the scientists Prof. Viktor K. Dragunov, DrSc. of the Moscow Power Institute – Technical University in Moscow, and Prof. Anatolij Kajdalov, DrSc. of the Institute of Electric Welding of E.O Paton in Kiev

27 June 2008

TEACHER'S CUP 2008 – 8th year of the Slovak and Czech tennis tournament of the university teaching and administration staff

7-9 July 2008

Graduation ceremony in Trnava

10 July 2008

Visit of associate professor Valentina Gečevska, PhD., vice-dean for science and international collaboration of the University of ss Cyril and Method in Skopje (Macedonia), Faculty of Mechanical Engineering, to MTF

11 July 2008

External assessment of CAF model within the "CAF method and self-evaluation preparation" project

25-30 July 2008

Public discussion regarding the architectonical studies of STU MTF

18-20 August 2008

Enrolment of the first-year students

27 August 2008

On-site visit of the assessment team for awarding the Slovak National Quality Award 2008

28 August 2008

Payment of motivation scholarship to 106 participants of the Student Research Conference 2008

8-11 September 2008

2nd Summer Universiada - the STU MTF baseball team wins the 1st place, and the STU MTF softball women team wins the 2nd place

12 September 2008

A visit of Prof. Petru Berce, PhD., of the Technical University in Cluj-Napoca, Romania, dean of the faculty of mechanical Engineering University, and Prof. Dr. Dr.h.c. Ing. Gyenge Csaba of the Institute of Production Engineering of the same University to MTF

19 September 2008

Sports Day of the STU MTF staff v Trnava

22 September 2008

Ceremony of the granting of the degree of doctor honoris causa of the Slovak University of technology in Bratislava to the academician B. J. Paton

25 September 2008

Seminar: "New Methods and Procedures in Metallography and Materialography"

2 October 2008

STU MTF becomes one of the participants in FP-7, the VII framework project by the title "Improving the Gender Diversity Management in Materials Research Institutions".

3 October 2008

STU MTF – an awarded finalist of the Slovak National Quality Award 2008

8 October 2008

An agreement signed between the Institute of Materials and Machine Mechanics of the Slovak Academy of Science and STU MTF on establishing a common research laboratory of advanced metallic materials and composites

9 October 2008

MTF at Akadémia 2008, the education fair

12 October 2008

34th year of the Small Carpathians Marathon (MKM), including 16th year of the Slovak Universities Championship in marathon

13 October 2008

Meeting of the Dean with the staff

16 October 2008

Dies iovis occursus – a Thursday afternoon session on the topic of Fungi, mycology and mycologists

16 October 2008

A visit of Dr. Ir. Peter Backx and Freddy Aps, representatives of BEKAERT, Belgium

20 October 2008

Dr. rer. nat. Andreas Kolitsch, director of the Ion Centre of the Research Institute, Dressden-Rossendorf, a visiting professor of STU MTF

21-24 October 2008

MTF participates in GAUDEAMUS 2008 Fair

22-25 October 2008

STU MTF - co-organiser of DAAAM - Danube Adria Association for Automation and Manufacturing

27 October 2008

His Magnificence Vladimír Báleš, STU Rector, appoints Mária Kapustová and Viliam Cibulka associate professors of MTF

28 October 2008

RADOM 2008, a workshop of PhD students in Trnava

3 November 2008

Matriculation ceremony in Dubnica nad Váhom

3 November 2008

Ceremony for granting the Slovak National Quality Award 2008 in Category C3 – other organisations of public sector, by Ivan Gašparovič, the President of the Slovak Republic

5 November 2008

Matriculation ceremony in Komárno

6 November 2008

Matriculation ceremony in Brezno

6 November 2008

Workshop of the Department of Forming and the Department of Applied Mechanics with the staff of ZF SACHS AG Schweinfurt, Germany and ZF SACHS, Slovakia, a.s.

10 November 2008

A meeting of the STU MTF students with the representatives of the Accreditation Commission

10-11 November 2008

MTF participates in the Days of Professional Consultancy for secondary school students

12-13 November 2008

Matriculation ceremony in Trnava

19 November 2008

Breakfast with the BEKAERT Company for the MTF students

19 November 2008

A meeting of the MTF management with students

20-21 NOVEMBER 2008

Elections to the Academic Senate

21 November 2008

Granting a decree to the visiting Professor Dr. Andreas Kolitsch, the head of the Ion and Plasma Technologies Centre, Research Centre, Dressden-Rossendorf.

24 November 2008

An outside session of the STU MTF Dean's collegium

27 November 2008

Detached workplace in Komárno celebrates the 15th anniversary of its activity

27 November 2008

The 1st meeting of the "Risk Analysis" project team

11 December 2008

STU MTF Delegation in the Republic of Korea and Japan

11 December 2008

Dies iovis occursus – a Thursday afternoon session on the topic "The truth about the occupation in 1968"

12 December 2008

Botanic Garden - opening ceremony

16 December 2008

STU MTF succeeds in the competition for Excellence Centres

- 1 Excellence Centre of 5-axis machining in the Institute of Production Technologies
- 2 Centre for the development and application of progressive diagnostic methods in processing metallic and non-metallic materials in the Institute of Materials

17 December 2008

Graduation ceremony of the PhD graduates

18 December 2008

Prof. Ing. Karol Balog, PhD. is granted the prestigious "Professor of the Year 2008" award by His Magnificence Professor Vladimír Báleš, STU Rector

22 December 2008

Dean's visit to Dubnica nad Váhom

23 December 2008

Negotiations with the Bang Joo Electronics Slovakia Comp.

FOREIGN VISITORS TO THE FACULTY

Andrea Runow • Germany IFW Dresden

Dr. h. c. Dr. Ing. Peter Joehnk • Germany FZD Rossendorf

Ing. Andreas Kolitsch • Germany FZD Rossendorf

prof. Miroslaw Kwiesielewicz • Poland Univerzita Gdaňsk

prof. Volkmar Richter • Germany FH Kothen

Ing. Jürgen Eckert • Germany IFW Dresden

Ing. Frederike Wesserscheidt • Germany IFW Dresden

prof. Rolf Pfrengle • Germany IFW Dresden

prof. Dr. Igor Drstvenšek • Slovenia TU Maribor

prof. Dr. Ing. Branko Katalinič • Austria TU Viedeň

prof. Neven Vrček • Croatia Univerzita Zagreb

prof. Blaženka Divjak • Croatia Univerzita Zagreb

prof. Miroslav Bača • Croatia Univerzita Zagreb

prof. Tihomir Hunjak • Croatia Univerzita Zagreb Domnita Florina Fratila • Romania TU Cluj - Napoca

Jurij Michailov, prof. Ing. DrSc. • Russia ITU Iževsk

Alexander Balitsky • Russia ITU Iževsk

Wetzig Klaus, prof. • Germany IFW Dresden

Jürgen Krause, prof. • Germany Fachhochschule

Nordhausen

MTF STU FOREIGN PARTNERS

AUSTRIA

Graz: Berufspädagogische Akademie des Bundesi

BELGIUM

Lieven: KaHo Sint-Lieven

CZECH REPUBLIC

Prague: Czech Technical University in Prague, Institute

of Radiotechnology and Electronics, Academy

of Science, Czech Republic

Olomouc: Palacky University in Olomouc

Ostrava: Faculty of Mechanical Engineering, Technical

University

FRANCE

Deuil La Barre: Abanico Sarl

GERMANY

Berlin: ISCO AG

Cottbus: Brandeburg Technical University

Dresden: Forschungszentrum Dresden/Rossendorf

IFW

Technische Universität Dresden

Koethen: Fachhochschule Anhalt, Wirtschaft und

Gestaltung, Bernburg, Dessau,

Hochschule Anhalt, Anhalt University of Applied

Sciences

CROATIA

Zagreb: Faculty of Organisation and Informatics of

Zagreb University

HUNGARY

Budapest: Budapest Muszaki és Gazdaságtudományi

Egyetem

Miskolc: Miskolci Egyetem

CHINA

Baotou: Baotou Research Institute of Rare Earths

(BRIRE)

KOREA

Pohang: Pohang University of Technology

POLAND

Gliwice: Silesian Politechnics

Kielce: Kielce University of Technology

ROMANIA

Bucharest: National Institute of Rand for Materials Physics,

Bucharest-Magurele,

Faculty of Physics, University of Bucharest

RUSSIA

Saint Petersburg: Sankt-Peterburskij State Electrotechnical

University

Izhevsk: Sarapulsk Politechnical Institute

Moscow: Moscow Electrical Engineering Institute, Dept.

of Engineering Management

Ufa: Faculty of Applied Informatics and

Robotechnology, UGAT

Faculty of Economics, Management and

Finance, UGAT

SLOVENIA

Ljubljana: Faculty of Mechanical Engineering, University

of Ljubljana

SPAIN

Valencia: Politechnical University of Valencia

UNITED KINGDOM

Coventry: Coventry University



INSTITUTE OF MATERIALS SCIENCE

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http://www.mtf.stuba.sk/generate_page.php?page_id=2834

Institute Departments

- Department of Materials Engineering
- Department of Physics

Staff

Professors: 6
Assoc. Professor: 7
Senior Lecturers: 19
Research Fellows: 7
PhD Students:7



Study programmes

- Engineering Materials
- Non-metallic Materials
- Surface Engineering

Research targets

- vacuum metallurgy, metal refining and solidification
- · powder metallurgy, properties of rapidly solidified particles
- tool steels, creep and/or corrosion resistant steels
- · weldability and surface treatment (boridation) of steels
- · complex metallic alloys and amorphous materials
- · nickel and titanium based alloys
- · biocompatible materials
- physical properties of ceramics, non-metallic composites, plastics, rubbers, fluoride, oxide and chalcogenide special glasses, as well as fluoride and oxide superionics
- · segregation phenomena and grain boundary engineering
- · modelling and simulation of solid structures
- · lead free solders

RESEARCH CHARACTERISTICS

The Institute of Materials Science was established on 1st of January, 2007 joining the former departments into a larger unit achieving an improvement of scientific and research activities as well as of international cooperation.

The Institute is responsible for materials and physics oriented courses at MTF. On bachelor degree, the Institute guarantees study program Materials Engineering, on engineering and doctorate degrees it guarantees study programs Materials Engineering, Processing and Application of Non-metals as well as Surface Engineering of Advanced Materials. Research and expertise activities of the Institute are aimed at crystallization of metals and alloys, tool material and nickel-based alloys, powder metallurgy, bio-compatible materials, stainless steels, steels for power plants, weldability of steels, magnetic materials, thermal treatments and surface modification of materials, complex metallic alloys, grain boundary engineering as well as ceramic and polymer materials. At present, the Institute possesses' 7 laboratories equipped with a number of modern experimental techniques (for example: high resolution transmission electron microscopy Philips CM300, X-ray diffractometer Philips PW 1710, differential scanning calorimeter Perkin Elmer). In areas, research and education, the Institute established intensive cooperation with local and foreign institutes. It became a part of a network of foreign academic and commercial institutes which gives an opportunity for extensive exchange of students and academic staff members of the Institute contributing to dynamic and sustainable professional growth. As the most prestigious academic institutes could be mentioned Leibnitz Institute of Solid State and Materials Research Dresden (Germany), Institute Jožef Stefan, Ljubljana (Slovenia), Vienna University of Technology (Austria), Research Center Dresden-Rossendorf (Germany), Institute of Physics of Materials, Academy of Sciences of the Czech Republic, Brno (Czech Republic), Faculty of Mechanical Engineering, University of Ljubljana (Slovenia) and other Slovak universities and institutes of the Slovak Academy of Sciences. From the list of industrial partners the most recognized are Bekaert SA (Belgium), Böhter - Edelstahl and Branson div. Emerson.

The Institute has long term tradition in cooperation with regional industrial partners as INA Skalica, Ltd., Skalica, VUJE corp., Jaslovské Bohunice, ZF Sachs Slovakia, corp., Trnava, Zlievareň, corp., Trnava, HKS Forge Ltd. Trnava; MANZ, corp. Nové Mesto nad Váhom; SONY Slovakia, Nitra; Samsung Electronics Slovakia, Galanta, Voderady; Faurecia Trnava; PSA Peugeot Citroen, Trnava; Noble International, Ltd. Senica; TRW Steering System Slovakia Ltd., Nové Mesto nad Váhom; Hella Lighting Slovakia, Kočovce; Kinex-KLF, corp., Kysucké Nové Mesto; PSL, corp. Považská Bystrica; EMO, corp. Mochovce; Johns Manville, corp. Trnava; Sauer Danfoss, corp., Považská Bystrica; ŽOS corp., Trnava; PFS, corp., Brezová pod Bradlom; Kompozitum Topoľčany; Fremach, Trnava; Slovalco, corp. Žiar nad Hronom; IMS Kupa, corp. Nováky

INTERNATIONAL PROJECTS

FZD MTF STU (01.01.2007-31.12.2008)

Doc. Ing. Jozef Janovec, DrSc.

Slovakion - Research of cluster structures and nanomaterials

The Faculty of Materials Science and Technology of STU acquired from the Forschungszentrum Dresden-Rosendorf a high-resolution transmission electron microscope PHILIPS CM300 with acceleration voltage of 300 kV, LaB6 cathode, and lateral resolution of 0.14 nm. It enables also nanodiffraction and EDS. After small modifications of the microscope the electron tomography presenting 3D-images of nanoparticles will

also be available. The microscope is unique equipment in Slovakia from the technical parameters point of view. The microscope will be used mainly for the characterization of thin layers, nanolayers, multilayers, interfaces, complicated cluster structures in complex metallic alloys and ceramics, and 3D-nanopartricles of various types. A complex nanoscale analysis of the material possible in the microscope will also extend the state of knowledge about conventional materials (e.g. high-strength low-alloy steels, aluminium and titanium alloys, nickel superalloys).

IFW MTF STU (04.07.2008-31.12.2010)

prof. Ing. Jozef Janovec, DrSc.

Investigation of fine structures in metallic materials using TEM With the intention to improve the investigation of fine metallic structures at the Faculty of Materials Science and Technology of STU, the IFW provided financial resources for purchase ancillary units for TEM (Delta Abrasiment).

COST MP0602 (COST) (05.08.2008-15.05.2011)

Prof. Ing. Jozef Janovec, DrSc.

Preparation and characterisation of lead-free solders

The project is focused on processing and investigation of properties of novel lead-free solders for high-temperature applications. New solders developed in the frame of the project will consist of various combinations of tin, zinc, cobalt, silver, copper and rare earth elements. Thermodynamic and kinetic aspects of soldering will be studied. Phase equilibria and formation of intermetallic phases at the solder/substrate interface will also be investigated.

EUREKA E!3437 (01.01.2005-01.01.2008)

Ing. Mária Hudáková, PhD.

Progressive surfacing of metals

The main and general goal of the project is to improve and optimize surface properties of advanced metallic materials through the physical and chemical deposition of thin and hard layers and their combinations. The efforts leading to the reduction of wear, corrosion, and generally to the prolonging of the service-time of tools and engineering parts is the main driving force for development of suitable surface technologies for the metallic materials.

No. S-13-2005 (01.09.2005-31.12.2050)

Ing. Martin Kusý, PhD.

Visegrad Scholarship-Structure and properties of X40CrMoV5-1 hot-work steel melted and alloyed by tungsten carbide WC with the high power diode laser (HPDL)

It was found out, based on the research carried out, that it is feasible to develop the surface layers on the X40CrMoV5-1 hot-work tool steel by remelting and alloying with the tungsten carbide using the high power diode laser (HPDL). The structure of the material solidifying after laser remelting is characteristic of the diversified morphology connected with the repeated changes of the crystals' growth direction, from small dendrites, whose principal axes are oriented in accordance with the heat removal directions at the boundary between the solid and liquid phases, clusters of carbides arranged in accordance with the swirls caused by the metallic liquid convection motion, and partially non-remelted WC conglomerates as alloying material in the central zone. The very fast heat removal from the remelting zone by the material core with the much larger thermal capacity, decides the martensitic transformation of the austenite originated due to crystallization, and the lathe martenzite developed in this process, partially twinned, is characteristic of the significant refinement of the martenzite with the martenzite lathes' length several times smaller that than of the ones of the martenzite developed during the conventional quenching. Laser remelting and

alloying with the tungsten carbide results in the refinement of the structure in the entire laser power range and in the remelted zone is about twenty times smaller compared to the conventionally heat treated material. Increase of the steel surface hardness to 66.5 HRC occurs due to refinement of the structure. The research results indicate to the feasibility and purposefulness of the practical use of the remelting and alloying with the tungsten carbide using the high power diode laser, e.g. for making new tools or for regeneration of the used ones from the X40CrMoV5-1 hot-work tool steel.

Bekaert, Zwevegem, Belgium (26.05.2008-25.05.2010)

Ing. Martin Kusý, PhD.

Progressive materials, processing and automation

NATIONAL PROJECTS

APVV-20-043505 (01.01.2006-31.12.2008)

Marian Kubliha, doc., Ing., PhD.

Study of disordered structures of non-metalllic by chosen physical methods.

To characterize internal arrangement of choosen kind of non-metallic materials (special glasses determined as active elements in infrared area of spectra, caoutchoouc mixtures for the automobile rubber preparation) on the basis of precise measurements of choosen physical properties. To utilize mentioned information at optimalization of composition and single parameters of mentioned materials preparation technology. It is possible to briefly resume the treatment on the physical properties description, the recovery correlations among reached values of measured physical properities and internal arrangement parameters, verification of obtained informations by means of other methods, results valuation, proposal of solutions, prospective optimalization of determining parameters, conclusion.

4/2007/08 (01.01.2008-31.12.2010)

Ing. Svetozár Demian

Development of metallurgical processing of highly reactive Ti-based intermetallic alloys for extreme stress

The project is aimed at the development of optimum metallurgical processing for highly reactive Ti based intermetallic alloys (TiAl, TiB2 and others) with high melting point, and also at the research of new systems suitable for extreme conditions characterised by high temperature, aggressive environment, high mechanical and thermal stress. The required chemical composition and lower price of the new generation of polyphase Ti-based intermetallic alloy will be achieved using precursors prepared from initial material using the original method of an isostatic reaction compaction followed by remelting in plasma or arc furnace. This approach will ensure significant improvement of chemical homogeneity, high flexibility in alloying with required alloying elements and minimisation of impurity content. Thus, required properties for extreme conditions will be obtained.

KEGA 3/5178/07 (01.01.2007-31.12.2009)

Prof. RNDr. Slabeycius, Juraj, CSc.

Multimedial support and conception of subject named "Diagnostic methods in material engineering".

Target of the project is multimedial promotion of subject named "Diagnostic methods in material engineering" redrafted for magister educational program "Materials engineering" by means of multimedial lectures and other teaching aids. Innovated laboratory measurements will be included to the subject too. Attractivenes of education will be increased by application of multimedial technologies, knowledges of

students will be enhanced and creative approach to study will be stimulated. Extended version of subject will be exploited also for graduant preparation.

KEGA 3/4057/06 (12.02.2008-13.02.2008)

prof. Ing. Palček, Peter, PhD.

Electronic interactive Slovak-Slovak and Slovak-English dictionary of Material Engineering.

Project is aimed at developing the electronic dictionary of Material Engineering on a web page available for universities and the Slovak Academy of Science free of charge.

The dictionary is designed for teachers and researchers in the Slovak universities. It comprises 1 200 selected expressions from the field on Material Engineering, while any workplace can contribute and enhance it via its web administrator. The explanation will be illustrated by schemes, video-sequences, photographs and examples. English equivalent is also given with individual expressions.

VEGA 1/3032/06 (01.01.2006-01.01.2006)

Milan Ožvold, prof., RNDr., CSc.

Preparation and physical properties of lead/free solders

The aim of this project is to increase the basic konwledge on lead-free solders as an interconnecting material. The work will cover the areas of physical, metallurgical and partially mechanical properties. Due to the special importance of today s application in electronics industry, the top four physical properties are:melting point temperature, electrical conductivity, thermal conductivity and surface tension. The surface tension of molten solder is a basic parameter affecting wettability and therefore solderability. The wettability and wetting reaction of the solder alloy are influenced by the interface reaction and intermetallic growth between solder and under bump metallization. The aim is establishing (micro)structure-property relations and potential reliability issue of Pb-free solders.

VEGA 1/3190/06 (01.01.2006-31.12.2008)

Peter Grgač, prof., Ing., CSc.

Study of the transformations processes in the rapidly solidified polycomponent multiphase alloys

Rapid solidification of undercooled melts in non-equilibrium conditions is used in several modern production technologies of high alloyed alloys and superalloys. These procedures are based on the production of rapidly solidified powders by inert gas atomisation. In the dependence on the chemical composition, size of a rapidly solidified particle and cooling conditions the variable metastable multiphase solidification microstructures are developed and later quantitatively and qualitatively altered during compaction processes. Project is focused on the detailed study of primary metastable structures and their transformations in the thermodeformation densification processes of polycomponent high alloyed technical alloys with intermediate phases of solidification origin. The main object of the project is on the base of experimental study and theoretical computations to develop a set of mutually connected knowledge providing a detailed description of transformation processes during the production and technological processing of high alloyed iron and nickel based alloys with the aim to contribute to optimistion of their chemical composition, production parameters and following technological processing.

VEGA 1/4107/07 (01.01.2007-31.12.2009)

Janovec Jozef, doc. Ing. DrSc.

Characteristics of quasicrystals and quasicrystalline approximants in Al-Pd-TM alloys (TM-transition metal)

The project aim is to characterise the phases in Al-Pd-Fe, Al-Pd-Co and

Al-Pd-Rh-based alloys. The attention will be devoted to the description of lamellar forms accompanying transformations of quasi-crystalline phases. Stabile quasi-crystals, quasi-crystalline approximants and related crystalline phases will be characterised by means of transmission electron microscopy including electron diffraction, X-ray diffraction, thermal analysis and other methods. The examined samples will be supplied either by 6. RP EK Complex metallic alloys, Network of Excellence, or will be prepared in our own laboratories. The project contribution dwells in its connection with international scientific network uniting the experts from various fields and types of organisations (Academies of Science, universities). The project output will be also used in the study of progressive materials by means of modern experimental methods. The project reflects technological and physical aspects of Materials Science and can be considered a base research with the direct impact on the knowledge pool in the field and information exchange.

VEGA 1/0126/08 (01.01.2008-31.12.2010)

Ing. Mária Dománková, Phd.

Improvement of microstructural stability and corrosion resistance of stainless steels controlled by precipitation of secondary phases.

The process of the secondary phase precipitation controls the mechanical and physical properties of the stainless steels. The main goal of this project is characterisation of the influence of the chosen factors (chemical composition, annealing conditions, deformation) on kinetics and thermodynamics of the secondary phase precipitation in stainless steels.

VEGA 1/0173/08 (01.01.2008-31.12.2010)

Ing. Viera Trnovcová, CSc.

Physical properties of optical crystals and glasses of heavy metal halides, chalcogenides and oxides

To study optical, mechanical, thermophysical and electrical properties and phase transilition in crystalline, glassy and composite heavy metal halides, oxides, oxides and chalcogenides doped with rare earth, for applications in optonics, fiber optics, supernonics and dosimetry. To determine relations between properties, composition, defect structure and preparation technique.

VEGA 1/0148/08 (01.01.2008-31.12.2010)

Ing. Roman Moravčik, Phd.

Analysis of prepared by progressive powder metallurgy processes the tool materials

Project will be primary oriented to the analysis of distinguished parameters of atomisation process to distinguished characteristics of the microstructure of rapidly solidifed powder particles, which were prepared form highalloyed materials of tool steels and properties with respect of application possibilities. Obtained knowledge will be the base for correlation model design which simulates relations between rapid solidification of materials produced by powder matallurgy processes.

VEGA 1/0840/08 (01.02.2008-31.12.2010)

RNDr. Andrej Antušek, PhD.

Ab initio calculations of NMR properties with electron correlation and relativistic effects and vibrational corrections

This project is focused on precise ab initio calculations fo NMR properties of molecules. We will explore trends of all important contributions such as electron correlations effects, relativistic effects and vibrational corrections for NMR properties of selected systems. The accuracy which can be reached using "state of the art" quantum chemical methods will be evaluated by comparison of theoretical results and gasphase NMR experimental values.

LIST OF SUBJECTS GUARANTEED WITH THE INSTITUTE

Advanced materials and technologies

Applications of statistical and physical methods in technical experiment

Applied electrotechnics and electronics

Bachelor project Bachelor thesis

Composites

Corrosion and surface treatment

Creation and simulation of plastics tools

Crystallography

Data processing and simulation

Degradation processes and prediction of lifetime

Design of plastics products

Diploma project

Diploma thesis

Dissertation project

Economics of non-metallic materials production

Electrotechnics and electrical drives

Electrotechnics and electronics

Engineering experiment

Engineering materials

Experimental exercises from physics

Experimental methods of materials investigation

Fractography

Fundamentals of economics of plastics processing

Fundamentals of macromolecular chemistry

Fundamentals of mechanical testing and defectoscopy of materials

Fundamentals of plastics processing

Fundamentals of rheology of non-Newtonian liquids

Heat treatment of materials

Heat treatment technology

Chemical heat treatment

Introduction to technological processes of non-metallic materials

Machine tools for plastic processing

Machinery and devices for plastics processing

Material and structural databases

Materials science

Mechanical testing and defectoscopy of materials

Metallic materials science

Metallography

Methodology of the technical experiment

Methods for analysis of structure and properties of materials

Methods for structure analysis of materials

Methods of materials investigation

Metrology and testing

Metrology and testing of non-metallic materials

Modeling of phase equilibria

Non-metalic materials

Non-metallic materials processing

Non-standard processing of plastics

Novel materials and technologies

Pedagogical activity

Physical modeling

Physical attributes of materials

Physical chemistry

Physical measurement methods of non-metalic materials

Physical metallurgy

Physical projection and modelling

Physics for engineers

Physics

Practise

Processing and applications of plastics

Processing technologies of non-metallic materials

Production technologies of plastics tools

Professional translation

Quantitative metallography

Research work

Safety of electrical devices

Semiconductor materials and technologies

Structural materials of nuclear power plants

Structure and properties of polymers

Sturcture and properties of non-metallic materials

Technologies of special alloys

Technology of coating

Technology of materials production

Technology of special alloys

Theory and technology of ceramic materials processing

Theory and technology of glasses processing

Theory and technology of plastics processing

Theory of materials production

Theory of materials treatment

Theory of phase transformations

Tool materials

Utility properties and materials design

Vacuum engineering and technology

Vacuum technique and technology

GRADUATE THESES

Bachelor Theses

Margorínová, Sylvia: Analysis of chromozing steel C 67

Hreščák, Peter: Microcopy analysis of compacts from tool steel K390 Microclean

Cabadajová, Zuzana: Analysis of damaged carbonitridated part

Holič, Ján: Analysis of cutting wedges of inserts made from sintered carbides after machining of the bearing steel

Vígh, Tomáš: Analysis of static tensile tests with the use of numerical simulation

Slobodová, Zuzana:Analysis of the brake cylinder from rear wheel car Škoda Felícia

Czibor, Peter: Analyse of a car's rolling brake's friction segments

Repiská, Marianna: Analysis behaviour and material gears spiroid set

Majerníková, Monika: The analysis of properties surface tool steels after boronizing

Horváth, Vladimír:Diffusively chromized steel C67

Papp, Marián:Electrical and dielectrical properties of corundum ceramics prepared by isostatic pressing

Javorčík, Ján: Coloring of polyethylene by technology rotation molding

Krajčovič, Michal:Steel's properties evaluation of nuclear power plant's primary loop after long time service

Boledovič, Peter:Use of defectoscopy for indication of surface faults of materials and welding joints

Daxner, Peter: Al based complex metallic alloys

Švantner, Tomáš: Al based complex metallic alloys

Messing, Martin: Complex alloy based on aluminium

Božik, Stanislav: Tightness control of welded tanks by defectoscopy methods

Vacho, Juraj:Quality of weld as one of the factors influencing the decrement of signal

Nagyová, Erika: Quantification of microstructure of heat-treated titanium alloy Ti6A14V

Kozánek, Oto: Macroscopic and microscopic analysis of the welded joins (unions) made of the steel S235JRG1

Janotová, Irena:Materials produced by powder metallurgy and technology of producing materials in a isostatic press

Židek, Radovan: Measuring elastic moduls by means of double pendulum

Škoríková, Ivana: Microstructural analysis magnetically hard-bitten materials on the base of metals rare earths neodymium - iron- boron

Sabo, Jaroslav: Microstructural analyse of hard magnetic materials on base metals of noble earths type samarium – cobalt

Baranyai, Szilárd: Microstructure analyse of titanium alloy Ti6A14V

Lipan, Rastislav: Resources of electrical measures by taking chosed optical properties of chalcogenic glasses

Bohovičová, Jana: Possibilities of Increasing of Surface Hardness of Tool Steels

Mičuda, Michal: Cutting materials design for machining of hardening and hard to-machined steels

Ostrožlík, Peter:Numerical simulation of sample heating in the conditions of electro-magnetic levitation

Chrenčík, Filip: The comparison of macroscopic and microscopic plastic deformation of steel in connection with the static tensile test

Rau, Vladimír: Preparation and properties of ferrite ceramics

Sandtner, Jaroslav: Monitoring of degradation PVC through the electric methods

Kamocsai, Imrich: Observing the diffusion of silver into sintered basalt with electric methods

Tompošová, Adela: Monitoring of vulcanization of rubber mixtures by measurements chosen electrical and dielectrical parameters

Zahradník, Juraj: The structure and thermophysical properties of metal matrix composites

Borsuk, Dušan: Structure and properties boride layers steels of ledeburit types

Pribylová, Zuzana: Structural analysis of boride tool steel M 390

Kolínek, Michal: Research of electric and dielectric characters of basalt ceramics including alloys

Ergang, Rudolf: Study of mechanical characters trip steel

Kubík, Michal: Sintering study of lanthanum oxide

Mičková, Mária: Sintering of LaCoO3

Miškove, Matej: Technology rotational molding filling polyethylene

Nagy, Tamás: Thermomechanical treatment of steels

Halás, Tomáš: Identification of modules of elasticity of hard materials

Reichbauer, Ľuboš: Choosing suitable contact type for monitoring electric and dielectric properties of a ethylenevinylacetate wrap

Čietek, Ján: Determination of basic physical - technological properties of selected solders

Štepanovský, Ondrej: Influence of a hardening agent on deformations of bearings after theat treatment

Haramia, Ján:Austenization parameter effects on hardness and structure of hardenable corrosion proof steel AISI 440 C

Žilinský, Adam: Effect of the heat treatment parameters to the final microstructure of light pipes from austenitic stainless steels

Ševčík, Martin: The effect of sample position in cast of head cylinders from AlSi6Cu4 alloy on structure and mechanical properties

Konopka, Pavol: Effect of technology treatment on quality of X-ray difraction optics

Sahul, Martin: The Investigation of the Basalt Coating Properties on Steel Substrate

Bakulár, Tomáš: Exloitation electrical methods for tracking changes in gum compositions

Abelovič, Tomáš: The eddy current testing method exploitation in operating diagnostics

Masters Theses

Mikušová, Katarína:Aging response in two types of precipitation hardenable stainless steel

Šipoš, Marek: Analysis and interpretation of data at impendance spectroscopy of non-metallic materials using distributed elements

Belák, Marián: The analysis of part worked by nitrocarburizing

Bednár, Matej: Analysis of forming of image in light microscopy and transmission electron microscopy

Šlesarik, Roman:Diffusionsborieren von dem Stahl 17MnCr5

Čavojský, Karol: Electric properties of sintered ferrite dust

Mihalovič, Michal: Phasic analysis of alloys TiAl prepared by HIP method

Kapusňák, Michal:Influence of cobalt on internal porosity and microstructure of rapidly solidified particles and compacts of high speed steels S590 and S790 Microclean

Szmolka, Tibor: Isothermic annealing of the material 18CrNiMo7-6

Nečas, Dušan: Mathematical description and using of non-linear least squares method in analyzing the results of diffraction experiment and impedance experiment

Hýroš, Ján: Microstructure of high strength titanium alloys

Szokolay, Gabriel:Possibility of monitoring of corrosion processes using impedance spectroscopy

Čavojský, Miroslav: X-ray diffraction analysis of rapidly solidified K390 Microclean

Béreš, Gergely: X-ray diffraction analysis of rapidly solidified alloy S290 Microclean

Valášek, Imre: A Monitoring of the Kinetics Thermally Degradation Vulcanizate Selected Rubber Mixture by electric and dielectric methods

Janoštiak, Marek: Thermal Degradation process monitoring of PVS by using the electric methods

Matiašovič, Tomáš: Monitoring the process of temperatures degradation of selection vulcanizate rubber mixture at its linear heating

Šallay, Ľuboš: Monitoring the influence of filler capacity in the process of rubber mixture vulcanization by eletric and dieletric methods

Maťusová, Stanislava: Influence of filler value on process of vulcanization of rubber composition by electric methods

Görtlerová, Alexandra: Monitoring of the influence of heating speed on the process of vulcanization of rubber mixture by electric methods

Babek, Pavol: Study of secondary phases precipitation in steel 17 349 (AISI 316L) after isothermal holding time 900° C

Homporová, Petra:Transformation kinetics in titanium alloys

Behanec, Dušan: Influence of the roughness on the surface of steel S235JRG1 on the formation of the boride layer

Bakajová, Jana: The dependence of US signal intensity upon the macroscopic measuring result of specified welded joints defects

VISITS OF STAFF MEMBERS TO FOREIGN INSTITUTIONS

prof. Jozef Janovec, DrSc. Belgium BAEKERT Zwevegem; Italy Meeting COST; Slovenia Univerzita Ljubljana; Austria TU Viedeň; Slovenia Univerzita Ljubljana; Germany IFW Dresden

Ing. Martin Kusý, PhD. Belgium fy BEKAERT, Zwevegem; Slovenia Univerzita Ljubljana; Austria Marcheg; Germany IFW Dresden; Austria TU Viedeň

prof. Ing. Milan Ožvold, CSc. Italy Meeting COST;

Mgr. Marián Palcut, PhD. Czech Republic Masarykova univerzita Brno; Poland Polish Academy of Sciences; Spain IRONIX-GLOBAL EVENTS CONSULTING Unip. Lda Barcelona; Czech Republic VUT Brno

prof. RNDr. Ján Kalužný, PhD. Czech Republic ČVUT Praha; Japan Tokyo

doc. RNDr. Vladimír Labaš, PhD. Czech Republic AV ČR; France ISNOG Montpellier

Ing. Viera Trnovcová, CSc. France ISNOG Montpellier; Russia Moskva;

Ing. Roman Moravčík, PhD. Austria TU Viedeň

prof. Ing. Peter Grgač, CSc. Austria TU Viedeň; Czech Republic ČVUT Praha; Germany IFW Dresden; Ukraine Patonov inštitút Kyjev; Czech Republic TU Liberec; Czech Republic VUT Brno

doc. Ing. Mária Dománková, PhD. Austria TU Viedeň; Czech Republic fy YEOL Bro;

Ing. Mária Hudáková, PhD. Czech Republic ZČU Plzeň; Czech Republic ZČU Plzeň; Finland Univerzita Helsinki; Czech Republic VUT Brno

Mgr. Ondrej Bošák Czech Republic PF UP Olomouc; doc. Ing. Marián Kubliha, PhD. Czech Republic PF UP Olomouc

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Mgr. Jozef Krajčovič, PhD. Czech Republic AV ČR Brno

doc. Ing. Maroš Martinkovič, PhD. Czech Republic VŠB TU Ostrava

MEMBERSHIPS IN INTERNATIONAL PROFESSIONAL ORGANISATIONS

Association for Heat Treatment of Metals of the Czech Republic prof. Ing. Peter Grgač, CSc.

Minerals, Metals and Materials Society

doc. Ing. Jozef Janovec, DrSc.

International Union of Crystallography (IUCr)

doc. Ing. Ľubomír Čaplovič, CSc. Ing. Viera Trnovcová, CSc doc. Ing. Jozef Janovec, DrSc.

European Physical Society

doc. Ing. Marián Kubliha, PhD. Ing. Viera Trnovcová, CSc. Ing. Róbert Riedlmajer, PhD Ing. Roman Čička, PhD. Mgr. Ondrej Bošák

Czech and Slovak Crystallographic Society

doc. Ing. Maroš Martinkovič, PhD. Ing. Martin Kusý, PhD. doc. Ing. Ľubomír Čaplovič, CSc.

CVC Working Group Integral

Mgr. Andrej Dobrotka

International Society for Solid State Ionics

Ing. Viera Trnovcová, CSc.

Regional Committee of the IUCr

doc. Ing. Ľubomír Čaplovič, CSc.

MEMBERSHIPS IN SLOVAK PROFESSIONAL ORGANISATIONS

Slovak Physical Society

Ing. Viera Trnovcová, CSc

doc. Ing. Marián Kubliha, PhD. prof. RNDr. Milan Ožvold, CSc. Mgr. Andrej Dobrotka Ing. Róbert Riedlmajer, PhD. Mgr. Ondrej Bošák Mgr. Viera Kaššáková, PhD. Ing. Roman Čička, PhD. RNDr. Igor Jančuška, PhD.

Union of Slovak Mathematicians and Phycisists

Ing. Viera Trnovcová, CSc. Mgr. Ondrej Bošák

Mgr. Jozef Krajčovič, PhD

Slovak Academy of Science/ Metal Science Society

doc. Ing. Jozef Janovec, DrSc. doc. Ing. Maroš Martinkovič, PhD Ing. Lýdia Trnková, PhD. Ing. Viktória Sedlická Ing. Mária Hudáková, PhD. prof. Ing. Alexander Čaus, DrSc. Ing. Martin Kusý, PhD.

Special Interest Group for Chemistry and Physics of Solids

doc. Ing. Ľubomír Čaplovič, CSc. doc. Ing. Maroš Martinkovič, PhD. RNDr. Mária Behúlová, CSc.

Slovak Astronomical Society

Mgr. Andrej Dobrotka

PUBLICATIONS

BOOKS

Dománková, Mária: Relationship between microstructure and corrosion properties of chosen austenitic stainless steels. - Dresden: Forschungszentrum Dresden, 2008. - 110 p. - ISBN 978-3-941405-01-1

Náplava, Antonín: Non chargerable polymer composites. - Dresden: Forschungszentrum Dresden, 2008. - 65 p. - ISBN 978-3-941405-02-8

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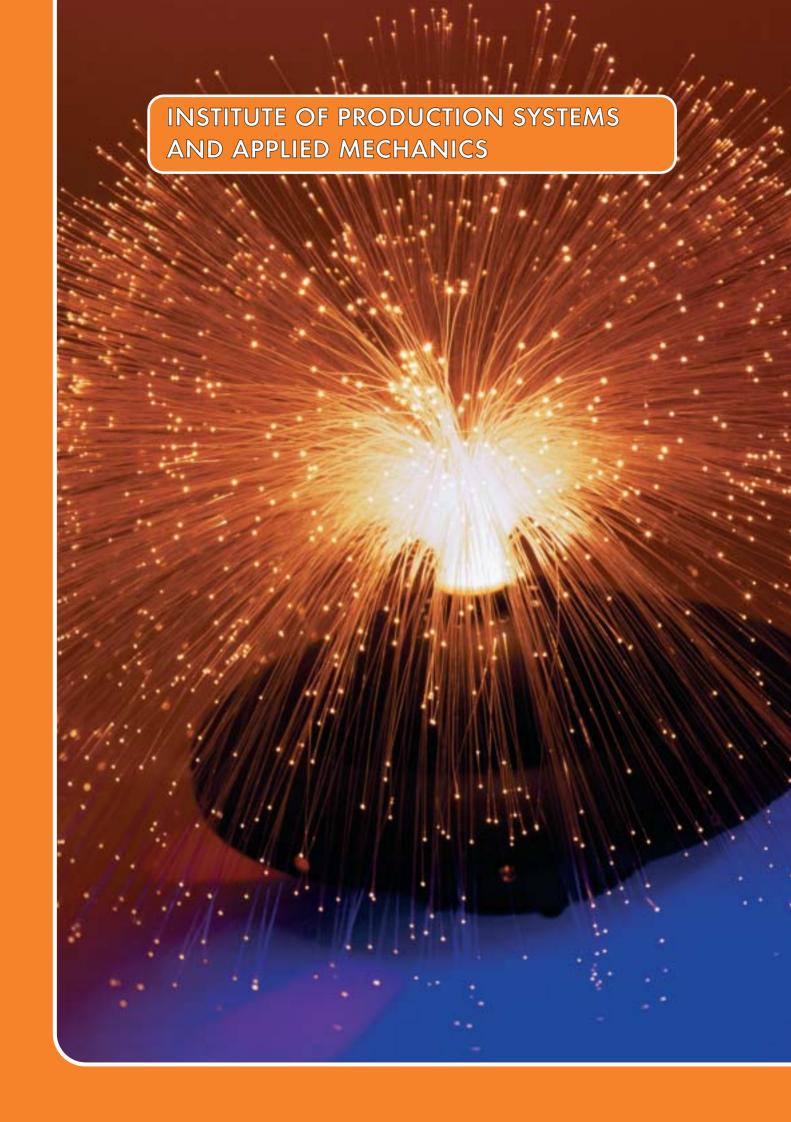
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INSTITUTE OF PRODUCTION SYSTEMS AND APPLIED MECHANICS

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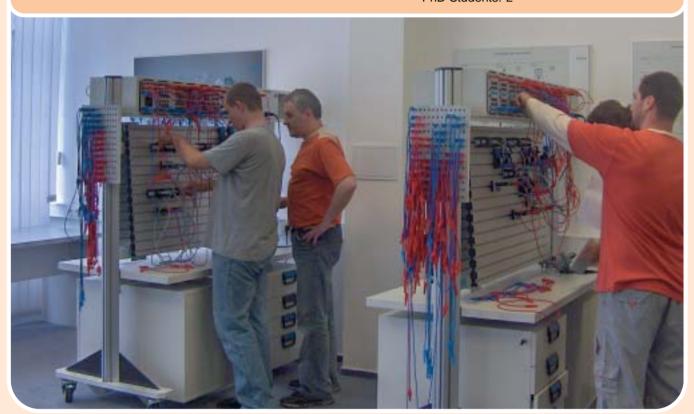
Institute Departments

- Department of Applied Mechanics
- Department of Technological Devices and Systems

Staff

• Professors: 2

Assoc. Professors: 3Senior Lecturers: 15Research Fellows: 2PhD Students: 2



Study programmes

- Production Devices and Systems
- · Mechatronics of Production Devices and Systems

Research targets

- · intelligent workpiececlamping
- thematic network on manufacturing technologies
- · new concept of integrated multifunction manufacturing system
- modelling, analysis, simulation and experimental investigation of machine aggregates as mechatronic systems
- investigation of new materials with progressive tribological properties
- research and application of new approaches in numerical methods analysis and simulation of technological and industrial processes, static and dynamic analysis of engineering structures
- numerical simulation of heat transfer processes, fluid-structure interaction
- reserach and development in the field of theoretical and applied mechanics

RESEARCH CHARACTERISTICS

The research works at Institute of Production systems and Applied Mechanics are focused to support and development of several degrees of studying subjects realized at our institute. The following studying subjects are realized at our institute, bachelor degree: Production Devices and Systems, Mechatronics of Production Devices and Systems, master degree: Production Devices and Systems. Our institute takes part in the PhD degree study program Machine Technologies and Materials. The research activities of our institute are focused on solving actual tasks from the field of production systems and devices and applied mechanics so as to support the institute staff's professional growth.

Main topics of research activities:

- · Flexible manufacturing systems,
- · Intelligent clamping systems,
- · Special production systems,
- Pneumatics and electro-pneumatics in control systems,
- · Material flow in production,
- Use of computers in design and manufacturing of machines and devices,
- Modeling, analyses and simulations of mechanical systems and machine aggregates.
- · Mechatronical principles application to production devices,
- · Methods of diagnostics and identification,
- · Mechanical systems reliability,
- · Vibrations, acoustics and biomechanics,
- Determination of cooling characteristics for heat treating mediums,
- Mechanical, thermal, fluid and other analyses for mechanical parts of machine and skeletons,
- Modeling, numerical simulations, analyses and optimisation for processes of forming, welding, founding and heat treatment.

Our institute has at this time the following laboratories: laboratory of robotics, virtual laboratory of pneumatics and electro-pneumatics systems, laboratory of pneumatics, FESTO laboratory, laboratory of CAD systems, laboratory of machine mechanics, laboratory of tribology, laboratory of thermo and fluid mechanics, laboratory of numerical analyses, laboratory of modeling, laboratory for vibration and acoustics research, mechanical workshop.

In the frame of cooperation between research and praxis our institute has cooperation with several industrial enterprises and research centres (FESTO spol. s r.o. Bratislava; SMC Priemyselná automatizácia spol. s r.o. Bratislava; ZF Sachs Slovakia, a.s. Trnava; TOMA INDUSTRIES spol. s r.o. Trnava; ŽOS, a.s. Trnava; INA Skalica, spol. s r.o. Skalica; VUJE, a.s. Trnava; EBO Slovenské elektrárne, a.s. Jaslovské Bohunice; JAVYS, a.s. Jaslovské Bohunice; AllDeco, spol. s r.o. Jaslovské Bohunice) and by institutes of SAV.

An important part of the research activities of our institute is represented by cooperation with abroad universities. Most inportant partners are TU Vienna, TU Miskolc, TU Cluj-Napoca, TU Poznaň, VUT Brno, UTB Zlín, VŠB Ostrava, TU Brašov, TU Chamnitz, ZČU Plzeň, TU Iževsk, and a lot more.

Results of our research activities are presented at domestic and international scientific journals and conferences and symposiums. These results are applied to educational processes at our institute too.

NATIONAL PROJECTS

KEGA 3/4154/06 (01.01.2006-31.12.2008)

Mudrik Jozef, doc., Ing., CSc.

Building a scientific and pedagogical centre "Gearing and Transmission" The establishment of a certified universal laboratory for testing and measurements of mechanical drives. The parameters of drives will be tested and measured for different loading states and different types of lubricants. The laboratory will be used for preparation of students of Master and Doctoral Degrees - Environmental and safety engineering, Manufacturing devices and dystems, Information technology and automation in industry.

KEGA 3/5211/07 (01.01.2007-31.12.2009)

Velíšek Karol, Prof.Ing. CSc.

Building of pneumatics and electro pneumatics system controling virtual laboratory

Virtual laboratory of pneumatics and electro pneumatics systems controling will be supported for principle training of pneumatics and electro pneumatics system control assorting and for operating simulation of these systems. In this type of laboratory, the students will use the Internet and develop their technical skills and abilities.

RAV MŠ SR 4/0102/06 (01.01.2006-31.12.2011)

doc.Ing. Jozef Mudrik, CSc.

Analysis of dynamic properties of selected mechatronic gear systems. The aim of the project is to develop a complex set of theoretical and experimental methods of analysis and synthesis of mechatronic systems with particular application on rotation machine aggregates designed for performing pre-defined technological processes. The project results will be used in the construction and operation of mechatronic systems in mechanical engineering equipment.

VEGA 1/3164/06 (01.01.2006-31.12.2008)

Peter Košťál, Ing., PhD.

Application of intelligent fixtures in manufacturing and assembly process

One of the possibilities of increasing the production efficiency (particularly in small and medium batch production which is dominant in Slovakia) is shortening of incidental times. Considerable effect of shortening of incidental times can be achieved by automation of clamping and manipulation operations. Total exclusion of the influence of the staff in the mentioned procedures represents an important component of automation. It is possible to achieve this aim by increasing the intelligence of whole production device step-by-step. Fixtures create non-detachable facilities of production device.

Intelligent fixtures are equipped also with the sensors recording different external effects (forces in single axis, moments) sending signals to the control system for examination. Based on these signals, the control system can stand-alone, and decide about changes of some production parameters.

VEGA 1/3193/06 (01.01.2006-31.12.2008)

Karol Velíšek, Prof., Ing., CSc.

Multifunction manufacturing-assembly cell

Concept of integrated flexible manufacturing cell dedicated to small batch production system that manipulates with workpieces and produces individual parts from semiproducts for final products. Parts are assembled to final product. Unlike standard production system, in this system the final products are produced and assembled in their workspace mainly from parts produced in this system, eventually from normalised parts. For manipulation and assembly in this system, external industrial

robot is not used. Exchange grippers for manipulation and assembly are installed on end effector -vertical axis of system parallel with spindle. Implementation of this concept projected like flexible production-assembly cell brings smaller occupied place, smaller expense, and higher ratio of production device usefulness.

VEGA 1/0837/08 (01.01.2008-31.12.2010)

RNDr. Mária Behúlová, CSc.

Design and optimisation of innovative forming and heat treatment technologies supported by FEM simulation.

Submitted project is focused on the application of advanced approaches to the design, analysis and optimisation of chosen innovatives forming processes including incremental deformations in order to achieve final products with very fine microstructures and specific material properties. From the theoretical point of view, the project should contribute to advance in knowledge in the field of material behaviour under conditions of intensive deformations, to the explanation of physical and metallurgical reasons of microstructure development in the processes of incremental forming and their influence on the material, technological and utility properties of chosen materials. Further the attention will be aimed at the study of rapid solidification processes during thixoforming. The object of project creates also the development, verification and application of new simulation models, material models and computing procedures for numerical simulation of forming and heat treatment processe.

VEGA 1/0721/08 (01.01.2008-31.12.2010)

doc. Ing. Bohumil Taraba, CSc.

Quantification of cooling properties of coolants in the field of heat thermal treatment processes supported by computer modeling suport of dominantly thermal technological processes.

Project is oriented on research of transfer phenomena by cooling of parts in chosen coolants used in industrial production. The aim is the quantification effect of coolants on vertical, horizontal and skewed parts surface. By experimental temperature measurement in the chosen point of the cooled part and with the numerical simulation support it is possible to predict the combined heat transfer coefficient as the surface temperature function, momentary heat fluxes from cooled surface and cooling rates.

VEGA 1/0832/08 (01.01.2008-31.12.2010)

Ing. Helena Kraváriková, PhD.

Thermo-mechanical analysis of the welding process using the experimental and modeling by the finite element method.

Modeling and simulation of melt welding process is a very demanding process requiring experience and special knowledge of the welding technology, heat transfer and exploitation of computer techniques. By appropriate application of these skills, you can obtain solution to specific problems in the field of welding process, such as residual thermal stresses and deformations of welded materials or structural changes of phases in heat affected zone (HAZ). Structure changes in HAZ are caused by changed temperature as a result of introduced heat into weld. Structure changes in HAZ cause changes of mechanical properties of welded materials. Stress gradient is high in HAZ, because of its thickness. Measurement of parameters obtained from experiments are used for verification of results achieved by FEM. Engineering-scientific software ANSYS is suitable for solving thermo-mechanical analysis of the welding process by FEM. Structure changes in HAZ could be satisfactority solved by software SYSWELD.

VEGA 1/0090/08 (01.01.2008-31.12.2010)

Ing. František Pecháček, PhD.

Optimised systems and processes of performance ultrasound.

Project is a base research oriented on ultrasonic tool resonators for technology applications of ultrasound. Amplitude and frequence parametres of ultrasonic piezoelectric convertors, wave conductors, concentrators and tools are being analysed.

LIST OF SUBJECTS GUARANTEED WITH THE INSTITUTE

Applied Mechanics

Assembly Machines

Bachelor Project

Bachelor Thesis

Computer Aided Design

Cutting Tools

Design of Production Systems

Diagnostics of Production Devices

Diploma Project

Diploma Thesis

Elasticity, Strength and Plasticity

Finite Element Method in Production Technologies

Fixtures and Technological Equipment of Production Machines

Fixtures

Fundamentals of Engineering Desing

Fundamentals of Engineering Desing and Technical Documentation

Fundamentals of Mechatronics

Hydromechanics and Thermomechanics

Industrial Robots and Manipulators

Logistics of Production Systems

Machine Parts and Mechanisms

Machine Tools

Machines for Special Technologies

Mechanics of Fluids and Thermomechanics

Mechanics of Materials

Mechanics of Production Machines

Mechanics

Mechatronics

Modeling and Simulation of Technological Processes

Noise and Vibration

Operation and Maintenance of Production Technique/Devices

Operation of Production Systems

Practice

Practice in Strength, Rigidity and Plasticity

Practice on the Fundamentals of Engineering Design

Production Devices

Production Logistics

Production Process Planning

Production Systems

Programming of Production and Manipulating Devices

Reliability and Safety of Technical Systems

Reliability of Technical Systems and Products

Semestral Project

Solid Mechanics

Technical Documentation

Technological Equipment of Production Machines

Technological Process Modelling and Simulation

Theory of Automatic Machines

Theory of Industrial Heating and Furnaces

Thermodynamics

GRADUATE THESES

Bachelor theses

Peško, Michal:The algorithmic proposal for inside spur gear for application in a moreradial head

Omelka, Tomáš: Characteristics of a flexible manufacturing system and its recent application in mechanical engineering practice

Krajčová, Katarína: Diagnostic methods of inspecting the technical conditions of machineries and devices

Szabo, Zoltán: Electro-hydraulic control of moulding press

Gyárfás, Peter: Proposal of pneumatic circuit for education purposes

Bačo, Michal: Hypothetic project of single-purpose cutter machine for selected component

Lančarič, Ivan: Hypothetic project of single-purpose drilling machine for selected component

Ivančíková, Zuzana: Draft of Ideas for Improvement of Line MV1-POM Performance in PCA Slovakia Trnava

Daniš, Jerguš: Complex solution of forging tools renovation

Havran, Štefan: Conceptual design for conveying equipment suitable for coal transport

Gyurcsovics, Gabriel: Metodics creation of automatized manipulator with pneumatic controll

Procházka, Peter: Modernisation of six-spindle automatic machine in the conditions of INA SKALICA

Gavlas, Juraj: Fitting-on PLC controlled in process automation furnished

Žilinský, Branislav: Design for a pneumatic circuit of the bow control and the brake system of the two-system electric railway engine

Figura, Lukáš: Proposal of pneumatic circuit for education purposes

Šuhajda, Peter: Workplace allocation design according to the material flow and relationship beetween operations for designated semi-product

Žilinská, Silvia: Design of production system for producing a chosen semi-product. (Comparison - forging - cast - workpiece)

Pompura, Marek: Design of production system for producing selected semi product (Comparision for a pressing - a welldment)

Kopka, Radoslav: Pneumatic control in selected automated devices

Drška, Pavol: Application of gear drives with nonparallel and nonintersecting axes

Horváth, Mário: The pressure control elements application by hydraulic control system of automated systems

Kollár, Andrej: Working environment of production equipment

Petráš, Miroslav: Drilling robot type 82337/6950 pneumatic system reconstruction

Špettová, Radoslava: Sound absorbtion in machine engineering operations

Špetta, Igor: Choice of Suitable Machine Tool for Production of Gearing

Žilinský, Daniel: Choice of tool machine for technological process - grinding

Masters theses

Kopas, Andrej: Automation of dotting assembly workplace of the production line

Brisuda, Jaroslav: Time analysis of assembly process linear pneumatic motor in assembly unit

Sondej, Andrej: Solution of material flow of the linear pneumatic motor assembly process

Kovács, Ladislav: Frequency analysis in vibrodiagnostics of technological equipments

Evanič, Martin: Information system for secured dependability program of production systems

Sýkora, Ján: Handling tool with load capacity aprox. 200 kg - lifter for depositing workpieces on the tool machine

Hrčka, Marek: Methods of analysis of possible failures in production systems

Miškovič, Oto: Model and simulation of disassembly process required product on the flexible manufacturing cell

Gebrlin, Branislav: Technological designing Model of Production system for production of select semi-product

Varga, Štefan: The proposal of automatic and measuring workplace for loading mechanical aggregates

Tahotný, Peter: Project of intelligent operating sequences in the flexible Production cell on the Institute of technological devices and Production systems

Koleno, Miroslav: Proposition of optimalization of material flow of production system for assembly of select raw product

Blažek, Marián: Preposal antivibration and antinoise precautions in the flexible manufacturing cell

Rozboril, Pavol: Design of teaching stand with stepper motor

Aschenschwandtner, Dušan: Optimalization of Cutting and Pressing Machine Komax 433

Mikuš, Július: The optimalization lines of production in welding shop for 5-door version of vehicles body

Vítek, Peter: Computer simulation of kinematic design clutch gripper

Chovanec, Martin: Predictive analysis of possible failures of production systems

Šilhár, Martin: Optimation of Automatic Machine

Kubičková, Lucia: Remake of producing process of specialized tempered safety glass production

Godál, Daniel: Mechanical gripper calculation - numerical simulation of contact deformations

Švrček, Lukáš: Formation of an algorithm for selecting an element's multiple spindle heads following technological parameters of product

Dissertations

Danišová, Nina: Intelligent manufacturing systems: Design of intelligent manufacturing cell

Zvolenský, Radovan: Disassembly of automation process:Methodology of automated disassembly device design

FOREIGN VISITORS TO THE INSTITUTE

Miroslav Grzelka, MSc., PhD. Poland TU Poznaň
Sinica Kuzmovic, prof. MSc. Eng. Serbioa TU Novi Sad
Alexandar Makedonski Bulgaria TU Sofia
Georgi Popov, prof. Bulgaria TU Sofia
Piotr Mikolajczak, Dr. Poland TU Poznaň
Gabriela Lobontiu, Dr. Romania North University of Baia Mare
Prof. Csaba Gyenge Romania TU Cluj – Napoca
Prof. Petru Berce Romania TU Cluj – Napoca
Csaba Felhö TU Hungary Miskolc – MTF
Imrich Lukovics Czech Republic Univerzita Tomáše Bati ve Zlíně – MTF

VISITS OF STAFF MEMBERS TO FOREIGN INSTITUTIONS

prof. Ing. Karol Velíšek, CSc. Austria TU Viedeň; Czech Republic Univerzita Tomáše Bati ve Zlíně; Austria TU Viedeň; Poland TU Poznaň; Poland Polytechnika Poznaň; Austria TU Viedeň; Egypt Univerzita Káhira; Czech Republic UTB Zlín; Romania TU Cluj – Napoca; Austria TU Viedeň; Israel TU Technion Haifa; Czech Republic VUT Brno; Slovenia TU Maribor; Romania TU Brašov; Romania TU Baia Mare; Cuba TU Magdeburg; Czech Republic VŠB TU Ostrava; Poland CMG KOMAG; Hungary TU Miskolc

prof. Ing. Milan Turňa, PhD. Czech Republic ČVUT Praha; Czech Republic VUT Brno; Czech Republic ČVUT Praha; Czech Republic ČVUT Praha; Czech Republic Wisteon; Czech Republic VUT Brno; Czech Republic Brno

doc. Ing. Peter Košťál, PhD. Hungary TU Miskolc Slovenia TU Maribor; Poland Polytechnika Poznaň; Egypt Univerzita Káhira; Romania Universitea Transilvania; Cuba TU Magdeburg; Poland CMG KOMAG; Poland Polytechnika Krakow; Hungary TU Miskolc; Hungary TU Miskolc

RNDr. Mária Behúlová, CSc. Czech Republic Západočeská univerzita Plzeň; Czech Republic Česko-slovenská společnost pro růst krystalů; Cuba TU Magdeburg doc. Ing. Jozef Mudrik, CSc. Czech Republic VUT Brno; Czech Republic VUT Brno; Czech Republic VUT Brno; Czech Republic VUT Brno

Ing. Marcela Charbulová Czech Republic ČVUT Praha

Ing. Milan Nad', CSc. Czech Republic VUT Brno; Czech Republic VUT Brno; Czech Republic VUT Brno; Czech Republic TU Liberec

Ing. Miriam Matúšová Croatia Univerzita Zagreb; Romania TU Bukurešť

RNDr. Mária Behúlová, CSc. Egypt Univerzita Káhira; Czech Republic Východočeská univerzita Plzeň; Germany IFW Dresden; Czech Republic VUT Brno

Ing. Tibor Nánási, CSc. Czech Republic VUT Brno; Czech Republic VUT Brno; Czech Republic ZČU Plzeň

Ing. Eva Labašová, PhD. Czech Republic PF UP Olomouc

Ing. Andrea Mudriková, PhD. Bulgaria Univerzita Sofia

Ing. Marcela Charbulová Bulgaria Univerzita Sofia; Romania TU Baia Mare

Ing. Helena Kraváriková, CSc. Czech Republic Východočeská univerzita Plzeň

doc. Ing. Peter Košťál, PhD. Israel TU Technion Haifa; Hungary TU Miskolc; Czech Republic VUT Brno; Romania TU Baia Mare

Ing. František Pecháček, PhD. Poland TU Poznaň; Czech Republic VUT Brno

Ing. Rastislav Ďuriš Czech Republic ZČU Plzeň; Greece CST 2008

doc. Ing. Bohumil Taraba, CSc. Bulgaria UCTM Sofia Ing. Nina Danišová, PhD. Romania TU Baia Mare

Ing. Erika Hrušková Romania TU Bukurešť

MEMBERSHIPS IN INTERNATIONAL PROFESSIONAL ORGANISATIONS

DAAAM

prof. Ing. Karol Velíšek, CSc.

OIAV - ÖSTERREICHISCHER INGENIEUR - UND ARCHITEKTEN - VEREIN prof. Ing. Karol Velíšek, CSc.

Machine Tools Association, Prague

prof. Ing. Karol Velíšek, CSc. Ing. Marcela Charbulová

European Acoustical Association

Ing. Tibor Nánasi, CSc.

The Czechoslovak Association for Crystal Growth

RNDr. Mária Behúlová, CSc.

MEMBERSHIPS IN SLOVAK PROFESSIONAL ORGANISATIONS

Slovak Acoustical Society

Ing. Tibor Nánasi, CSc. Ing. Milan Naď, CSc.

Technical Commission 21 SÚTN Bratislava

Ing. Tibor Nánasi, CSc.

International Academy of Informatisation

Doc. Ing. Jozef Mudrik, CSc.

Mechanical Devices Engineering Association

Doc. Ing. Jozef Mudrik, CSc.

Machine Tools Association

Ing. Peter Košťál, PhD. prof. Ing. Karol Velíšek, CSc.

Slovak Associations of Mechanical Engineers

prof. Ing. Karol Velíšek, CSc. Ing. Peter Košťál, PhD. Ing. František Pecháček, PhD.

Slovak Academy of Science/ Slovak Mechanical Society

Doc. Ing. Jozef Mudrik, CSc.

Slovak Academy of Engineering

Doc. Ing. Jozef Mudrik, CSc.

Technical Commission 68 SUTN Bratislava

Ing. Milan Naď, CSc.

Technical Commission 57 SÚTN Bratislava

Doc. Ing. Bohumil Taraba, CSc.

Technical Commission 58 SÚTN Bratislava

Doc. Ing. Bohumil Taraba, CSc.

Technical Commission 81 SÚTN Bratislava

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INSTITUTE OF PRODUCTION TECHNOLOGIES

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Institute Departments

- · Department of Welding
- · Department of Machining and Assembly
- · Department of Foundry
- Department of Forming

Staff

• Professors: 6

Assoc. Professors: 10Senior Lecturers: 12Research Fellows: 8PhD Students: 35



Study programmes

- Computer-Aided Production Technologies
- Production Technologies
- Machining and Assembly
- Computer-Aided Design and Production
- Forming
- Welding and Joining Materials
- Engineering of Co-ordination and Inspection in Welding
- Industrial and Art Casting
- Powder Metallurgy
- Machine Technology and Materials

Research targets

- soldering and brazing
- explosive welding
- weldability of steels
- welding plastic materials
- surfacing and tribology
- adhesive bounding
- foundry technology preparation of the molten metal
- · preparation of moulding materials
- powder metallurgy technology of powder processing
- plasma-electrolytic technology surface treatment of metals
- · art foundry
- development of new foundry alloys
- theory of machined parts manufacturing, creatics, measurement and assembly
- CIM, CAD/CAM, CAPP, CAQ, CAA
- · 3D art engraving
- · manufacturing of dies
- · qualitity of measurement
- formability of new materials
- · high parametrical forming
- hardening surface layer
- · experimental methods for forming
- · computer simulation

RESEARCH CHARACTERISTICS

The research of the Institute of production technologies is oriented to the industrial technologies with respect to research and development in the sphere of high-tech technologies. The main fields of the industrial technologies on the Institute of production technologies are: machining, forming, foundry and welding.

Key directions of scientific research activity of the Institute of production technologies are focused on the support of the development of individual science and educational branches. It is safeguards to the responsibilities for the special growth of workers. The attention is devoted first to the actual and perspective questions related with industrial technologies in conditions of SR, at which are made provision for international trends as well as the integration processes to EU. Mark of scientific research work and activity are determined with originality of scientific orientation of the teachers and scientific research workers. material supply of main workstations and of the solution of scientific and socially best known questions of social work. The Institute of production technologies is oriented to the trans-regional own pedagogic and scientific activity in many aspects, cooperates and enlarging the co-operation with the more renowned scientific research institutes abroad. International co-operation in research is implemented mainly with the change of information, results, knowledge for education of PhD students (fellowships, educational visits, workshops).

The scientific directions of main workstations are determined to the long time and covered the production and technologiecal aspects of exploitation of all resources and solutions of the actual questions in a given branches. The lay of projects is oriented mostly to the production technologies in co-operation with industrial practice on the basic of actual global problems.

Center of sphere of the scientific research are:

- Production and controlling of components with complex form and strict surface.
- Numerical simulation and optimalization of production in surface and volume forming of the metallic materials - prediction of formability.
- Modification of surface of the stainless steel with plasma discharge in electrolyte.
- · Art casting.
- Classical and special method of joining, cutting metallic and non-metallic materials.
- · Tribology and surface engineering.

All important and original results are presented in our institute on the seminars and conferences at home and abroad, are published in reviewed or non-reviewed scientific journals and in the professional journals.

The results from the research activity are transferred to the educational process within the subjects also the solution of bachelor, diploma and PhD works.

INTERNATIONAL PROJECTS

TOWARDS COMMON RESEARCH PROJECT (01.10.2008-31.12.2011)

prof.Dr.Ing. Jozef Peterka

The main purpose of the project is to expand theoretical concept CAD-CAM-CNC on concept CAD-CAM-CNC-CAQ-CAD and experimentally verify this new concept in the field of manufacturing of free form surfaces and in the field of assembly parts with free form surfaces in conditions of university.

CEEPUS CII-RO-0058-03-0708 (01.01.2007-31.12.2008)

Ing.Ladislav Morovič

THE IMPLEMENTATION OF EUROPEAN CREDIT TRANSFER SYSTEM INTO THE SHORT TIME HIGHER EDUCATION WITHIN BOLOGNA PROCESS AT TECHNICAL UNIVERSITY OF CLUJ NAPOCA

The present CEEPUS proposal intends to continue the actual CII-RO-0058-02-0607 (CII-RO-0058-01-0506) network focused on ECTS at academic long time studies in the frame of Bologna process. The result will be the establishment of ECTS for the new specializations "Industrial Engineering" and "Economical Engineering" beginning at Alba Iulia in 2006. It is connected with other networks, developed since 1999 till present such as Ro103, Ro129, using the acquired information and materials developed in the frame of these networks.

CEEPUS CII-PL-0007-03-0708 (01.01.2007-31.12.2008)

Ing.Ladislav Morovič

Geometrical Product Specifications - a new tendency in the design and implementation of technological processes

To produce goods or provide services companies need standards. Standardization is applied to achieve a certain level of orderliness that is optimal under specific circumstances by formulating procedures for general and repeated use and providing solutions to the existing or possible problems. In industry standards are necessary, for example, to specify the ways of communication and preparation of documents at the particular stages of product design and construction. They are responsible for process smoothness and the quality of semi- and finished goods. Of significance are also the quality assessment and control methods.

NATIONAL PROJECTS

VMSP-P0008-07 (01.01.2008-31.12.2008)

prof. Ing. Koloman Ulrich, CSc.

Non-deformation welding of indoor beams by four torches

The research deals with non-deformation welding technology and the design of functional nods model of a single-purpose welding machine by four torches for welding the indoor beams. The welding machine has the high shape and dimension adaptability with the exploitation of a completely new method of arc automatic MIG/MAG welding methods by four torches simultaneously in horizontal and overhead positions from both sides of I-shaped indoor beam by fillet weld. The new technology will increase the productivity and quality of the welded indoor beams' production.

SK-SRB-00407 (01.01.2008-31.12.2010)

doc. Ing Augustín Görög, PhD. Accurary of machining and machine tools

APVV-0057-07 (08.08.2008-09.08.2008)

doc. Ing. Milan Marônek, CSC.

Research into welding and forming the nitrooxidation-treated steel sheets

The nitrooxidative layers enhance significantly mechanical and anticorrosive properties of metal sheets. The project deals with the research of nitrooxidative layers making on metal sheets, the research of appropriate welding methods of such treated plates and with the study fo forming and corrosive resistance of made weld joints. In the field of welding the basic characteristics of made weld joints will be studied (shape, structure, mechanical properties, weldability) by using the advanced technologies of welding of nitroocidatively treated sheets.

KEGA 3/416/06 (01.01.2006-31.12.2008)

Bílik Jozef, doc., Ing., PhD.

Increase of adaptability and practical readiness of graduates study program forming for actual praxis.

The target of showed project is building of virtual laboratory, this laboratory will be used for teaching new technology. Laboratory will serve such very effective and visual toolin process of acquirement professional knowledge. Advancement of project for students is purchase of knowledge in study major, acquisition of Internet accomplishment too.

KEGA 3/4157/06 (01.01.2006-31.12.2008)

Ulrich Koloman, prof., Ing., PhD. IWE

Developing multimedia programs for the training of welding specialists Multimedia programs including videoclips of modern welding and joining technologies focused on education of top welding engineers in welding engineering branch. Processing of selected company's materials, experience and research results of welding department of Faculty of Materials Science and Technology into a modern presentation way.

KEGA 3/6140/08 (01.01.2008-31.12.2010)

prof. Dr. Ing.Ivan Kuric

Globalization of education of the academical technical orientation undergraduates with aspect to increase their flexibility, mobility and skills.

Instrument for the achievement of goals will be the implementation of modern electronical instruments as WEB aplications and e-education, mobility of students. Will be suggested and realized the complex e-education system. Methods of the project will be the combination of classic approach of study with realization of mobilities on partnership universities and the work with the electronic education system.

VEGA 1/3191/06 (01.01.2006-31.12.2008)

prof. Ing Milan Turňa, PhD.

Progresive metalurgical joining (and allied processes) of special and combined materials by ecologically friendly technologies and consumables

Design, experimental approval and scientific reasoning of progressive metallurgical joining and adhesive bonding of special and combined materials by ecologically friendly technologies and consumables. Selection of special, modified and hybrid technologies fo welding, brazing/soldering, adhesive bonding, cutting and allied processes apllied for hard-to-weld materials and materials sensitive to degradation in the process of technological treatment or at their implementation into technical practice.

VEGA 1/3162/06 (01.01.2006-31.12.2008)

prof. Ing. Alexander Janáč, CSc.

Determining of the accurate characteristics of production equipment, of their products and uncertainty of their measurement.

Triennial project in the first, theoretical period, analyses methods of accuracy measurement and determinig of measurement uncertainty in area of machine-tools, with special sight on turning and milling type of machining centers. It is concerned to all known methods, from traditional rules of former concern TST, through standardized methods till methods utilized new measuring technique. Conclusions obtained by analysis applies in the second period to accuracy measurement and to determining of measurement uncertainty of turning and milling type machining centers, existing on project solving workplace, with utilizing of available measuring technique and another measuring technique, planned to buy in period of solving first perod of project. Experiments in area of measurement will be exactly evaluated with aim to obtain new scientific knowledge.

VEGA 1/3192/06 (01.01.2006-31.12.2008)

Mária Kapustová, Ing., PhD.

New trends solving and other development of die forging technology. The project submits application and processing of technological and economic measures that are inevitable condition for rationalization of production in our die forges. The model submission for gainful production of forgeds bases on application of new materials and nontraditional technologies, for purpose of increased forgeds quality and achievement of lower usage energy and materials. After this manner the production of forgeds will be cheaper, what essentially increases competitiveness our forges within countries of EU.Sizeable material saving representatives die forging technology without fin, enentually forging with partial overflow, i.e. with bridge. The software programmers have great stature for advisement and the finite option of forging technology. In term of lower energy consumption it is necessary to assert in the productive zone warm forming technology, it brings the higher quality of forgeds production. The achievement of its application is conditional by following of temperature influence for formability of materials. The important economic effect representatives forges workbench ecologization. The provision of healthy workbench is one of the basic legislative tasks of employer.

VEGA 1/3163/06 (01.01.2006-31.12.2008)

prof.Dr. Ing. Jozef Peterka

Objective method of design of assembled product and assembly system The assembly in Slovakia will be the main industrial activity. In Slovakia will be produced and assembled the most of automobiles per thousand citizens. The level of DFA (Design for Assembly) in the all world is not sufficient. The using methods DFA are too subjective or are based on the false economical calculations. There are missing the objective methods leaned on laws of mechanics and mathematics. The first works in this field was elaborated by us. The assembly systems inported to Slovakia, mainly for final assembly, have low level of humanization. The goals of project are to remove these two problems by elaborating of two methodologies. Contemporary will be bounded the narrow collaboration with goal to interested Slovak intelligence in the solution of over given problems.

VEGA 1/4108/07 (01.01.2007-31.12.2009)

Bónišová Monika, Ing. PhD.

New trends and next development of superfinishing technology.

The project focuses on the new fields in the development of superfinishing. Latest information will be applied to improve the technology of machining, to reduce the wear of tools and machines, improve the quality of the machined surfaces in superfinishing, enable the machining of the surface which is difficult to reach, decrease production costs and save the time of superfinishing.

VEGA 1/4111/07 (01.01.2007-31.12.2009)

Lipa Zdenko, prof. Ing. CSc.

Implantation of differential and other mathematical methods into analytical theory of machining.

Analytic theory of machining worked till now mainly by mathematical tools of lower level and did not utilize the possibilities of various mathematical and physical methods. Some machining problems are possible to solve by using procedutes and methods utilized in other scientific discipline (transformational and rheological methods). We can also use the Mathematical analysis, Dimensional analysis, Energetic analysis, especially in Dynamics of machining, in machining forces theory , in Thermodynamics of machining (thermic and temperature conditions) and in research of all attendant phenomena in machining.

VEGA 1/0354/08 (01.01.2008-31.12.2010)

Ing. Štefan Podhorský, PhD.

The technologic and the environmental aspects of the plasma-electrolytic process used for stainless steel polishing

The subject of the project is a new, unconventional method of the polishing and the surface finishing of stainless steel products - the technology of plasma polishing. The technology utilizes physical effect of the electric discharges onto the metal surface sunken in an electrolyte.

VEGA 1/0130/08 (01.01.2008-31.12.2010)

Ing. Peter Pokorný, PhD.

Research of influence of CAM strategies on achieved dimension accuracy and roughness of machined surface in conditions of univer sity Hi-tech laboratory.

The project is focused on research of influence CAM strategies 3D milling (for example raster, spiral, offset, box etc.) and 4D milling of parts with free form surface on achieved accuracy of dimensions and achieved roughness of machined surfaces.

VEGA 1/0060/08 (01.01.2008-31.12.2010)

doc. Ing. Jozef Bílik, PhD.

Numerical simulation and experimental verification of laser welded tailored blanks formability for the automotive industry.

The project submit a proposal of formability prediction of laser welded tailored blanks of different thicknesses and properties using the numerical simulation and its subsequent experimental verification. The aim of the project will be to observe the kinds of tailor welded blanks failure and welded joints location influence on their formability.

VEGA 1/0381/08 (01.01.2008-31.12.2010)

doc. Ing. Roman Koleňák, PhD.

Study of effect of physico-metallurgical aspect of high-temperature brazing on the structure of joints in metallic and ceramic materials.

The physico-metallurgical characteristics of high-temperature brazing of high-alloy steels Ti, Ta, Mo, Co alloys etc. were investigated, Structural characteristics of brazing alloy during high-temperature brazing were studied.

LIST OF SUBJECTS GUARANTEED WITH THE INSTITUTE

Adhesive bonding

Apreture of artistic castings

Assembly machines

Assembly Technology

Assembly Technology and CAA systems

Assembly Theory

Atelier of Modeling and Production of 3D Products

Bachelor project

Bachelor thesis

Basis of Assembly

Basis of CAx technology

CA systems and computer simulation processes

CAD/CAM Systems

CAPP systems of Process Planning

Castings design considerations

CAx technologies

Complex Systems Quality

Computer aid in foundry and PM

Computer Aided Productions Technologies

Design and manufacturing of welding constructions

Disertary Project

Effects of foundry technology on environment

Equipment for foundry and metal casting

Experimental Methods in Forming

Experimental Methods in Machining

Final project

Finishing Methods of Machining

Flat Forming

Flexible Production Lines for Forming Process

Forming Machines

Forming Process Automation

Forming Tools

Foundry technology

Fundamentals of manufacturing technologies and systems

Geometrical Product Specification

Graduate project

Graduate thesis

Industrial Technologies and Production Devices

Information and control technology in welding

Inspection in welding

Investment casting for artistic purposes

Machine Tools and Fixtures

Machine Tools and Tools

Machines and equipment in foundry and PM

Machines and Tools for Forming

Machining and Forming Theory

Machining Technology

Machining Technology and Metrology

Machining Theory

Maintenance and renovation

Materials joining

Measuring and Control Parameters of Products

Mechanization and Automation

Mechanization and Automation in Machining

Metrology

Metrology and CAQ systems

Metrology and Testing

Non-conventional metallurgical processes

Non-conventional mould production

Opening Computer aided of production technologies

Optimization of Forming Processes

Optimization of Forming Processes for Small-Lot Production

Paedeuticsal Activity

Performance of production systems

Planning of welding manufacture

Practice

Preparation of castings and PM parts production

Production Process Planning

Production processes and systems in foundry and PM

Production System

Programming NC machines

Programming Practice

Progresive methods of measuring parts

Progressive Machining Methods

Progressive Methods of Assembly Machines Products

Projecting of Forming Tools by Computer

Projecting of production processes and systems

Projecting of production systems

Quality and casting defects

Quality control of weld joints

Research Work

Safety of Machines and Production Facilities

Selected Clauses from Theory and technologies casting

Selected Clauses from Theory and technologies forming

Selected Clauses from Theory and technologies machining, metrology

and assembly

Selected Clauses from Theory and technologies welding

Semestral Project

Simulation of Forming Processes

Soldering

Special Technologies of artistic castings production

Special Technologies of casting

Special welding and cutting methods

Studio of modeling and production 3D products

Technical Preparation of Production in Forming

Technical Preparation of Production in Machining

Technological Design

Technological Process Modelling and Simulation

Technologies of special cast iron preparation

Technology of composite materials processing

Technology of Forming

Technology of materials production

Technology of powder metallurgy

Theory of Forming

Theory of foundry

Theory of foundry and welding technology

Theory of foundry technology

Theory of welding

Tribology and surface engineering

Volume Forming

Welding and casting machines

Welding fixtures

Welding machines and equipments

Welding technology

GRADUATE THESES

Bachelor theses

Mikyška, Tomáš: Adhesive bonding in the automotive industry

Hrušovská, Dominika: Analysis of energic savings for production of drope stampings

Buchanec, Ivan: The analysis of the cut off layer cross-section in lathe turning of trapezoid threads

Sojak, Ivan: The analysis of compacts shapes manufactorable by die pressing of powders

Pročka, Tomáš: Analysis production decision milling

Duračka, Andrej,: Application of lead-free solders in settings of company Delipro Piešťany

Kiripolská, Veronika: The application of welding preparations in process of resistance welding

Kiripolský, Peter: Resistance butt welding application

Krutý, Igor: Point Welding in Automobile Industry

Lűttmerding, Matej: CAM for 5D cutting

Jadrný, Radovan: CAM strategies in machining

Haršányi, Ondrej: CAPP systems in engineering

Brecko, Tomáš: CAQ and information quality assurance

Servátka, Stanislav: CNC tool machines

Hegedüs, Kristián: Metrological laboratory gauges databases

Desát, Martin: Diffusion welding of ceramics and ceramics with metals

Sékely, Andrei: Diffusion welding of combined metals

Forro, Roman: Roughness of the Processed Surface

Soviš, Vladimír: Electronic stabilization systems for automobile

Valent, Peter: Einschätzung und Regulierung der Flüssigheit des mit dem Wasser bespriztzenen Pulver

Májek, Miloš: Evaluation of fracture toughness in transition regime by master curve conception

Bodišová, Petra: Implementation of CAD system CATIA in automobile industry

Trnková, Ľubica: Lubricant additives and friction stabilizers used in PM sliding and friction materials

Farkaš, Peter: Check of quality of adhesive joints

Magula, Jaroslav: Welded joint quality made by laser

Hrčka, Miroslav: Technology of production angular extracts

Stemmer, Robert: Measurement of shakiness during turning

Nagyová, Mária: Methods of welding aluminium and steel

Raček, Roman: Methods mode of production dust bare metal

Laczo, Peter: Installation of the binder room at company Johns Manville

Pätoprstý, Róbert: Design of installation lighting device

Gejdoš, Karol: Design of coupling devices for passenger and commercial motor vehicles in company GALIA SLOVAKIA s.r.o.

Mravec, Ivan: Suggestion of welding technology for Mg alloy-Titanium joint

Molnár, Imrich: Suggestion of brazing and soldering technology for Mg alloys with dissimilar metals

Čižmárik, Rastislav: The project of technology and production of the tenons and mortises by the company UT - Umwelt und Transporttechnik, s.r.o. Dolná Streda

Mezzey, Peter: Optimization of Technological Welding Procedure for Horizontal Heat Exchanger W701

Michalec, Ivan: The Aluminum Structures Welding Technology Design

Petrička, Stanislav: Welding of TRIP steel by classical methods

Daniš, Juraj: Project of nave production in automobile industry in ZF SACHS Levice

Nemčovič, Juraj: Directing of shear tools by using computing technique

Moroz, L'ubomír: Design of moulding tools used in an automated workshop

Freňák, Pavol: Computer analysis of cut coat cross-section in metric threads turning

Filip, Martin: PC simulation perdurability and reliability of solder joints

Gáplovská, Monika: Conditions of release for precision forging

Ondrejička, Richard: Comparison of roundness deviation measuring methods

Dvořák, Ľubomír: Determining the suitability of materials for overprinting

Melicher, Pavel: Production of modeling plant for art casting

Martinus, Martin: Use of welding materials in the form of wire for welding

Gudabová, Patrícia: Surface finishing of stainless steel castings

Lukačovič, Róbert: Review of CAx technologies, their meaning and application

Bulant, Pavol: The survey of filler materials for laser wear resistant layers creating

Kubek, Andrej: Chain CAD - CAM - CNC - CAIn

Buček, Ľuboš: Cutting with the water ray

Kolčiter, Marián: Cutting forces at drilling

Ostrolucký, Lukáš: CNC machines control systems and their programming

Beták, Michal: Steel wire testing

Hasiček, Stanislav: Behavour of steel sheets with nitrooxidation coating in welding process

Buday, Milan: The technical preparation of the production at the horizontal heat exchanger welding

Kolníková, Ladislava: Technology of ADI castings production

Jakubička, Peter: Technology of the yields production with flanges

Vendlek, Marek: Technological systems for laser material processing

Packo, Matej: Technologies of welding of thin steel armatures in automobile industry

Schmidt, Július: 5-axis technologies of machining

Borza, Boris:Theoretical analysis of type LE mechanical presses working parameters

Šimek, Štefan: Theoretical-technological aspects flexion

Mošať, Marek: A classification of cutting machinery in metal shaping processes

Klimo, Miroslav:Theory and practice of heat treatment of casts made by tool steels

Lőrincz, Gábor: Classification and labeling of shaping machines

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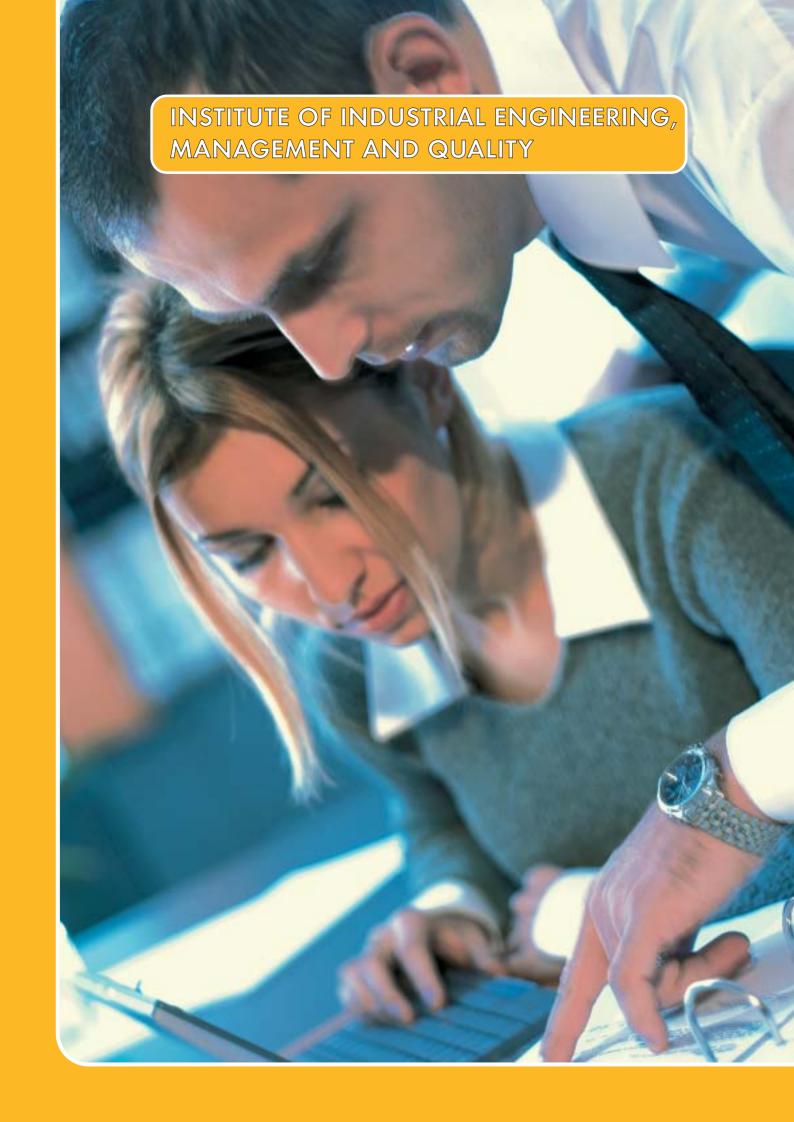
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INSTITUTE OF INDUSTRIAL ENGINEERING, MANAGEMENT AND QUALITY

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Institute Departments

- · Department of Industrial Engineering
- Department of Management
- · Department of Quality Engineering

Staff

• Professors: 4

Assoc. Professors: 8Senior Lecturers: 18Research Fellows: 4PhD Students: 29



Study programmes

- Industrial Management
- Production Quality
- · Production Quality Engineering

Research targets

- · progressive forms of manager education
- human resource management
- · environmental management
- · organizational culture
- project management
- advanced information technologies implementation
- · quality control in industrial enterprises, service enterprises and public organisations
- · quality of communication with customers
- monitoring customer satisfaction in quality management and marketing

RESEARCH CHARACTERISTICS

Concept and focus of the research activities:

Research and pedagogical projects within VEGA & KEGA grant agencies International programmes and projects

Internally funded projects

Contractual research and development projects funded by business and industry

Major fields of research: Progressive approaches in the area of the organization management, Human resources management, Development of managerial competences, Knowledge management, Project management, Sustainable development, Ergonomics, Logistics, production, marketing, Quality management Products and processes certification.

INTERNATIONAL PROJECTS

37 IRE 6 (01.06.2005-28.02.2008)

Prof. Ing. Alexander Linczényi, CSc.

Development and Implementation of Regional Innovation Strategy in the Self-Governing Region of Trnava

Needs of regional companies, mainly technology-based SMEs in terms of research, inovation and technology development and to compare these needs with the offer of innovation infrastructure in the region, to compare the companies needs in implementing and partner region, to introduce innovation audits into the SMEs.

11230220391 (01.04.2006-30.09.2008)

Ing.Ončák Peter

Modular system of distance education in project management with e-learninguand information technologies support.

The project aim comprises an intention to build a training and consultation workplace equipped with appropriate program tools for effective training of project managers.

ERDC (01.06.2008-30.05.2010)

doc. Ing. Renata Nováková, PhD.

Emergence of Research Driven Clusters in Central Europe

The project aims at supporting regional authorities and governments in convergence regions with know-how, methods and financial instruments necessary to create capacities for stimulation and emergence of research-driven clusters. This will lead to clustering research institutions, universities, R& D companies, SMEs. large companies and financial institutions (if appropiate) in the region.

NATIONAL PROJECTS

KEGA 3/4155/06 (01.01.2006-31.12.2008)

Holková Andrea, doc., Ing., PhD.

The evaluating resources and the applicable methods for management objects teaching practice

Project is aimed at the methods confrontation used for the evaluation and methodology and recommendation proposal for management objects teaching evaluation. It is mainly centred on evaluating processes which can influence or evaluate the teaching process as well as quality, qualification and effort assessment ways documented by students and by the teaching platform. The emphasis is laying on informative and collective aspects of the evaluation and their task at the quality and effectiveness of the management objects teaching improving.

VEGA 1/3764/06 (01.01.2006-31.12.2008)

Jarmila Šalgovičová doc., Ing., CSc.

Implementation of Quality Management in Non-governmental Health-Service Institutions

The project analyses the methods and approaches to implementation and improvement of services quality in the area of human medicine in selected non-governmental health-service institutions. It should help providers understand and implement the philosophy and principles, methods, tools and techniques of total quality management, which can increase the efficiency

and efectivenss of the services offered. This should consequently improve the populations health state and clients satisfaction, decrease the costs and bring better economic results to the providers of medical health care. The project outcome will become a model of quality management programme in non-governmental health-service institutions. The publication will respect the current European and world trends applied in quality management in the field of health service. The model will be implemented in selected organisations of providers of both primary and specialised outpatient health care.

VEGA 1/0229/08 (01.01.2008-31.12.2010)

doc. Ing. Iveta Paulová, PhD.

Perspectives of quality management development in coherence with requirements of the Slovak Republic market

Project is aimed at the exploration and analysis of contemporary theoretical knowledge of quality management and expected trends of theory and practice requirements (requirements and needs of market). The elaboration of information and results evaluation for explored industry on the base of analysis. Evaluation of process application related to quality management in explored branches of industrial practice in comparison with requirements of individual models of quality management system (ISO 9001:2000, TS 16 949, AQAP). Elaboration of proposals for processes improvement in the areas where the biggest failures were discovered. The output will be the elaboration of system solving proposal for more effective requirements application in the area of quality management for requirements of plant practice.

VEGA 1/0156/08 (01.01.2008-31.12.2010)

doc. Ing. Andrea Holková, PhD.

Key managerial competences in the range of specific functional management areas and their applicable development concept.

The merit of the project is to vindicate the importance of management competencies in human resource management as a crucial factor of organization success and competitiveness. The project is focused on comparison of variable approaches to management competencies, their identification and key managerial competencies definition. Identification and development of managerial competencies is necessarily needed for high performance of key managers. The project is also focused on methods and techniques of managerial competencies evaluation, development of competency models and selection of applicable methods for key managerial competencies development.

LIST OF SUBJECTS GUARANTEED WITH THE INSTITUTE

Accounting

Assurance of Product Dependability

Bachelors Project

Bachelors Thesis

Business Economy Basics

Business Economy

Business Finances

Business strategies for small and medium-sized enterprises

Calculation and Prices

CAQ

Computer Aided Design of Quality Management System

Computers in Business Practice

Controlling

Designing and Manufacturing Process Management

Designing of Basic Processes in Quality Management

Diploma Project

Diploma Thesis

Dissertation Thesis

Economics Analysis

Economy

Ergonomy

Exact Methods in Managerial Decision making

Financial and Investment Management

Financial Management

Human Resource Management

Change Management

Information Management

Innovation Management

Integrated Marketing Communication

Intellectual and Industrial Property

Intercultural Management

Labour Rationalization Basics

Logistics

Logistics in Quality Management

Management

Management and Marketing

Management Basics

Management Information Systems

Management of Investment Progresses

Managerial Ethics

Managerial Skills and Communication

Marketing

Marketing in Quality Management

Marketing Management

Marketing Strategies

Operation and Maintenance of Machines

Operational Research

Organizational Culture

Pedagogical Activity

Personnel Management

Practical Experience in Production

Practice

Production Management

Products Reliability Ensurance

Project Management

Project of conformity assessment

Project of satisfaction monitoring

Quality Audits

Quality Economics and Financial Analysis

Quality Management

Quality Management Case Studies

Quality Management

Quality of Production and Services

Research Thesis

Satisfaction Monitoring Project

Semestral Project

Standardization, certification, conformity assessment

Standardization, conformity assessment, certification and accreditation

Statistical Methods

Statistical Methods of Quality Control

Strategic Management

Taxes Management

Tools and Techniques of Quality Management

Total Quality Management

GRADUATE THESES

Bachelor theses

Fojtlín, Pavol: The pricing analysis as the part of the cost oriented to managing of quality

Boleček, Adam: The Analysis of the Evaluation of Competitiveness in the Selected Organisations from the Perspective of Quality Management

Hrkeľová, Lucia: Analysis about influence of innovation activities on increase of quality in bussinesses which they offer new products or services

Prekopová, Katarína: CRM - exigence, evolution, anticipation and routing at the better decision

Polakovič, Matúš: Economic and noneconomic motivation tools as instruments of work productivity increase

Vyskupová, Monika: Economic and non-economic motivators as tools for improving work productivity

Stúgelová, Karina: Environmental oriented personal management as a tool of a sustainable development of Smurfit Kappa Obaly Štúrovo a.s.

Jasenský, Matej: External vs. internal coaching of subordinates and his influence for the development of business

Šmalinská, Veronika: Quality and career affecting performance of organizations

Omelková, Hana: Quality and career like factors affecting performance of an organization

Palacka, Andrej: Application possibilities of principles of JIT (Kanban) in planning and managing of production processes in Pastorkalt a.s.

Voznický, Marek: The application of an adaptation program of new employees in company Zentiva a.s. Hlohovec

Doboš, Marián: Proposition of complex of arrangements to improve the reward system in ABATEK s.r.o. Vrbové

Bahno, Ján: Proposal of complex measurements for improvement of motivation system and social program in company VETROPACK s.r.o. Nemšova

Tarčáková, Monika: The conception of propose steps concentrated on the improvement of the system of employees education as the condition of the optimalisation of the firm's culture in the company TOMA INDUSTRIES, s.r.o., Trnava

Lábsky, Ivan: Projection of criteria for choosing about juridical form of company

Vrbovská, Beáta: Proposal for a methodical process of measurement of satisfaction of MTF STU Trnava employees using CAF model

Baňáková, Zuzana: Proposal on the methodical progress for determination of capability the measures

Murgáč, František: Design of methodical process by competency testing of production

Šimášek, Milan: Proposal of Suppliers selection Procedure in an Automobile Industry

Šúryová, Jaroslava: Environmentally Oriented Management in the Company ŽOS Trnava, a.s.

Danko, Dušan: Improvement suggestion of marketing mix selected instruments

Moleková, Veronika:Proposal of references to motivation employees for increase productivity of work

Srogončíková, Katarína: The proposal of recommendations for the improvement of chosen personal activities

Chudý, Ján:Proposition of recommendation for quality improvement in planning and control

Lizák, Roman: Proposal of recommendations for improvement of quality in production process

Machalová, Jana: Recommendation proposal for improvement of the quality guarantee in the production process

Gábriš, Martin: Design of advices to improve the system of classification employees

Vaclaviková, Dana:Proposal arrangements ergonomic rationalization of working process at selected working venture TOMA INDUSTRIES, s.r.o., Trnava

Puvák, Ľudovít: Proposal of ergonomics rationalization in chosen operation on ON Semiconductor Slovakia, a.s. Piešťany

Paulovčák, Patrik:Proposal of measures of ergonomical rationalization on chosen operation of company SONaP, s.r.o. Sečovce

Švec, Michal: A proposal of steps of ergonomic rationalization in selected operation of company Termomont, Dolná Krupá, s.r.o.

Hečková, Zuzana: Proposal of action how to applicate the Kanban system in planning and coordinating of the production process in Sony, Trnava

Hureková, Adriana: Procedures proposal of ergonomic rationalization of working processes in selected shop within factory VISTEON Slovakia

Tančibok, Tomáš: Draft of measures for the form of purchasing of the long-term material property

Ščasná, Jana: The proposal of measures for identification and analysis equipments of employees education in factory Zentiva, a.s.

Kubasáková, Daniela: The suggestions of measures to rationalization of production logistics in a company VUNAR Product, a.s. Nové Zámky

Kschillová, Dagmar: Package of measures to development marketing and selection tools of marketing mix in microambient selection business

Nízka, Elena: Suggestion of Measurements on Development of Marketing Mix Tools in The Micro-Milieu Firm of AGROPARTNER Ltd. Plavecké Podhradie

Marko, Peter: Proposal of measures for development management marketing activities with trend for purchasing of metallurgical material in ŽOS Trnava, joint stock company

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Karásková, Veronika, aut. - Holková, Andrea, ved. práce: Návrh opatrení na tv. Proposals formulation of managers and employees training plan in ŽOS Trnava, a.s.

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Ondrušeková, Marianna: Layout of the application on exploitation of trade mark like a part of the marketing communication in business company JATKA Hurbanovo Ltd.

Bírová, Iveta: Proposition the solutions of implementation and application the innovative strategy in Georgia-Pacific Slovakia, s.r.o. Hlohovec

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Ivanovič, Peter: Proposal steps to improve organizational structure of chosen company

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Kosnáčová, Lucia:Application of interrelated measures on development process options organizational structure of choices company

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Gábriš, Marián: Application measure for development formation effective team in OSRAM Slovakia, a.s. Nové Zámky

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Koleňáková, Jaroslava: Suggestion of steps for more effective identification and analyse necessity education of employees of ZF SACHS Slovakia stock company, Trnava

Zaťko, Ivan: Proposal of steps for more effective internal directives for accounting in company TOMA INDUSTRIES, s.r.o.

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Drieniková, Katarína: The Project of Arrangements How to Make Strategic Management of KONŠTRUKTA-Industry, a.s. More Effective

Ivanovič, Juraj: A proposal of steps for increasing efficiency of education system in JAVYS, a.s. Jaslovské Bohunice

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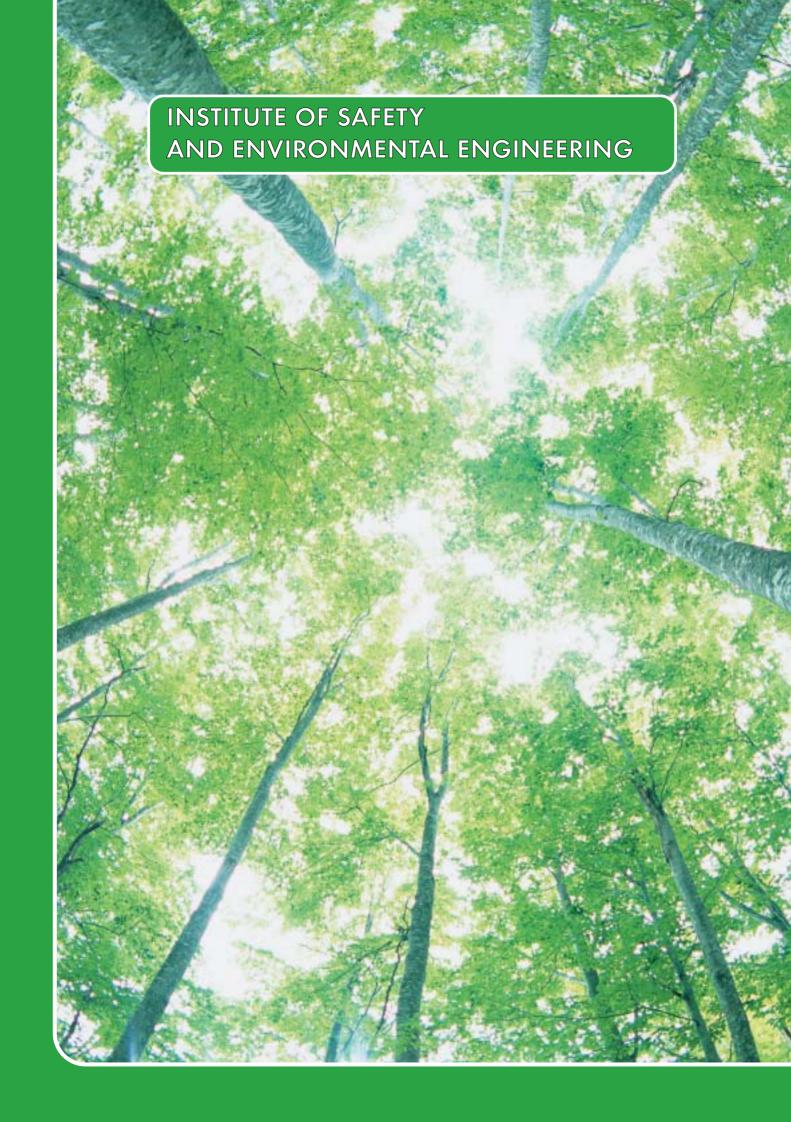
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INSTITUTE OF SAFETY AND ENVIRONMENTAL ENGINEERING

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http://www.mtf.stuba.sk/generate_page.php?page_id=2838

Institute Departments

- Department of Environmental Engineering
- Department of Safety Engineering
- Department of Industrial Safety

Staff

• Professors: 1

Assoc. Professors: 4Senior Lecturers: 8Research Fellows: 1



Study programmes

- Environmental Engineering
- · Work Safety and Health Protection
- · Environmental and Safety Engineering
- · Integrated Safety

Research targets

- assessment of wastes of cutting fluids, cooling emulsion and their life cycle prolongation, changes of composition during microbial contamination
- · risk assessment and hazard analysis of industrial fire
- · hazard assessment of dangerous wastes and hazardous substances
- fire hazard analysis of industrial dust and flammable materials
- · safety analysis of technical systems
- the use of progressive oxidation processes for degradation of organic pollutants
- application of SETUR sprinkler for removal of some water pollutants
- · utilization of solar energy
- · determination of drinking water quality

RESEARCH CHARACTERISTICS

Laboratory testing:

- testing of combustibility and explosiveness of substances, product and wastes in different states,
- appraisal of fire-fighting foam and spray properties in the aging process,
- monitoring of chosen factors in the work environment, appraisal of noise and lighting at the workplace,
- analysis of drinking water quality,
- · determination of biodegradability of cutting fluids,
- · determination of organic pollutants using analytical methods

Document elaboration:

- danger characterization and risk appraisal of selected substances, products, wastes and technologies in dependence on the partner requisites,
- elaboration of protocol on identification of the external effects, elaboration of documentation on explosion protection,
- · elaboration of emergency plans in accordance with legislation,
- · risk assessment and risk analysis of fires in the industry.
- implementation of occupational health and safety assessment series (OHSAS), (internal audits, preparation for certification audits)

Research studies:

- study of limiting conditions of initiation of burning process of powder materials.
- · impact of fires and its liquidation to the environment,
- environmental charge from the usage of foam extinguishing agents, appraisal of biological degradability of chosen foaming agents,
- fire danger of PVC cables and theirs protection,
- creation of knowledge database and expert system for the risk appraisal of dangerous substances, products, wastes and technologies and other dangerous processes,
- modeling of impacts of industrial accidents to the environment,
- usage of PC models to the material escape modeling, comparison
 of different types of modeling programs in the field of dispersion
 of the materials to the environment,
- study of health and safety aspects of occupational indoor environment,
- progress and utilization of small hydroenergetic source in combination with solar equipments for branch of engineering,
- establishment technical-consulting laboratory for utilizing and consequently propagation of solar energy,
- determination of characteristics of emission quantification and indicators of atmosphere quality in conditions of European legislation,
- The exploitation of advanced oxidation processes in removal of organic pollutants from wastewaters by the use of wastes from production and treatment of metals as catalysts,
- advanced environmentaly suitable methods for utilization and removal of wastes from machine industry,
- research and development of utilization fytomass technologies for liquid fuel production from renewable resources,
- botanic garden as an instrument for environmental consciousness of citizen escalation,

Consulting, training and courses:

 training and courses focused on the health and safety at work, safety education in the sense of international standards, research

- coordination for the specifically application targets and requirements for the increase of the safety of industrial regions,
- guidance for implementation of occupational health and safety assessment series (OHSAS), consulting in the field of emergency planning,
- · consulting in utilization of renewable sources of energy.

INTERNATIONAL PROJECTS

EUREKA E!3266/STU/08 (01.01.2008-31.12.2011)

doc. Ing. Ivana Tureková, PhD.

Modelling the dispersion of emmissions of dangerous substances during major industrial accidents.

The project deals with the ways of supporting the international collaboration in research into the modeling of dispersion of emissions of dangerous substances during major industrial accidents. The STU MTF Department of safety Engineering is a partner - candidate for EUREKA E! 3266-EUROENVIRON VEBAIR project. The software programs purchased will enable to calculate the dispersion of emissions in residential and industrial areas. The output will be a practical application of monitoring and modeling the dangerous states.

14150100019 (01.08.2006-28.02.2008)

prof. ing. Karol Balog, PhD.

Establishment of the technical-consulting laboratory for the utilisation and consequent promotion of solar energy.

The project is oriented on an alternative source of energy promotion - solar energy through thermal and photovoltaic panels. The established technical-consulting laboratory will provide consultations, presentations and lectures with practical demontrations of several working solar systems. The actual power of the installed solar equipment can be seen online.

G/404/2000-2 (01.01.2000-31.12.2050)

Prof. Ing. Karol Balog, PhD.

Ecological aspects and control of major-accident hazards involving dangenerous substances

11230100437 (01.01.2007-31.10.2008)

doc. Jasenák

Increasing the competencies and education of PhD students

NATIONAL PROJECTS

LPP-0171-07 (01.04.2008-31.03.2011)

Ing. Anna Michalíková

Natural phenomena in experiments for children and adults

After consultations with the basic and secondary school teachers, a communication portal oriented on the following ideas will be developed: environmental education and health, physics in common life, astronomy, alternative energy sources, wastes and recycling. The website will contain e-materials with visual experiments which cannot be carried out in the classroom due to the dangerous chemicals and the absence of related tools and instruments. The e-learning courses developed in collaboration with the teachers could be used in pedagogical process and also in the preparation of talented students for specialised competitions and will be available for interested parties. The project output will facilitate the communication with public, teachers and students of basic and secondary schools.

VMSP-P-0054-07 (06.08.2008-07.08.2008)

doc. Ing. Jozef Jasenák, PhD.

Optimisation and research of palletes components by progressive technologies

Optimisation and research of palletes components systems for tyres, automobiles, automobile components, rolled profiles etc. will utilise the introduction of the elements and nods on a palette via semi-automatic and automatic process, as well as the progressive ways of production of the components such as plasma, laser and cutting which are currently replacing classical technologies. The research of the optimal construction of the basic frame regarding the type of loading capacity is an important component of the research. The palettes have limited dynamic load and life cycle. The automated system will be based on the calculation of the new construction of the palette and its components, which directly influences the dynamic load, lifecycle and also the price on the market with tough competition.

KEGA 3/6431/08 (01.01.2008-31.12.2010)

doc. Ing. Černecký Jozef, CSc.

Determination of emission quantification and indicators of atmosphere quality in the European legislation cinditions

Project is focused on particular results of the state and production of atmosphere

VEGA 1/0488/08 (01.01.2008-31.12.2010)

doc. Ing. Ivana Tureková, PhD.

Environmental impacts of the fire-fighting foams from the extinguishing fires in nature

If fires in nature are not extinguished early, they can seriously endanger nature. Fire-fighting foams used by the fire-interventions bring these substances into natural environment and can cause the contamination of environment. It is important therefore to know the foam in terms of fire-fighting properties and also of the environmental impact. Due to the absence of information about ecotoxicological properties and biological degradation of fire-fighting foams, the physical and chemical properties and also the effect external conditions on the effeciency and stability of foam will be searched. The valuation system of parameters and screening for selection of foams will be also designed. This information is necesary to reduce the negative impact on environment.

VEGA 1/0798/08 (01.01.2008-31.12.2010)

doc. Ing. Stanislav Hostin, PhD.

Development and utilization of small hydroenergetic power source combined with solar systems in machine Technologies

Small hydroenergetic power source with rolling fluid machine represents a unique, patent protected device working on a yet unknown hydrodynamic principal. The device rolling fluid machine is of a simple construction. It is able convert hitherto not utilize, low hydropotential to mechanic or electric energy with function of the rolling fluid machine. On the base of this finding, together with methods of hydraulic with methods of hydraulic similarity of machines, to model various types of hydroenergetic sources. Also designed and testing small hydroener getic power source combined with solar equipment that to utilize in machine technologies for example to producing electrical energy on power supplying measurement and regulation systems, to pumping, transport, heating or cooling liquids etc.

LIST OF SUBJECTS GUARANTEED WITH THE INSTITUTE

Assessment of environmental effects

Bachelor Project

Bachelor Work

Basics of Biological Systems

Basics of Environment Monitoring

Basics of Environmental Engineering

Basics of Environmentalistics

Basics of Safety Engineering

Blast and Fire Protection

Blast Protection and Industrial Safety

Connoisseurship of Commodity

Danger Activities Management

Danger Activities Psychology

Danger Effects and Processes Simulation

Danger Materials

Disposal with Waste

Dissertation Project

Ecological Disposal with Materials and Waste

Educational Acitivity

Environment Justice

Environmental and Safety Information Science

Environmental Design

Environmental Engineering

Environmental Chemistry

Environmental Law

Environmental Management

Environmentalistics

Fire Engineering

Fire Safety of Buildings and Technologies

Fire-Fighting Safety of Buildings

Fundamentals of Environmental and Safety Information Science

Fundamentals of Environmental Biotechnologies

Fundamentals of Environmental Law

General Ecology

General Chemistry

Human Reliability in Technical System

Chemical and Mechanical Technologies and Environment

Chemistry

Chosen Chapters of WSHP Control in Company

Industrial Accidents Prevention

Industrial Toxicology

Informative Techniques in Risk Analysis

Inorganic and Organic Chemistry

Integrated Management Systems

Law and Technical Directions of WSHP

Major Industrial Accidents

Management of Risk

Monitoring of risk factors in environment

Monitoring Systems in Environment

Noise, Oscillation and Ionizing Radiation in Occupational Environment

Occupational Environment Engineering

Physical and Chemical Instrumental Methods

Practice

Processes of environmental technologies

Project of Environmental Protection

Quality Control and Normalization in WSHP domain

Remediation Technologies

Renewal of Damaged Ecosystems

Research Work

Risk Analysis Methods

Risk Control Methods

Risk Evaluation in Environment

Risk Theory and Casual Processes

Safety and Reliability of Systems

Safety Engineering

Safety of Industrial Technology

Safety of Technical Systems

Sanitation of Work

Social and Economic Aspects of WSHP

Technical and Safety Conditions of Materials and Constructions

Technical Apparatus Risks

Technical Systems Reliability

Technologies and Environment

Technologies of Waste Management

Theory and Management of Safety Control

Theory of Diagnostic, Maintaining and Repairs

Thesis / Diploma Work

Thesis Project / Diploma Project

Work Safety and Health Protection

Work Safety of Man

GRADUATE THESES

Bachelor theses

Ďurčanský, Matej:The Analysis of human health risk in car service.

Benedikovič, Igor: The analysis of dustiness in beton factory Hidrostavbet Ltd.

Žitňanský, Tomáš: Risk analysis by lathe work.

Michálek, Ivan: The analysis of damaging volatile substances by the gas chromatography .

Košíková, Jana: Analysis of separated collection of communal waste in the village.

Hrubšová, Jana: Analysis of the system of collection and assessing waste in the company Delphi Slovakia, Ltd.

Šramatá, Dagmar: Analysis of narcotic and psychotropic substances by gas chromatography and their effect on users.

Meravá, Martina: The Application of Environmental Management System in ZF Sachs Slovakia, a.s., Trnava.

Trnovský, Martin: Application of legal requirements in managed documentation of Safety and Health Protection.

Konya, Juraj: Audit of health and safety at work on selected workplace.

Ďureje, Jozef: Audit of health and safety at work in selected organisation .

Vékony, Peter: Job safety industy background.

Tompoš, Michal: Safety at work and working processes of firefighters.

Čapková, Jana: Foreign substances in food.

Lysá, Lenka: Inorganic substances in food sequence.

Dubovan, Michal: Decontamination of Firemen.

Kubica, Lukáš: Energy budget contiguous with exploitation of solar power.

Žilová, Andrea: Energetical use of biomass.

Bartovicová, Monika: Environmental information for consumers about products.

Mančíková, Erika: Environmental manager accountancy as an environmental policy tool .

Blašková, Eva: Public Procurement and red-tapie .

Adamusová, Dušana: Environmental charges of the region Horná Nitra.

Lamačka, Peter: Environmental reporting in organisations with established environmental management systems.

Záhorec, Peter: Evaluation of the quality of underground water in a chosen area .

Štibraná, Monika: Evaluation of the utilization biomass as an energy source.

Antal, Jaroslav: Assesment of the health hazards in logistics manager position from working environment point of view .

Stolárová, Martina: Identification of risk factors affecting the human organism in VEOLIA, a.s.

Cerovský, Martin: Identification of Hazards as a tool of distribution of personal protective working equipments .

Janovič, Martin: An internal audit under the OHSAS regulations in Skanska BS, a.s.

Gergelová, Dana: Water quality control by regulation to drinking water.

Chocholoušková, Zuzana: Quality of water in the selected locality.

Hornáček, Matej: Human factor in accident occasion.

Morávková, Jana: Proposal improvements occupational health and safety in upholstery productio.

Kocian, Karol: The improvement of work safety in the stone-pit Buková.

Zaoralová, Lucia: Untraditional possibilities of using for solar energy.

Štibrányiová, Tatiana: New trends in the area of processing wastes from plastics.

Kollárová, Mária: The air protection in the face of dust particles.

Halászová, Tünde: The safety plan of a construction in practice.

Ďuriš, Ľubomír: Safety and occupational hygiene policy in The Execution of punishment Institute and The Execution of pre-trial custody Institute in Ilava.

Bukový, Filip: Examination of the Quality of Underground Water of Inactive Sludges - Pastuchov.

Mĺkva, Barbora: Review of the influence of selected waste dump to environment.

Vanečková, Jana: Environmental impact assessment of the rebuilding of the city swimming-pool in Vrútky on environment .

Uváčik, Martin: Transport of radioactive waste from an environmental point of view .

Kardošová, Jana: State help on protection and creation in environment.

Gajdošová, Renáta: Study of effect chosen service of fork lift to environment.

Duda, Martin: The study of the utilization of waste sediment as source of power .

Danková, Mária: Cooperation between the provider of nuclear devices with the state administration and local government on protection of emergency planning and emergency readiness.

Dostálová, Monika: The technology of processing biomass into fuels and the influence of biofuels usage on the living environment.

Horváth, Michal: Influence of physical-chemical characteristics on initiation of the process burnings industrial dust.

Gaálová, Marta: The effect of noise on the health of the employees in the company Drevomont-Fitos, Dunajská Streda.

Masters theses

Repa, Ondrej: Analysis of waste made in Chemolak, a.s..

Čemez, Peter: Application of voluntary tools of environmental policy in business practice .

Harangozó, Jozef: Audit of safety and health protection at work in plant in chosen workplace .

Matuščin, Peter: Safety of Work with paintcoa substances in SlovZink, Inc., Košeca.

Babelová, Ivana: Safety and orientation marking as a significant element of employer and employee health and safety at work executive.

Holková, Gabriela: Biodegradibility of informations management .

Švantnerová, Katarína: Environmental and safety products labeling.

Erős, Pavol: Check lists of selected activities on Fire Station in Komárno.

Bagó, Marian: Modeling the accident state of dangerous substances in the workplace sewage tank in Smurfit Kappa Štúrovo, a.s.

Holičková, Lucia: Monitoring of pollutants on selected dump.

Roháľová, Miroslava: Possibilities of sanitation and remediation of soils involved with acidification .

Kupková, Veronika: Possibilities of stabilization of organic pollutants in soils and bottom sediments .

Morávková, Ivana: Settings possibilities of chosen organic matters in biomass.

Krajči, Martin: Ways of use of environmentally sound technologies.

Boleman, Tomáš: Application possibilities of renewable....

Volner, Lukáš: Pretreatment possibilities of phytomass for fermentation production of ethanol.

Valentová, Lucia: New trends in wastes assessing from separated collection.

Galinski, Marek: Arbitration noisiness at the workplace Oceliareň.

Šudý, Marián: End-of-life vehicles recycling like the source of matters and raw materials.

Blinová, Lenka: Treatment of biomass to biofuels in therms of their environmental impact.

Fiala, Jozef: Biodegradability determination of selection components of biomass.

Gáspárová, Marta: Assessing properties of biodegradable plastics.

Bacák, Peter: Old vehicles and assessing windshields in SR.

Spišeková, Silvia: Study of characteristics of chosen type of hydroengine Setur according to its use for irrigation.

Kollár, Martin: Study of the usage of photovoltaic systems for chosen electrochemical processes.

Adamec, Matúš: Study of thermic pump utilization alternatives in selected enterprise.

Sucharda, Michal: Study of impact of external conditions on ignition temperature of woody dusts.

Schön, Milan:Creaton of e-documents in education and science research in branch of environmental engineering.

Schmiedtová, Michaela: Application tool ecological foot print in environmental management.

Kolmosová, Jana: Application FSC Standard on requirements of Swedwood Malacky.

Gajanec, Martin: Evaluation of System Collection of Electro-waste in Chosen Company.

Buštorová, Martina: Exploitation of renewable sources of energy.

Sersen, Miroslav: EMS implementation according ISO 14 001 in Tatrachema, co-opt, Trnava.

Lorencová, Zuzana: Evaluation of quality of surface water - lake Adamov.

FOREIGN VISITORS TO THE INSTITUTE

Assoc. prof. Dr. Ing. Michael Šenovský, FBI, TU Ostrava, Czech Republic Dr. Reiner Jaspers, OKOTEC, Schwalmtal, BRD

VISITS OF STAFF MEMBERS TO FOREIGN INSTITUTIONS

prof. Ing. Karol Balog, PhD. Austria Wels; Czech Republic Dům techniky České Budejovice; Czech Republic VŠB TU Ostrava doc. Ing. Ivana Tureková, PhD. Czech Republic VŠB TU Ostrava

MEMBERSHIPS IN INTERNATIONAL PROFESSIONAL ORGANISATIONS

Czech Republic Firework and Safety Engineering association Prof. Ing. Karol Balog. PhD.

International Institute of Welding

Prof. Ing. Karol Balog, PhD.

MEMBERSHIPS IN SLOVAK PROFESSIONAL ORGANISATIONS

ARPOS

Prof. Ing. Karol Balog, PhD

Slovak National Accreditation Society (SNAS)

prof. Ing. Karol Balog, PhD.

Slovak standards Institute

Prof. Ing. Karol Balog, PhD. RNDr. Miroslav Rusko

Slovak Academy of Science / Slovak Chemical Society

Ing. Richard Kuracina, PhD.

Slovak Academy of Science / Slovak Ecology Society

RNDr. Miroslav Rusko

Slovak Academy of Science / Slovak Biology Society

RNDr. Miroslav Rusko

Civic Association UMBRA

RNDr. Maroš Sirotiak

Nature Protection Club

RNDr. Maroš Sirotiak

PUBLICATIONS

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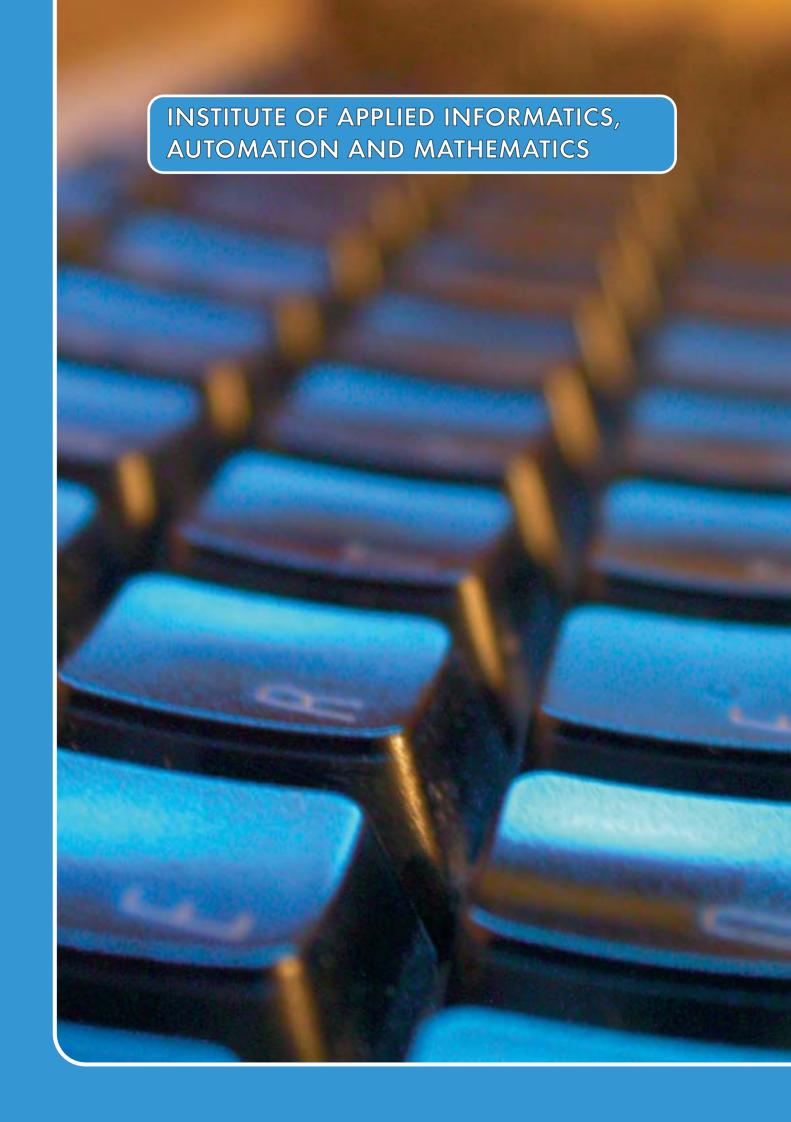
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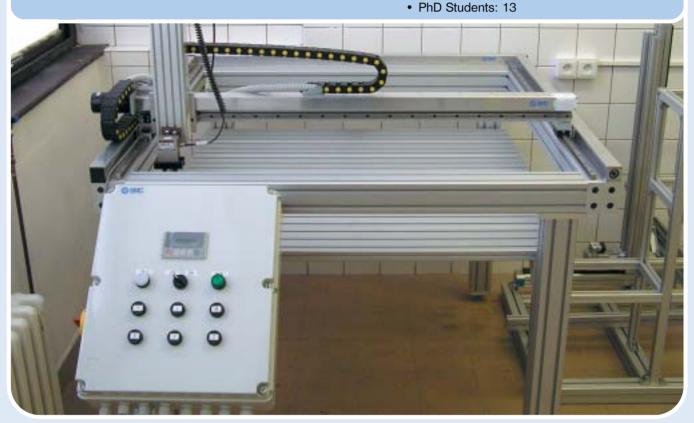
Institute Departments

- Department of Mathematics
- Department of Applied Informatics and Industrial Automation

Staff

• Professors: 3

Assoc. Professors: 9Senior Lecturers: 26Research Fellows: 2



Study programmes

- Applied Informatics and Automation in Industry
- Automation and ICT Implementation in Processes

Research targets

- control theory, control systems, control systems sensibility and robustness, PLC
- information and database systems
- · client-server architecture systems
- artificial intelligence and expert systems, genetic algorithms, fuzzy sets and systems
- · system modelling and simulation
- computer graphics, graphical and CAD/CAM systems
- CIM
- · multimedia, virtual reality
- properties of solutions of ordinary differential equations
- · metrics and topological properties of real functions
- · fractals and chaos
- graph theory algebraical and topological graph theory
- · geometric interpolation of massifs
- rationalization of teaching in the sphere of contents, methods and forms,
- · e-learning

RESEARCH CHARACTERISTICS

Institute research is oriented to the process control informatization and automation fields on all levels of production control, i.e. technological, workshops and managerial in consideration of new trends in the mentioned fields (development of intelligent control methods, new software support, new trends in the information storing, obtaining and using, multimedia and graphic systems, process visualization field, etc.). With the orientation on production process we reach near co - operation with other MTF institutes. Actually we increase part of applied research at the expense of basic research. This depends on the increasing interest of companies to solve their real problems.

The main fields of research: information and database systems, software engineering, control and regulation systems of technological and production processes, including the questions of control quality, optimality, sensibility and robustness of control systems, as well as control system reliability, modeling and simulation, graphic and multimedia systems, intelligent control systems (genetic algorithms, neuronal networks, fuzzy controllers, expert systems, systems to support decision, ...). The scope of the mathematical part of the institute covers differential equations, real functions, fractals and chaos, graph theory, teachings rationalization methods, E- learning.

Institute AIM provides math, information and automation support. Except scientist-research projects the institute focuses also on education projects, which are of interest from several views as e.g. research applications, rapprochement contacts, material and financial contributions.

INTERNATIONAL PROJECTS

11230220340 (01.04.2006-30.06.2008)

doc. Ing. Pavol Tanuška, PhD.

Increasing the staff's qaulifications and adaptability via the welding and computational courses

The project is oriented on completion of further training in order to increase and improve the adaptability through welding technology and PC courses.

11230100458 (01.07.2007-30.06.2008)

doc. Ing. Peter Schreiber, PhD.

Transformation of the Master degree study programme "Automation and ITC Implementation in Processes" to English language

NATIONAL PROJECTS

LPP-0202-06 (01.10.2006-31.10.2009)

prof. Dr. Ing. Oliver Moravčík

Science closer to students

Project of science and technology popularisation is oriented to students of secondary schools with the aim to increase their interest in new knowledge in the field of science, research and development and to improve the education quality. The main aim of the project is to support education and research through the motivation tools for students and to improve the quality of education.

APVV-0308-07 (01.02.2008-31.12.2009)

doc. Ing. Peter Schreiber, CSc.

Nuclear and radiation safety demonstration methodology of containers for spent fuel transportation based on experimentally achieved data

It is impossible to perform direct measurement of spent fuel residual output in the container. In case the container is presented as a mathematical model of specific thermal system, we would be able to derive residual output based on power proportions or on base of known or measurable physical value (heat capacity, surface, the container and surrounding temperature, heat transition coefficient, etc.). These values could be a link to residual output computation. Obtained values should be compared with values received from standard atomic-physical computation.

KEGA 3/4110/06 (01.01.2006-31.12.2008)

Strémy Maximilián, Ing.

Virtual laboratory of programmable logic controllers LOG0!12/24 RC and selected control objects

One of the goals of this project is to design and implement a virtual lab of the programmable logic controllers according to the model Siemens LOGO!12/24RC with integrated transfer possibility of the control algorithms from the development and simulation environment LOGO! Soft Comfort v5.0.Solving of the project involves also the design and implementation of the selected control objects applicable for control with virtual PLC described above. The project solving method regards the standard requirements and recommendations using in EU for laboratory building for purposes of the classic approach education, distance form of education, e-learning, involving web environment education.

KEGA 3/4149/06 (01.01.2006-31.12.2008)

doc. RNDr. Hanzel Pavol, CSc.

Designing electronic courses in Mathematics

The project deals with e-learning courses of Mathematics. The materials can be used in any university. The use of the materials will be free of charge and available anytime for any students.

KEGA 3/4153/06 (01.01.2006-31.12.2008)

Mišútová Mária, doc. RNDr., PhD.

The teaching model of mathematical courses with support of ICT.

A research project, granted from KEGA agency is solved by Departments of Mathematics of MTF STU and Department of Informatics of USCM.

VEGA 1/3008/06 (01.01.2006-31.12.2008)

Marcel Abas, RNDr., PhD.

Symmetries of graphs and maps

The purpose of this project is to develop new methods to investigate symmetric structures in topological graph theory. We will focus on cellular embedings of graphs in surfaces and main objects of our study will be Cayley maps and regular maps. We believe thaht using theory of Cayley maps on surfaces with boundary recent developed, we will able to solve problems unsolvable up to now.

VEGA 1/0368/08 (01.01.2008-31.12.2010)

doc. Ing. Peter Schreiber, CSc.

Artifical intelligence in flexible manufacturing control systems

The traditional procedural (imperative) approach is used in the programming of programmable productions systems. A sequence of instruction must be given in order to execute a required function.

VEGA 1/0282/08 (01.01.2008-31.12.2010)

doc. Ing. Jozef Vaský, CSc.

3D model generating by means of reconstruction from part engineering drawing orthogonal views

Engineering drawing is a formal 2D notation of geometrical, material and technological features of a real part. Today's CAD/CAM systems

are based on 3D solid modeling. They make it possible to generate drawings from visualizational and technological operations. It would be therefore effective to transform paper drawings of parts right into 3D representation.

VEGA 1/0068/08 (01.01.2008-31.12.2010)

Mgr. Róbert Vrábeľ, PhD.

Analysis of the boundary layers for three and four points boundary value problem of singularly perturbed second-order ordinary differential equations

We provide geometric and quantitative analysis of the dynamics of three and four points boundary value problem for singularly perturbed second-order ordinary differential equations \epsilon $y_{-}=f(x,y,y_{-})$ near of the critical manifold (hyperbolic and non-hyperbolic).

VEGA 1/0170/08 (01.01.2008-31.12.2010)

doc. Ing. Pavel Važan, PhD.

The proposal of alternative procedure of manufacturing lot size determination in flexible manufacturing systems by simulation optimization

The main goal of the project is the proposal of alternative procedure of manufacturing lot size determination in flexibile manufacturing systems by simulation optimization. The procedure will be designed and verified for a piece and batch production.

VEGA 1/0582/08 (01.01.2008-31.12.2010)

doc. RNDr. Jaroslav Červeňanský, CSc.

An extension types of convergence in fuzzy spaces

Analysis of various type of convergence at fuzzy spaces, fuzzy metrics and types of convergence in these metrics, problem analysis according to commonplace axioms and selection of optimal application and numerical times-consuming algorithm.

LIST OF SUBJECTS GUARANTEED WITH THE INSTITUTE

Actuarial Mathematics

Analytic Geometry

Applied Mathematics

Automatic Control Hardware

Automatic Control Theory

Automation of Data Scanning and Processing

Bachelor Project

Bachelor Thesis

Basics of Automation

CAD/CAM Systems

CIM (Computer Integrated Manufacturing)

Complex System Theory

Computer Architecture and Operating Systems

Computer Networks

Computers in Personal Practice

Control of Flexible Manufacturing Systems

Data Visualization

Database Systems

Database Systems and Works in Networks

Decision Support Systems

Descriptive Geometry

Development Environment

Development of Information Systems

Differential Equations

Digital Control Systems

Diploma Project

Dissertation Project

Education Activity

Fuzzy Systems

Graduation Project

Graduation Theses

Graphical Data Processing

Industrial Programmable Controllers

Information Systems

Information Technologies

Information Technologies Basics

Information Technology and Society

Integration of Production Control Systems

Intelligent Control Methods

Introduction to Discrete Mathematics

Knowledge Representation and Inference Mechanism

Linear Algebra

Mathematical Methods of Experiment Planning and Evaluation

Mathematics

Modeling and Simulation

Neural Networks and Genetic Algorithms

Numerical Mathematics

Planning in Production Systems

Practice

Production Systems Control

Production Systems Modelling and Simulation

Programmable Logic Controllers

Programming Languages

Programming of Control Systems

Programming Practicum

Projects Control

Reliability of Control Systems

Research Working VII

Robots and Manipulators

Selected Chapter from Technical Systems and Cybernetics

Simulation Optimization in Production Systems Control

Software Engineering

Spreadsheets and Graphics Processors

Systems Analysis

Systems Modeling and Simulation

Systems Programming

Systems Theory

Theory of Experiments Planning

Web Technologies

GRADUATE THESES

Bachelor theses

Vyskoč, Marek: Adaptive IP telephony and its application for e-Learning growth.

Paraj, Ladislav: String searching algorithms.

Uhlík, Matej: Analyze options of creating applications for mobile devices (Windows Mobile, Symbian) .

Trnka, Kamil: Animation of the interactive cybernetic systém.

Szöke, Kristián: Contact management application with support of electronic communication.

Braniš, Martin: Authoring systems.

Tomeček, Juraj:Digitalisation and processing by chosen softwares of the data collected by videocamera.

Babolčai, Andrej: Distribution of static ARP entries using XML web services.

Tulala, Daniel: Documentation analogue models.

Slovinský, Miroslav:Electronic service book .

Hucík, Vladislav: Database system for a business car repair shop.

Ágh, Daniel: Registration system of publication activities for KAIA.

Arpáš, Filip: Formats and interfaces for digital video.

Tomiš, Ján: Geographics informations systems.

Vyskoč, Lukáš: The graphical formats for medical images.

Pintér, Tomáš: HW simulator of technological process.

Kuna, Ivan: Implementation of GSM modul with 12C bus.

Kozáková, Adriána:Interactive multimedia application for mathematical text - Differential calculus of function of two or more variables.

Lukáč, Martin:Interactive multimedia application for electric machine measurement (Practise directions) .

Ploczek, Michal: Inteactive Whiteboard and its exploitation in Integrated e-Learning.

Szabó, Ondrej: Interactive Education of German Language.

Krajčír, Lukáš: Internet interface for discusion forum.

Orlický, Matej: Internet interface for store (PHP, MySQL).

Rehák, Miroslav: Comparison analysis of backup technologies.

Kozma, Miroslav: Graphics Images Format Compression.

Ronec, Lukáš: Computer configuration software.

Sokol, Juraj: Linux server - firewall, web, mail, ftp and samba server.

Graňák, Boleslav: Monitoring and management Headend CATV.

Mikušík, Marcel: Monitoring and analyzing data in computer network.

Vaský, Andrej: Design and implementation of visualization data module for object application.

Škreňo, Peter:Design and implementation of SAN (Storage Area Network) network in a company environment.

Beneš, Peter: Design and realization of application to view manufacturing plan in firm Pastorkalt a.s.

Máliš, Miroslav: Suggestion and realization of registration system for F-shop.

Skripčák, Tomáš: Design and implementation of helpdes (C#, ASP.NET)

•

Mikuš, Andrej: Design and realization of an interactive multimedia application for education support of Mathematics I, part "Linear algebra".

Lenický, Ľuboš: Design and realization of interactive multimedia application for the support of teaching subject of Mathematics I, part "Indefinite integral" .

Kováčik, Michal: Design and realization of interactive multimedia application for the support of teaching subject of Mathematics I, part "Character of real function and its limit" .

Hajdin, Martin:The suggestion and the realisation of model IS with UML usage.

Gajarský, Marek: Suggestion and realization of the model house heating control in "Matlab" .

Motúz, Peter: The suggestion and realization of information system for needs of evidence of protected specimen.

Keselyová, Andrea: Design and creation of interactive aplication Object-oriented programming.

Dubravec, Miroslav: Projection and creation of multimedia application for the interactive instruction of MS Visual C# .

Drinka, Boris: Designing and creation of multimedia application for interactive education of Computer architecture.

Koníčková, Gabriela: Database system of a car bazaar.

Štetiarová, Katarína: The System of Truck Transport in UML Notation.

Fedorová, Erika: Proposal of Database system of firm.

Kozák, Michal: Design of IS for hypermarket.

Lackovič, Miroslav: Design of computer network and its security.

Panák, Branislav: Design of computer network and its security features based on open source systems.

Krško, Roman: Project manager design and his implementation in.NET CF C# .

Einšpigl, Jozef: Application web side for analytic geometry. Šimončič, Roman: Creating a web page for Solid geometry.

Pavelek, Marek: Proposal of web set of interactive mathematics tasks operating with tests and a chosen part realization.

Štofan, Milan: Network design of company with MPLS technology.

Korytár, Marek: Object security fire-fighting device.

Végh, Ondrej: Examination of stability dynamic systems of the 2nd

degree with constant coefficients depending upon the system's parameters supported by computer.

Zambor, Ľuboš: Comparison and testing of compression algorithms.

Moravčík, Juraj: Methodical manual of programmable controller KRGN 90 in english language.

Olah, Miroslav: Product manual for controller UDC 3300 in english language.

Porádek, Martin: Problematic of helpdesk files production.

Slabý, Peter: Programming of database application in PHP.

Toma, Martin: Realisation presentation multimedia application as final product of KEGA.

Plevjak, Jozef: Controlling of step motor with program language Assembler.

Kázmérová, Xénia: The solution of security of chosen modules of internet schop.

Zámpory, René: Signals GbE and Fibre channel.

Krovina, Jozef: Signals SDH and OTU.

Jančula, Marek: Simulation of two position control of surface level in Matlab - Simulink.

Ungerová, Silvia: Means of using UML language in Testing procedure.

Bendíková, Renáta:The System for the Support of the Tuition with the Possibility of the Assignment Generation.

Sedláčková, Darina: System for electronic documents administration in corporations.

Tóth, Peter: Transformation of the video Hi8 record into digital format for archivation.

Výborčík, Boris: Creating an interactive multimedial application.

Heteš, Marek: Vectorisation of growing plan component.

Melka, Matúš: Visualisation of volume of data reconstructed from CT frame.

Popelka, Dominik: The influence of compression of graphic formats images from the point of view of their position on web pages.

Opálek, Andrej: Setting up a new computer network in an institute of the Slovak Academy of Sciences, configuration and security.

Zich, Pavol: Creating of electronic materials with the topic "Infinite series numerical".

Belko, Stanislav: Creation of electronic matters for the theme: "Infinite functional series" in the form of www pages using cascading style sheets.

Blšták, Peter: Software application development for optimal solution

transportation problem.

Dlhý, Adrián: Utilization of WinAPI in the OS Windows application programming.

Farkašová, Mária: Web presentation of DW in Komárno.

Masters theses

Chynoranský, Dušan: An Analogue model of Junction Exchange Station

Panyik, Ladislav: Analysis of system operation sensibility of production assembly hall

Laufer, Peter: Analysis, design and implementation of information system for lending and selling multimedia titles

Pavlinová, Darja: Controller system analysis with a regulator based on neural network

Darfáš, Miroslav: Application of algorithm for distance measurement in graphs

Sobinovský, Ľubomír: Application for human productivity counting on the production lines, work rating, statistic and bonuses counting

Kopček, Mário: Marking of products automatic process

Steinecker, Peter: Automation of Statistic Process Control

Štrbíková, Mária: Activities of informations management

Košáň, Martin: Sectional solution of design assigning quality of process by evolution of software systems

Bruch, Andrej: The partial solution of the draft of the quality guarantee of the process of the software systems development

Valúch, Vladimír: Numerical model of power system

Štrba, Jaroslav: Data mining - exploration of knowledge from databases

Pavlíková, Martina: Data mining on medical data

Kováč, Boris: Database application for mobile devices on base of Oracle

Chmelík, Martin:The diagnostic temperature monitoring system based on the microcontroler PIC

Voznická, Mária: Electronic data collection for annual account of health insurance by means of intelligent electronic form (IEF) with the technology XML

Valanec, Štefan: The Whole-life dose evidence for external employees of Nuclear power plant

Šimun, Štefan: Generation of 3D model for revolved part using form reconstruction from technical drawing

Pelikán, Vladimír: Generating 3D model of translation object by reconstruction from 2D technical drawing Mesiarik, Peter: Genetic algorithm with the possibility runoff input parameters and execution genetic operation

Suran: Evaluation of the reliability of the methods and their application into energetics

Svatá Michalková: Implementation of ERP system DIALOG 3000S in industry company OMS, s.r.o.

Deák, Tomáš: Implementation of module for mathematical records in system Moodle

Minarovič, Matej: Inference engine for knowledge represented by rules

Blažej, Juraj: Information database system for evidence documents

Matulová, Katarína: Information system for mototechna based on C#

Tvrdoň, Martin: Information system for management of electronic company documents

Dudáš, Miroslav: Information system for system of transport

Tranžíková, Eva: Stocks information system

Futroš, Pavol: Design of information system in UML notation with comparative analysis WEB vs. MDI

Vadkerti, Pavol: Information system in IBM Lotus Notes environment for a middle size corporation

Malinkovič, Martin: Integration of Systems by Integrating Broker

Žálec, Miroslav: Interactive VRML scene in ambient of internet browser

Štiavnický, Matej: Internet application for creating, processing and evaluation of questionnaires

Sedláček, Peter: Internet interface for GPIB bus

Glemba, Tomáš: The control, registration and valuation information system of monitoring persons who work in environment of ionization radiation

Tarkošová, Alena: Methodic of selection and utilization of industrial cameras of any production systems

Horváth, Peter: Business processes modelling with UML tools

Daniš, Mirosla: Monitoring of OS GNU/Linux

Závacký, Pavol: Connection of real proceses to the system of virtual PLC

Vidlička, Kamil: The tool for data conversion from the different types of databases

Spišáková, Lucia: Project and implementation of information system for collection of specific data in field for eustream, a.s.

Katona, Marián: Design and implement plugin of administration for contacts

Čižmár, Marián: Design and realization of numerical controller for universal use

Satina, Juraj: Application and realisation database system bearing on sale hardware components (PHP, HTML, MySQL server)

Čomaj, Andrej: Proposition and realization of didactic software with testing program

Nízl, Miroslav: Design and realization of reconstruction cutting and stripping machine control system

Nagy, István: The development and creation of functional relation between a virtual control device and a technological process

Göndör, Pavol: Proposal and realization system control of stepper motors SIMOSTEP by software SIMATIC

Gabera, Rastislav: Projection and realization of controlling system of servomotors by means of resources SIMATIC

Filiač, Marián: Application design for Helpdesk data analysis in MS Access environment

Lacher, Tomáš: Design of authentification module for OpenBSD & Linux (PAM)

Zelenák, Ivan: Project of automatized testing system for laboratorial purposes

Kopera, Radosla: Design of a Safety Camera Operated trough the Internet

Chupík, Richard: Design of database application for education assistance in C#

Matušák, Marcel: Information system design with modeling CASE tool support

Benechová, Jana: Design of information system to support industrial control of outside mirror assembly on production lines in MAGNA DONNELLY SLOVTECA s.r.o.

Kozár, Tomáš: Design of information system in UML notation (MS Visual C#, ASP.Net)

Vajdečka, Marián: The proposal of the Internet application for the needs of the accounting of the transfer company by utilization AJAX technology and data obtained by Google API

Nižníková, Jana: Suggestion on IS in notation UML for registering operations performed in production

Hurban, Ján: Proposal of complex design IT infrastructure in middle sized company with international connection

Gabriška, Martin: Proposal of a model and a simulation of a mechatronic system in "Matlab" environment

Fitos, Kristián: Developing of model integration of information systems with integration tool ACE Enterprise Integrator

Brožek, Viliam: Project of procedure to automated choosing an available ERP system

Kaščáková, Ľubomíra: The design of procedure of lot size determination by simulation optimization

Ďurček, Adrián: Application program module for visualization fractals pictures

Machovič, Branislav: Proposed regulation of the condenser level in a thermal power plant

Kenížová, Helena: Proposal of the Software System for the Testing Process Support

Valent, Peter: Design of Control system in Traffic based on Fuzzy systems

Boor, Dušan: Design and Implementation of production monitoring system in company HANIL E-HWA Automotive Slovakia s.r.o.

Fridrich, Vladimír:The information system partial proposal for the inspection stand of burned out nuclear fuel

Moravčík, Jaroslav: GPS support for microcomputer's applications

Barlík, Jozef: Comparison of relational DB management systems MS SQL 2005, ORACLE 10g, SYBASE ASE 15

Mrva, Martin: Confrontation Choice Algorithm of Simulation Optimization

Sojak, Andrej: Real remote experiment as an inherent part of the Integrated e-Learning

Žák, Michal: Redesign of calendaring functions in a bank sales application

Bogdan, Pavol: Redesing of calendaring functions in a bank sales application and functional migration design from mainframe to J2EE

Blažej, Juraj: The control of sale management and stock supplies in chain of retail stores - software tool design and description

Kubiček, Martin: Control of heat change station by controller ELESTA RCO 720 D-M

Malina, Michal: Data Processing of automac testing system by the form of CPK analysis

Polakovič, Peter: Suitability of using real-time Java in air traffic control system

Ulík, Róber: XY Plotter controlled with Microcontroller

Puškáš, Peter: Network-based intrusion detection system. Design of the Solution and Implementation of NIDS Snort

Federič, Peter: System for generating pages of redaction system in www environment

Binčík, Pavol: Content Management System (CMS)

Soboslai, Tomáš: Utilization of Web 2.0 inintranet and industry applications

Dudáš, Jaroslav: Utilization of Visual basic for Application in MS Office 2003 applications

Bondarava, Alena: Software development with use of Case tool Rational Software Architect

Tranžík, Martin: Remote control PC via MS Outlook from arbitrary transfer facility through E-mail

Chrenko, Peter: Fieldbus PROFIBUS in SIEMENS SIMATIC systeme

Ardon, Peter: Improving assembly process cooler by simulation

Kováčik, Marek: Improvement of sales management and stock supplies in chain of retail stores

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PUBLICATIONS

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Tanuška, Pavol: The methodology base of data warehouse testing. - Köthen: Hochschule Anhalt, 2008. - 72 p. - ISBN 978-3-86011-016-4

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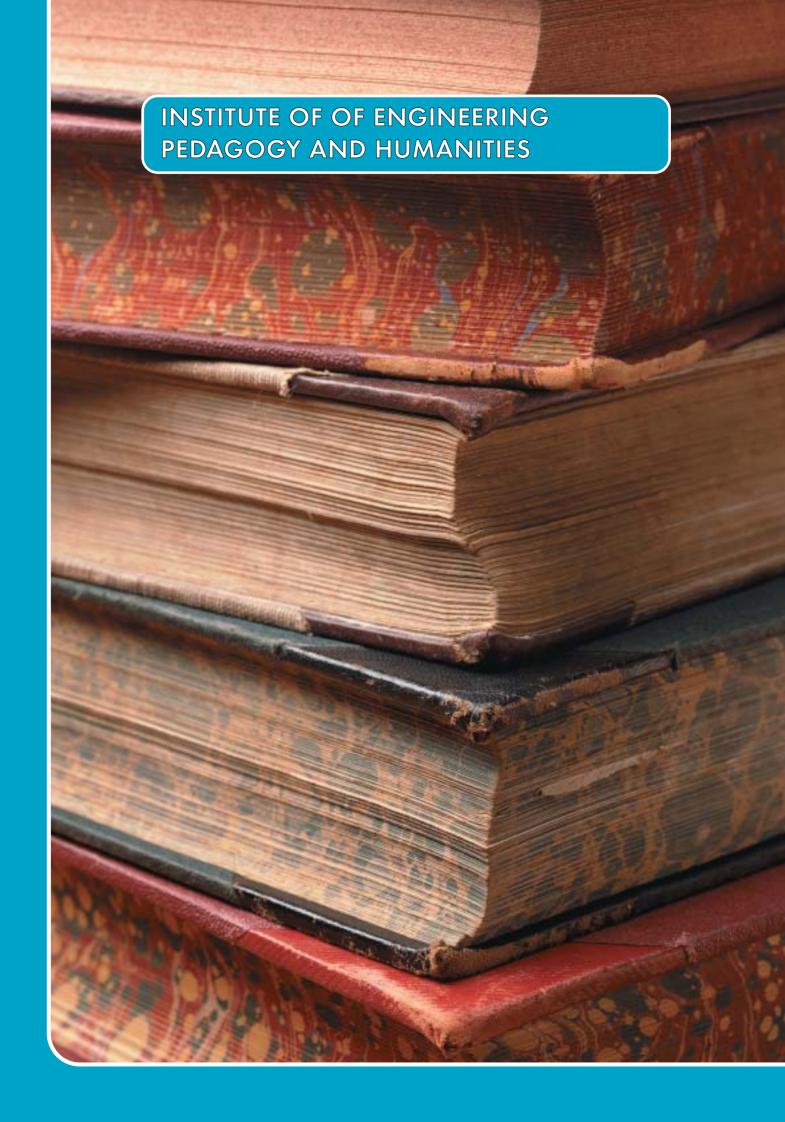
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Institute Departments

- Department of Engineering Pedagogy and Psychology
- · Department of Humanities
- Department of Professional Language Communication
- Department of Physical Education and Sports

Staff

Professors: 3
Assoc. Professors. 6
Senior Lecturers: 30
Research Fellows: 2
PhD Students: 11



Study programmes

- · Personnel Work in Industrial Plant
- Teaching Practical Subjects within Engineering Majors
- Teaching Specific Engineering Subjects
- Didactics of Engineering Professional Subjects

Research targets

- · engineering pedagogy and psychology
- · key competencies of students
- · complementary teacher training and its experimental verification in educational practice
- humane science in technology
- foreign language curriculum improvement based on the needs analysis of the faculty graduates and undergraduates in the field of international professional communication
- investigating of methodological aspects of foreign language teaching and implementation of the research results into educational processes
- · physical culture and fitness

RESEARCH CHARACTERISTICS

The expert aim of research activities of the Institute of Engineering Pedagogy and Humanities at MTF STU stems from the profile of the Institute and faculty in the area of pedagogy, and it is in accord with the long-term aim of the development of the Slovak University of Technology in Bratislava and it covers a full range of the Institute's educational activities. The content of the Institute's research activities is directed mainly at research in the area of humanities and social sciences with an emphasis on the development and innovation of methods and forms of education under the conditions of technical intelligence preparation. The specialty of the

Institute's research lies in its division into two research areas:

Research Area No. 1: "Pedagogy".

This area includes the research assignments concerned with engineering pedagogy, preparation of high school teachers, advancement of personality, history of technical educational system, body culture and language skills development.

Research Area No. 14: "Engineering".

This area includes the research assignments concerned with personnel work and preparation of e-learning courses for personnel officers.

The Institute's research activities take the form of Scientific and scientific-pedagogical projects solved within the scope of selection and subsequent support by the grant agencies VEGA and KEGA. Projects solved within the scope of selection and subsequent support by the grant agency APVV. Projects solved within the scope of international programs. The transfer of the outcomes of the Institute's research into practice can be accomplished by the special and expertise activities. Members of the Institute work out a practical training in the enterprises (e.g. Bohunice Nuclear Power Plant, VUJE Trnava and ŽOS Trnava) to the extent of their expertise.

The regular organizing of scientific and expert colloquiums is an important part of the Institute's research and its outcome presentation. The Institute organizes the international scientific conference SCHOLA on a regular basis which takes place under the auspices of the International Society for Engineering Education – IGIP.

The student scholarly activities and the student scientific conference are a stable part of the Institute's care for talented and gifted students. The Institute regularly organizes the conference in the section of humanities and foreign languages.

NATIONAL PROJECTS

KEGA 3/6216/08 (01.01.2008-31.12.2010)

Ing. Krpálková Krelová Katarína, PhD.

Application of the subject "Guide to the enterprise" to the study program teaching of technical professions subjects, Master degree at MTF in Trnava

The European Union stakes out the spirit of enterprise development in all schools types and grades as one of the main goals in the education sphere. Education is a new idea to the enterprise and its contents are not stabilized yet. The submitted project deals with this problem and develops the curriculum of the subject "Guide to the enterprise".

KEGA 3/6253/08 (01.01.2008-31.12.2010)

Ing. Milan Petráš. CSc.

The greatest of the great, the correspondence of Prof. lng. Aurel Boleslav Stodola /1859-1942/.

The project is aimed at translating, editing and publishing all the available letters of A. Stodola to his brothers and A. Einstein. There is a grand collection of 130 letters of the years 1876-1943 available so

far. Stodola's letters (saved from being lost by the project leader) to his brothers were partially used by Ivan Stodola, the playwrite, in Náš strýko Aurel (Our Uncle Aurel, Bratislava, 1968). The intended publication will contain an introductory study and iconographical material and will provide new (hidden so far) aspects of this famous scientist, professor, constructor and philosopher's biography.

KEGA 3/6026/08 (01.01.2008-31.12.2010)

doc. Ing. Hrmo Roman, PhD.

Innovation study program teaching of technical professions subjects in $\operatorname{MTF}\operatorname{STU}$

The goal of the research team is the evaluation and innovation of the study programme Teaching of technical professions subjects, which was accredited at MTF STU. The researchers intend to introduce the following innovation into practice: optimization profile of a graduate in study programme and placement of a graduate on the labour market, optimization of proportions between lectures and exercises in the study programme, improvement of the study materials and innovation of teaching methods.

VEGA 1/3640/06 (01.01.2006-31.12.2008)

Silvester Sawicki, Mgr., PhD.

Psychological, pedagogical and psychospiritual methods of diagnosis of psychospiritual crisis and ways of impact on it

Our project is focused on the diagnosis of psycho-spiritual crisis (frequently confused with mental diseases) and possibilities of its psychological, educational, social and spiritual impact. This phenomenon appears in the phase of spiritual maturation and transformation of personality. It is manifested by temporary mental and social disorders with some signs of a mental disease. The American Psychiatrists Association (APA) has labelled it as a spiritual emergency (DSM IV), as non-psychotic diagnosis. They recommend non-psychiatric treatment. APA advises to treat it with psychological, social, educational and spiritual methods. At present, we still do not have relevant diagnostic methods and techniques for its distinction from mental diseases. Most of the psychologists and psychiatrists do not differentiate psycho-spiritual crisis from psychotic diseases, mainly schizophrenia, because of prejudices towards spiritual experiences.

VEGA 1/4547/07 (01.01.2007-31.12.2008)

Bernát Libor, PhDr., ThMgr., CSc.

Mlkuláš Drábik - a prophet, mystifier and chiliast

The main concern of the project focuses on the person of clergyman Mikulas Drabik (+1671) and the analysis of his writings. As a clergymen, he worked as a co-worker with Jan Amos Comenius (up to 1628) in Lednica. The project tries to reconstruct his curriculum vitae, based on Drabik's own biography. There is also the ambition to analyse his writings - especially Lux ex tenebris, Mikulase Drabika Zjevení (1617-1671), a heritage of Rottal in the Morava Regional Archives in Brno. The main emphasis is on Drabik's ideas development and his millenaristic, eschatologistic and apocalyptic claims. Comenius polemics with his fellows will be included as well.

VEGA 1/0185/08 (01.01.2008-31.12.2010)

doc. PaedDr. Marián Merica, PhD.

Optimisation of motor programs as the basis for health improvement and the development of fitness and sports performance capacity.

Solving the way of how to stop the increase of occurence of some kinds of illnesses and health defects. Finding the possibilities of hypokinetics remotion of the pre-school, school and university population on the basis of characteristics of their health condition, evaluation of their attitude to movement and to individual specific motor activities,

and on the basis of their body and motor development analysis in the following sports: swimming, tennis, athletics, football, body building, baseball and softball. Searching of motor programs optimisation with the aim of increasing the fitness and sport performance of our programs.

LIST OF SUBJECTS GUARANTEED WITH THE INSTITUTE

Bachelor Project

Bachelor Thesis

Biological Fundamentals of Evolution

Biology of Teenagers

Current Trends in Education

Didactics of Engineering Subjects

Didactics of Professional Training

Diploma Project

Diploma Thesis

Dissertation project

Dissertation project - methodology of pedagogical research

Dissertation thesis

Engineering Pedagogy

English for Specific Purposes

English Language

Ethics

French for Specific Purposes

French Language

Fundamentals of Communication

Fundamentals of Ethics

Fundamentals of Law Education

Fundamentals of Law Education Recovery

Fundamentals of Law for Technologists

Fundamentals of Law for Technologists and Managers

Fundamentals of Philosophy, Methodology and Logics

General Economic Theory

German for Specific Purposes

German Language

Handling Labour Conflicts

Handling Work Problems

History of Economic Theories

History of Science and Technology

History of Technology and Vocational Education

Human Ecology

ICT in Education

Industrial Psychology

Industrial Sociology

International Economic Relations

Introduction to Research Methodology

Introduction to Scientific Work

Introduction to University Study

Management of Secondary School

Master Thesis

Material Didactics Resources

Mental Hygiene

Outstanding Personalities of Slovak Science

Pedagogical Practice

Pedagogy

Philosophy of Technology

Physical Education and Sports - optional

Physical Education and Training

Politology

Practice

Production Practice

Prognostics

Psychology

Psychology in Managerial Jobs

Psychology of Health

Psychology of Occupational Safety

Recreational Physical Education and Sports

Research

Rhetoric

Russian for Specific Purposes

Russian Language

Selected Chapters of Andragogics

Selected Chapters of Evolutionary and General Psychology

Selected Chapters of General and Evolutionary Psychology

Selected Chapters of Labour Psychology

Selected Chapters of Pedagogical Psychology

Selected Chapters of Pedagogy

Selected Chapters of Social Psychology

Semester Project

Seminar on Pedagogical Practice

Slovak Language

Social and Personal Counselling

Social Communication

Social Policy

Sociology

Sociology of Education

Sociology of Management

Sociology of Work

Synergetics

Theory of Education

Total Quality Management

Winter training camp for students

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Kollárová, Michaela: Creating a corporate identity in Slovenské liečebné kúpele Piešťany, a.s.

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Gorošová, Simona: Recruitment and selection of the employees.

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Kavecký, Martin: Developing information competencies via e-learning

Krištofiaková, Lucia: Increasing the quality in teaching the subject of Economics via TQM implementation

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Club of Young Sociologists

Mgr. Martin Hric

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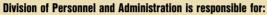
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Departments

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Student hostel and canteen are responsible for:

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PHOTO GALLERY OF ACTIVITIE IN YEAR 2008

Ceremony for granting the Slovak National Quality Award 2008 in Category C3 – other organisations of public sector, by Ivan Gašparovič, the President of the Slovak Republic



STU MTF- co-organiser of DAAAM - Danube Adria Association for Automation and Manufacturing



International Doctoral Seminar 2008



"Lecture series on the Ion Beam Research in Materials Science", a project of the STU MTF Institute of Materials in co-operation with the Slovak Physical Society a Forschungszentrum, Rossendorf, Germany – prof. Dr. rer. nat. habil. Dr. h. c. mult. Klaus Wetzig



A visit of Dr. Ir. Peter Backx and Freddy Aps, representatives of BE-KAERT, Belgium



Sun Ray 2 Platform at STU MTF- piloting operation launched



Open-Door Day in STU MTF in Trnava



Graduation ceremony in Trnava



















NEW PROFESSORS AND ASSOCIATE PROFESSORS AT THE FACULTY

Ivan Gašparovič, President of the Slovak Republic, appoints new professors: **Jozef Janovec** in the major of Materials

Ivan Baránek in the major of Machine Technologies and Materials

Mária Kapustová









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