

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

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Editor: Kvetoslava Rešetová, MSc.Dr.

Translation: Emília Mironovová, MSc.Dr., Dagmar Cagáňová, PhD.,

Note: Institus themselves are responsible for the translation of their own sections.

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CONTACT ADDRESS

Faculty of Materials Science and Technology
Slovak University of Technology
Paulínska 16
917 24 Trnava
Slovak Republic
Tel: +421 33 5511032
Tel: ++421918646060
Tel/Fax: +421 33 5511028
e-mail: sek_dekana@mtf.stuba.sk

www.mtf.stuba.sk

PREFACE





PREFACE

The Slovak University of Technology (STU) in Bratislava celebrated its 70th anniversary in 2007. The University, together with our Faculty of Materials Science and Technology, one of STU's seven faculties, organized numerous conferences, seminars and social events for the academic and scientific staff. On this occasion, the STU Rector honored 40 outstanding Faculty members as well as important domestic and foreign partners with a memorable medal.

During this year, the new administration defined ambitious plans for the Faculty during the remainder of their term. The focus was on the activities associated with the establishment of SLOVAKION, the Slovak ion and plasma excellence centre, utilising experience of a partnership with the Dresden-Rossendorf research centre. The University and Faculty representatives accompanied Slovak Deputy Prime Minister Čaplovič on a visit to Saxony where they agreed upon the terms of collaboration in establishing the centre. Two other similar projects, one in the field of modern technologies, the other in the power and automotive industry, were also initiated by the Faculty in cooperation with the representatives of the city and self-governing region of Trnava.

As a result of the new restructuring of administration and systemisation of work positions, seven pedagogical and research institutes, and five economic and administration divisions have been founded. Though these changes accompanied by substantial leaning raised some criticism of the staff, they have resulted in immediate economic benefit. In addition, formerly autonomous departments have been relocated to create departments of each institute physically located in one place.

The gifts of physical and legal entities in 2007 along with our own reserves from previous periods allowed the reconstruction of two lecture theatres for a total cost of more than 3 million SKK, and laboratories of the Institute of Materials, offices and laboratories of the Institute of Technological Devices and Applied Mechanics, the Institute of Applied Informatics, Automation and Mathematics, as well as other institutes and divisions in total costing more than 5 million SKK.

All the investments granted to our Faculty in 2007 were used exclusively for the improvement of equipment and facilities. The most valuable acquisition, worth 30 million SKK, was a Philips transmission electron microscope (TEM) obtained within the bilateral contract with our German partners at Forschungszentrum Dresden-Rossendorf. The microscope was put into operation last October on the occasion of 60th anniversary of the Faculty establishment. The cooperation with the business and industry partners has also been rewarding. The university has signed contracts with both Slovak and foreign partners for a total volume of several million SKK.

The Accreditation File we submitted provides optimism for the following reasons:

- We submitted several postgraduate degree programmes for accreditation, exceeding a simple re-accreditation;
- We unanimously managed to define the range of Fundamentals of Natural Science common for all study programmes, weekly volume of contact education and a menu of subjects from institutes;
- Our self-evaluation ranks us in the highest categories of Slovak universities' evaluation in five fields offered for accreditation.

ARRA, the Slovak rating and ranking agency, ranked us six places higher for 2006 than in 2005. This achievement, we hope, will challenge and encourage the processes that will raise the Faculty to the top universities in Slovakia.

Beginning with the 2007-2008 academic year, the Faculty

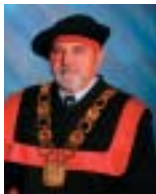
stopped providing part-time study in its programmes. This was primarily due to economic factors and insufficient students' achievements. At the same time, 1200 full-time baccalaureate degree and 1000 full-time master degree students enrolled in the first semester of 2007-2008. When compared to the previous academic years, the number of doctoral students enrolled in the first semester has doubled to 36. In the future, we will make an effort to reduce the number of students admitted. This will allow us to focus on higher quality students with better achievements in the first few semesters of the baccalaureate study, thereby enhancing our research community.

The Faculty's pedagogical and scientific achievements summarized in this annual report demonstrate that our teachers and researchers managed to push this institution forward and quickly towards discovery in entirely unknown territories.

Let me thank our sponsors, curators, Advisory Council members and all partnering institutions for the efficient and fruitful collaboration in the year 2007. We are happy to have mastered recent tasks and challenges and hope to successfully solve future projects together.

Oliver Moravčík, Professor, PhD.
Dean of the Faculty

MANAGEMENT OF THE FACULTY



Oliver Moravčík, Professor, PhD.
Dean of the Faculty



Jozef Peterka, Professor, PhD.

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



Mária Mišútová, Assoc. Professor, PhD.

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



František Horňák, Assoc. Professor, PhD.

- Engineering and PhD Degrees
- Accreditation of Engineering and PhD Degrees
- Student Social Affairs
- Education Quality, Educational Process Inspection



Peter Grgáč, Professor, PhD.

- Research
- International Relations
- Professional Development of Academic Staff



Jozef Sablik, Professor, PhD.

- Internal Relations
- Public Relations
- Security System
- Publishing Activity
- Social Programmes for Staff
- ALUMNI

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

Institute of Production Systems and Applied Mechanics

Department of Applied Mechanics
Department of Technological Devices and Systems

Institute of Industrial Engineering, Management and Quality

Department of Industrial Engineering
Department of Management
Department of Quality Engineering

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

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

Section of Personnel and Social Affairs
Dean's Secretariat
Section of Security Systems

Centre for Technologies Transfer

Student Hostel and Canteen

Student Hostel
Student Canteen

SCIENTIFIC BOARD

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Oliver Moravčík, Professor, PhD.

Vice-chair

Peter Grgáč, Professor, PhD.

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Mária Mišútová, Assoc. Prof., PhD.
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Tibor Mikuš, MSc.Eng.
Fratišek Simančík, PhD.
Štefan Schmidt, MSc.Eng.
Miroslav Solava, MSc. Eng.
Róbert Riedlmajer, PhD.

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Chair

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Jaroslav Červeňanský, Assoc. Prof., PhD.
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Juraj Miština, MSc.
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Pavol Tanuška, Assoc. Prof., PhD.
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Róbert Riedlmajer, PhD.
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Koloman Ulrich, Professor, PhD.
Helena Vidová, PhD.

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Zuzana Kelemenová
Štefan Horváth
Kamil Vidlička
Linda Kubecová
Monika Lukáčová
Vladimír Cibuláš

STUDY PROGRAMMES

BACHELOR PROGRAMMES (Bc.)

Applied Informatics and Automation in Industry
Engineering Materials
Non-Metallic Materials
Production Devices and Systems
Computer-Aided Production Technologies
Production Technologies
Industrial Management
Personnel Policy in Industrial Plant
Production Quality
Environmental Engineering
Work Safety and Health Protection
Teaching Practical Subjects within
Engineering Majors
Mechatronics of Production Devices and Systems

MASTER PROGRAMMES (MSc., Eng.)

Automation and ICT Implementation in Processes
Engineering Materials
Non-Metallic Materials
Production Devices and Systems
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
Engineering of Surfaces
Industrial Management
Production Quality Engineering
Environmental and Safety Engineering
Teaching Specific Engineering Subjects

POSTGRADUATE PROGRAMMES (PhD.)

Engineering Materials
Industrial Management
Integrated Safety
Didactics of Engineering Professional Subjects
Machine Technology and Materials
Automation and ICT Implementation in Processes

RESEARCH

Concept and focus of the research activities Types

- research and pedagogical projects within VEGA & KEGA grant agencies,
- international programmes and projects of MVTs,
- internally funded projects,
- contractual research and development projects funded by business and industry.

Fields

- research of new metallic and non-metallic materials,
- research and development of new manufacturing technologies for environment-friendly productions,
- implementation of information technologies into technological, production and organisational systems, as well as process identification, automation and control,
- research into and verification of management principles and organisational structures,
- quality management, product certification and conversions of machine production,
- safety and reliability of technological equipment and systems with emphasis on methods, analysis and synthesis,
- humane and social sciences with emphasis on improvement and innovation of teaching methods and forms in the conditions of training and education of technical intelligentsia.

The Centre for Technologies Transfer was established with the aim to foster the implementation of research results into practice.

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

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 the 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 the 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 post-

graduate 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 the 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 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 gained 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 ability to create own and 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 statistic 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 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 in master degree, or perform in 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 system and institutional rules of a school

as well as 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 either prepared to continue his study in master degree, or enter the job market.

Mechatronics of Technological Devices and Systems

The graduate of this major will have 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 that 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 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 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 abovementioned 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 social, moral, legal and economic impact 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 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 up 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 techno-

logist, 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 materials used, defend safety aspects and provide expertise for economical assessment of a product. He will successfully perform in the top production, research, at engineering universities both at home and abroad, in managerial positions requiring the knowledge of materials and their further processing.

Engineering of Co-ordination and Inspection in Welding

The graduate will receive the 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 the 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 (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 of formation of surface with required parameters, optimise technological processes, 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 postgraduate degree and develop his research career in a wide scale of industrial management while implementing progressive methods and techniques, or to enter 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 postgraduate degree, or to enter 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 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 on the knowledge development in the field of managerial activities, tools and methods applied in various types of companies. He has mastered research and development methods of 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 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 environment, fire protection and other related sectors. The graduate will operate as a highly qualified expert in institutions of base and applied research, researcher and teacher in universities, 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 empiric 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 applications of CA technological systems, simulations and automation of technological processes as well as possibilities of their application in companies, 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 the 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 system. He will grasp the relations of automation and control with related natural sciences, as well as physical nature of implemented original solutions 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 top development researcher in top scientific, research and academic institutions in both domestic and foreign job markets.

INSTITUTIONAL MEMBERSHIP OF MTF

Faculty of Materials Science and Technology, STU, is member of IGIP, Internationale Gesellschaft für Ingenierpädagogik, and the only representative of Slovakia in the organisation.

AWARDS

14/05/2007

Honorary title of Professor emeritus granted to Ivan Hrivňák, Professor, DrSc.

20/09/2007

Committee of the section for Scientific and Professional Literature and Computer Programs, Literary Fund, awarded Jozef Rydzy and Michal Benák a Special award for the best student projects within STU MTF Student Research Conference

17/10/2007

DAAAM awarded Peter Košťál, PhD, an MTF employee, for his 10-year continuous activity in the DAAAM conferences and sessions

03/12/2007

STU MTF Milan Turňa, Professor, PhD. EWE, was awarded the title of The Professor of the Year

SCHEDULE OF MTF STU ACTIVITIES IN 2007

MARCH

14/03/2007

Discussion on international student mobility

30/03/2007

MTF STU Day, social event

APRIL

19/04/2007

Student Research Conference, Faculty round

MAY

02-03/05/2007

Signing agreement on co-operation of MTF STU with POSTECH a MTF STU

03/05/2007

Open Day

13 - 16/05/ 2007

International Doctorate Seminar in Smolenice

18/05/2007

Open Day

JUNE

01/06/2007

Scientific Conference with international participation, supporting VEGA Projects

11 - 13/06/2007

16th Conference of Material Engineering departments in the Slovak and Czech Republics on Materials Science Research and Education in Smolenice

13/06/2007

MTF STU dean meets professors and associate professors

22/06/2007

Teacher CUP, tennis tournament

AUGUST

20-27/08/2007

Enrolments of the first-year baccalaureate students

SEPTEMBER

10-14/09/2007

MTF STU and DMS-RE co-organised 17th common seminar in Tatranská Štrba

12- 5/09/2007

MTF STU - co-organiser of international conference on FORMING

18-19/09/2007

3rd international seminar on New Trends in Quality Management

21/09/2007

Sports day of STU MTF staff

27/09/2007

Festive session of the STU Scientific Board in Bratislava, on the occasion of 70th anniversary of STU establishment

OCTOBER

02-04/10/2007

MTF presentation at the exhibition „Academy of Education“

08/10/2007

Meeting with Ladislav Ťažký, the Slovak writer

11/10/2007

Academic gala event

11/10/2007

Memorandum on Understanding signed

14–15/10/2007

Dušan Čaplovič, Deputy Prime Minister of the SR government, and Oliver Moravčík, STU MtF Dean together with the STU management will visit the research centre in Dressden/Rosendorf

14/10/2007

15th Championship of the SR universities in marathon

17/10/2007

Session of STU MtF Scientific Board connected with the Faculty staff awards

18–19/10/2007

15th International Scientific Conference CO-MAT-TECH 2007

23/10/2007

Agreement on co-operation with the Faculty of Administration and Informatics, Zagreb University, Croatia, signed

30/10 – 02/11/2007

STU MtF participated in Gaudeamus, the European Fair of Post-secondary and Life-long Education in Brno

NOVEMBER

12–8/11/2007

STU MtF participated in the Week of Science and Technology in Slovakia 2007

17/11/2007

Academic ball of students

26/11/2007

Seminar on utilisation of and navigation in external information sources

28/11/2007

Immatriculation of the first-year baccalaureate students in Detached workplace Komárno

29–30/11/2007

Schola 2007 International Conference

DECEMBER

03/12/2007

Immatriculation of the first-year baccalaureate students in Detached workplace Dubnica n./Váh

10/12/2007

Immatriculation of the first-year baccalaureate students in Trnava

11/12/2007

Visit of Mr. Rauno Viemerö, the Ambassador of the Republic of Finland

MTF STU FOREIGN PARTNERS

AUSTRIA

Graz: Berufspädagogische Akademie des Bundes

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: Brandenburg Technical University

Dresden: Forschungszentrum

IFW Dresden/Rosendorf

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)

COREA

Pohang: Pohang University of Technology

POLAND

Gliwice: Silesian Politechnics

Kielce: Kielce University of Technology

ROMANIA

Bucharest: National Institute of RandD for Materials Physics, Bucharest-Magurele, Faculty of Physics, University of Bucharest

RUSSIA

Sankt-Peterburg: 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

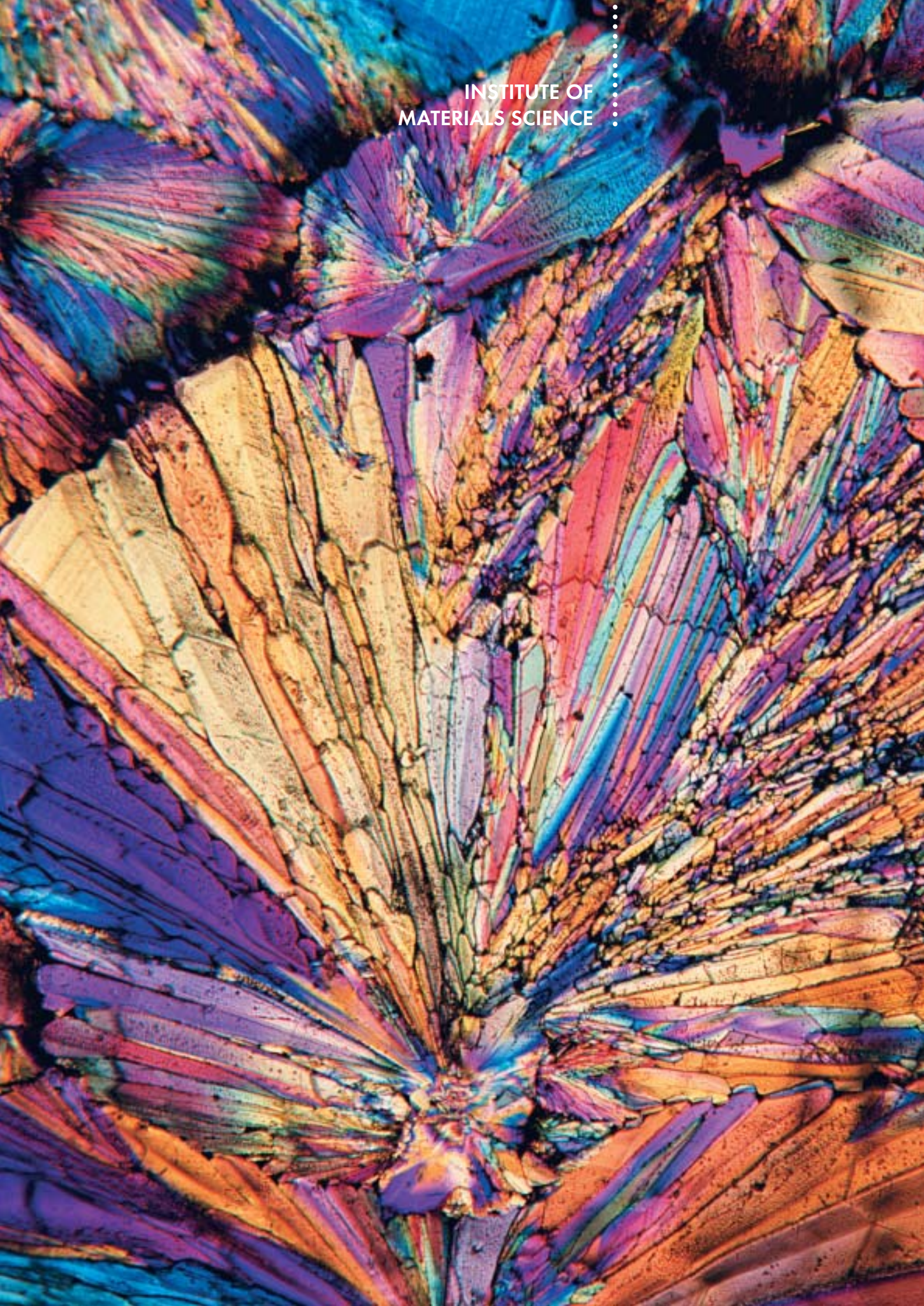
SPAIN

Valencia: Politechnical University of Valencia

UNITED KINGDOM

Coventry: Coventry University

INSTITUTE OF
MATERIALS SCIENCE



INSTITUTE OF MATERIALS SCIENCE

Director Jozef Janovec, Assoc. Professor, DrSc.
e-mail: jozef.janovec@stuba.sk
tel: ++421918646072

Address Bottova 25, 917 24 Trnava, Slovak Republic
tel.: ++421918646038
tel/fax: ++421/33/5521007
http address:
http://www.mtf.stuba.sk/generate_page.php?page_id=2834



Institute Departments

Department of Materials Engineering
Department of Physics

Staff

- Professors: 5
- Emeritus Professors: 3
- Assoc. Professor : 7
- Senior Lecturers : 23
- Research Fellows: 6
- PhD Students :64

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

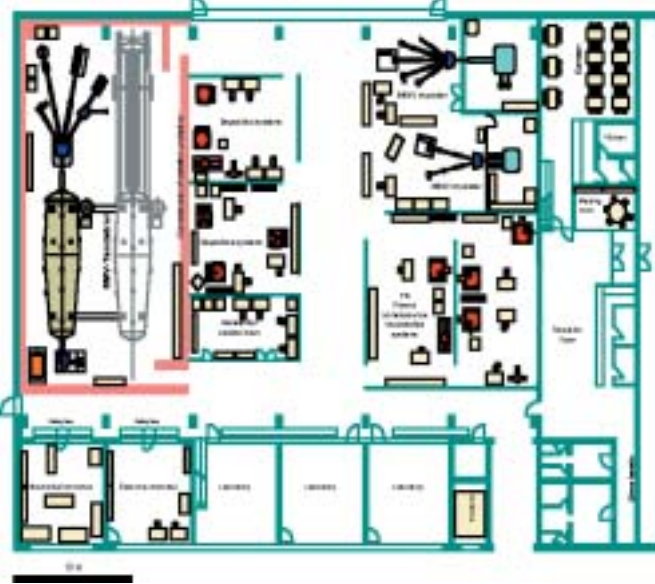
CENTRES OF EXCELLENCE



Laboratory of TEM

INTERNATIONAL PROJECTS

Slovakia - Research of cluster structures and nanomaterials (01.01.2007-31.12.2008)
Jozef Janovec, Assoc. Professor, DrSc.



EURB-0005-06 (01.01.2005-01.01.2008)
Mária Hudáková, PhD.

Progressive Surfacing of Metals The main and general goal of the project is to improve and optimize of 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.

SK-FR 00106 (01.01.2006-31.12.2007)

Ján Kalužný, Professor, PhD.

Investigation of special glasses and fibres suitable for preparation of active and passive elements exploiting in IR range.

* The solution of the project topics makes possible to propose the preparation and the control of the properties of optical glasses utilized for production of fibres and further optical elements mainly for medical and biological application

NATIONAL PROJECTS

APVT-20-011304 (01.01.2005-31.12.2007)

Vladimír Labaš, Assoc. Professor, PhD.

Implementation of measuring electrical parameters in to quality control and technology of non-metallic materials

* The project is based on the theoretical and practical experiences of the applicant with the measurements of the electrical and dielectrical properties of nonmetallic materials. The project is oriented on the implementation of the mentioned measurements into the technology process and the commercial properties quality checking in the enterprise Plastika Nitra. The follow goals of the project can be determined: to propose a suitable connections for a new materials, to propose a suitable methods and parameters for the measurement, to propose the technological steps in which it is possible to apply the measurements of chosen parameters, as well to propose which measurements in the process of the commercial properties quality checking used in the present time can be substituted by measurements of the electrical and dielectrical properties of material. The proposal for the optimization of the materials composition can be determined as the main result of the project.

APVV-20-043505 (01.01.2006-31.12.2008)

Marian Kubliha, Assoc. Professor, PhD.

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

* To characterize internal arrangement of chosen 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 chosen physical properties. To utilize mentioned informations 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 properties and internal arrangement parameters, verification of obtained informations by means of other methods, results valuation, proposal of solutions, prospective optimalization of determining parameters, conclusion.

VEGA 1/2111/05 (01.01.2005-31.12.2007)

Marián Hazlinger, Assoc. Professor, PhD.

Study and numerical simulation of degradation processes in materials

* The research project deals with the study of degradation processes and failure of parts depending on microstructural and technological properties of selective methods of the heat treatment. The study will be carried out using

different heat-treated specimens to be tested in laboratory conditions at various temperatures and under various mechanical loads (used mechanical loads will be statical, dynamical, and fatigue). Experimental specimens will be analysed in terms of fractography and morphological changes in microstructure. The experiments will be performed using simultaneously computer simulation and numerical methods of solution in the field of degradation and testing procedures of materials. The development of new computing techniques, material's models, and application of non-linear structural elements for selective tests of materials will be also introduced in the project.

VEGA 1/2100/05 (01.01.2005-31.12.2007)

Viera Trnovcová, PhD.

Microstructure and physical properties of chosen materials for photonics and superionics

* The aim of the project is to determine relations between the microstructure, defect structure, defect interactions and the optical, mechanical, thermophysical and electrical properties of halides, oxides and chalcogenides, predominantly of heavy metals. We will adapt our two exposure holography interferometry, used for measurements of Young elasticity modulus, also for measurements of other mechanical properties. We will introduce a computational analysis in these measurements by a digitalization process using the speckle technique.

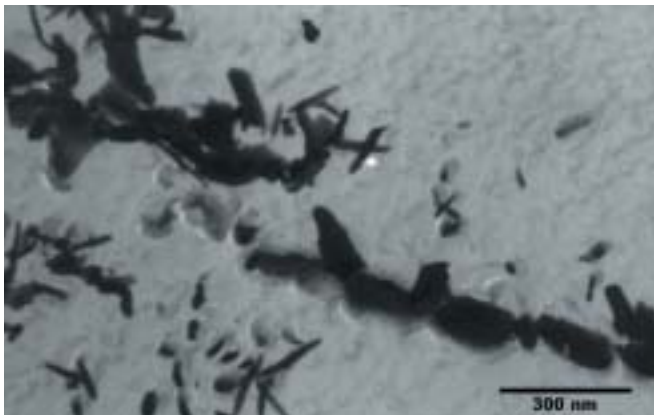
VEGA 1/2113/05 (01.01.2005-31.12.2007)

Mária Dománková, PhD.

Study of influence of plastic deformation on the corrosion resistance of the selected austenitic stainless steels.

* Austenitic stainless steels exhibiting usually an excellent corrosion resistance are used as a structural material in chemical, petrochemical and energy industries. However, when subjected to heating in the temperature range of 500-800 °C, they are prone to sensitisation. In the sensitised condition, the steels are quite susceptible to intergranular corrosion and intergranular stress corrosion cracking. The sensitisation is caused by the precipitation of chromium rich

carbides at the grain boundaries. The project will be concentrated on quantification of the following factors: degrees of strain, grain boundary character distribution, and concentration of interstitial elements. In the analysis of the AISI 304 steel, influence of the deformation induced martensite will also be considered.



Microstructure of AISI 316 (650°C/1000h)-TEM

VEGA 1/2077/05 (01.01.2005-31.12.2007)

Ján Kalužný, Professor, PhD.

Research of the impact of the composition and the preparation process of chosen systems with non-ordering structure.

* Measurements of electric, dielectric, optical and thermophysical properties, as well, will be employed for understanding of the ordering of the searched chalcogenide glasses and oxide glasses belonging to the group of heavy metal oxides - HMO. Following the gained results we want to describe and explain transport and relaxation processes and clear up a matter of the creation of micro-inhomogeneities, point defects or clusters and microcrystals and their effect on the final quality of glasses, mainly with the point of view of the high power transport of laser radiation of CO and CO₂ lasers, respectively. Moreover we want to determine temperature stability, temperature at which the irreversible changes of structure do not become and to find out optimal composition of the mixtures and process technology of the chosen composite systems as polymer materials and ceramics by means of the physical properties measurements.

VEGA 1/3190/06 (01.01.2006-31.12.2008)

Peter Grgáč, Professor, PhD.

Study of the transformations processes in the rapidly solidified polycrystalline 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 polycrystalline 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 optimisation of their chemical composition, production parameters and following technological processing.

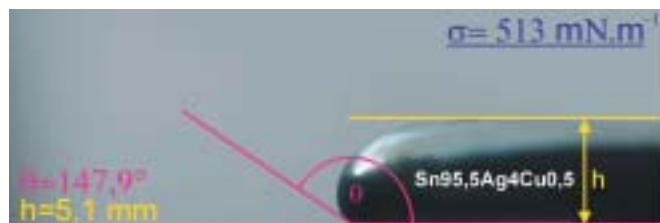
VEGA 1/3032/06 (01.01.2006-31.12.2008)

Milan Ožvold, Professor, PhD.

Preparation and physical properties of lead-free solders

* The aim of this project is to increase the basic knowledge 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.



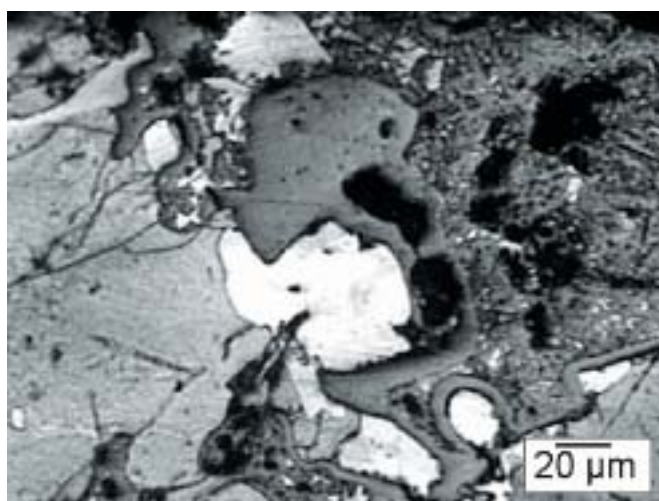
Determination of surface tension of solder by means of goniometric method

VEGA 1/4107/07 (01.01.2007-31.12.2009)

Jozef Janovec, Assoc. Professor, DrSc.

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

* Main aim of the project is the phase characterization of the Al-Pd-Fe, Al-Pd-Co and Al-Pd-Rh based alloy. The attention will be paid to the description of lamellar structure which are accompanied with the formation and transformation of quasicrystalline phases. Stable quasicrystals, quasicrystalline approximants and similar phases will be characterized with transmission electron microscopy including the electron diffraction, X-ray diffraction, thermal analysis and other methods. Investigated materials will be received from partners from the Network of Excellence Complex Metallic Alloy (NoE CMA). The project contribution is based on the cooperation with the international scientific network, cooperation with specialists working in different scientific fields and various types of organizations (SAS, University), but also in the study of progressive materials with modern experimental methods. Project reflects to the technological and physical aspects of materials science. It can be added to basic research activities with direct impact on the extension of knowledge and scientific information exchange.



Microstructure of the Al-Pd-Co alloy

GRADUATE THESES

Bachelor Theses

Kocúrová, Karin: Analysis of ledeburitic type boride tool steels

Maďar, Peter: Analysis zinc - coating layer

Štefániková, Mária: Analysis of heat treatment tool steel K190 ISOMATRIX PM

Nagy, Štefan: Biocompatible coating on titanium alloys

Grundeiová, Ivana: Boronizing and heat treatment steels of ledeburitic types

Bernadičová, Zuzana: Fractographic analysis of selected kinds of boriding steels

Budinský, Miroslav: Inspection and Evaluation of Pipeline Status

Žembová, Dagmar: The quality control in production using by defectoscopy

Pišelyová, Jana: Corrosion resistance carbon of materials used in chemical industry

Sloboda, Radovan: Macroscopic and microscopic analysis of electric breaker's contacts

Florian, Miroslav: Microscopy analysis of rapidly solidified particles of tool steel K390 Microclean

Maračková, Monika: Microscopic analysis glass on base oxide heavy metal

Jakabovič, Milan: The microscopical analysis of the heat treated tool steel X230CrVMo13 4

Šarmír, Marian: Microstructural analysis of magnetically hard materials based on samarium-cobalt type rare earth metals

Cibuľa, Miroslav: Microstructure analysis of weld deposit by taking chemical structure of additional material into account

Frkáňová, Katarína: Microstructure analyses of unalloyed steel, after simulation of welding cycle

Grgáč, Dušan: Microstructure analysis of welded joint zinc coated high strength low alloyed steel

Pribila, Peter: Steel materials used in chemical and food industry

Kolář, Miroslav: Physical vapor deposited wear-resistant surfaces

Nógely, Róbert: Description of degradation in PE

Haršány, Tomáš: Description of electrical properties of ceramics using equivalent circuit method

Vanišová, Nikola:Description of electrical properties of plastics using equivalent circuits

Mikoláš, Juraj:Comparison of milling cutter and blade of frame saw made of tool steel

Olešová, Milada:Operation diagnostics with industrial endoscopy

Roščák, Lukáš:Investigation of structure and morphology of boride layers

Holub, Anton:Leak testing and leakage searching

Kresan, Pavol:Monitoring effect contents filler on kinetics vulcanization rubber mixture through the medium measured electric and dielectric parameters

Bezúch, Ľubomír:Maximum temperature determination for graphite using as material of real electrode

Pašák, Matej:Research degradation mechanisms of welded joints from creep resistance steels

Petrovičová, Karin:Study of physical facilities oxidate ceramic materials

Polovka, Michal: Technology of the material production in isostatic

Harnúšková, Jana:The heat treatment of aluminum made of hardenable aluminum alloys

Patzelt, Michal:Mistakes technical ceramics infliction burnt

Šandorová, Andrea:The influence of time-temperature exposures at corrosion - resisting of austenitized steels

Bognerová, Jana:Influence of time-temperature exposures on corrosion resistance of specified types of austenitic stainless steel

Tóth, Martin:Influence of chemical content on the corrosion resistance of selected austenitic stainless steels

Staneková, Hana:Impact of detergents on cutting edge of knives

Šurka, Zdenko:The influence of Contacts on Measuring of Electric and Dielectric Parameters Throughout Vulcanization of Rubber Mixtures

Lipka, Rastislav: The influence of thermal cycle at microstructure of Al76Rh24 complex metallic alloy

Jozefovič, Peter:Influence of furnace temperature parameters on micro-structure of 100Cr6 material of bearing ring

Hoško, Jozef:Influence size particles basalt powder for properties thermal spray

Lipovský, Ivan:Analysis of selected properties of thermal - insulating material NOBASIL

Zmeková, Lenka:Investigation and development resistance steels new generation for application at ultra super critical parameters

Masters Theses

Rybár, Michal: Analysis and interpretation of data in impedance spectroscopy of non-metallic materials

Szladký, Tomáš: Analysis of the microstructure of heat treated titanium alloy Ti-6Al-4V :

Lilko, J.:Analysis of rapidly solidified particles of tool steel K390 Microclean

Gaál, S.:Analysis of rapidly solidified particles in HS6-5-2 steel

Šoltés, T. Analysis of rapidly solidified particles of high speed steel S 290

Ovečka, M. Diffusion boronising high-speed steel S 600

Mareš, Jozef :Electrical and dielectrical properties of special glasses specified for applications in infrared part of spectra

Cvik, P.: Evaluation of grade of deformation by volume moulding of steel

Hlavandová, Lenka : Creep qualities of selected gas pipes made from PE material :

Hudáková, I.:Microscopic analysis of coated cutting tools

Benovič, Filip : Proposal of mechanism for binding for horizontal channel baling press

Noskovičová, Z.:Analysis of damaged shear tool

Krakovský, Filip : A Monitoring of the Vulcanization Process and the Following Rubber Mixture Degradation

Kán, M.:Determination of recrystallization degree of warm bulk formed aluminium alloys

Mariančíková, M.:Precipitation kinetics investigation in austenitic stainless steel X6CrNiMoTi 17-12-2

Nemcová, Miroslava :Study of ceramics moulded pieces technological texture by unconventional methods

Adamčíková, Andrea :Study of ceramics wetting by lead- free solders

Baroš, J.:Fatigue failure of crank shafts

Šimek, Michal :The influence of degradation structure on the optical properties of polyethylene technical films

Bučák, P.:Effect of diffusive borodizing on tool steels designed for work under higher temperature conditions

Gogola, P.:Influence of Microstructure on Corrosion Resistance of M310 ISOPLAST Steel

Vach, M.:Influence of the microstructure on the corrosion resistance of M333 ISOPLAST steel

Oslanec, Peter :Microstructural influence on mechanical propertief of monocrystalline nickel based superalloy CMSX-4

Gaboňová, Gabriela :Influence of plastic deformation on kinetics precipitation of austenitic stainless steels AISI 316

Šlosár, Michal :Investigation of optical characteristics of rubber compositions

Chrebet, Tomáš :Thermal stability investigation of chosen glasses designate for aplication in infrared spectrum

Floch, Peter : Investigation of mounting lug fracture reasons

Kebísková, Jarmila: Nitration form effect on microstructure and corrosion properties of low carbon deep-pull steels

FOREIGN VISITORS TO THE INSTITUTE

Czech Republic
Institute of Physics of Materials, Czech
Academy of Sciences – Aleš Kroupa, PhD.

Czech Academy of Sciences - Jitka
Pedlíková, MSc. - Olga Procházková, PhD. -
Jiří Zavadil, PhD. - Petr Kostka, Msc.

France
Université de Rennes I - Prof. Marcel Poulain

Poland
Varšavská univerzita - Mgr. Janusz Cukras

Romania
National Institute of Materials Physics - Adam
Lorinczi

Germany
Böhler

VISITS OF STAFF MEMBERS TO FOREIGN INSTITUTIONS

Austria
Technology Consulting Centre - Martin Kusý, PhD.

Böhler - Edelstahl Kapfenberg -
Jozef Janovec, Assoc. Prof. DrSc.

Technische Universität Wien -
Jozef Janovec, Assoc. Prof. DrSc.

Czech Republic ZČU Plzeň - Peter Grgáč, Professor, PhD.
Institute of Physics of Materials, Czech
Academy of Sciences - Jozef Janovec, Assoc.
Professor, DrSc. ; Milan Ožvold, Professor,
PhD.; Marián Palcut, PhD.

Institute of Inorganic Chemistry, Czech
Academy of Sciences - Ján Kalužný, Professor, PhD.

Czech Academy of Sciences, Prague – Ján Kalužný,
Professor PhD., Marián Kubliha, Assoc. Prof. PhD.

University Olomouc – Stanislav Minárik, Assoc. Prof. PhD.,
Marián Kubliha, Assoc. Prof. PhD., Ondrej Bošák, MSc.,
Vierka Kaššáková, PhD.

VUT Praha - Mária Hudáková, PhD.

LECO Instrumente Plzeň, s.r.o. - Mária Hudáková, PhD.

VŠB TU Ostrava -Mária Hudáková, PhD.

Delong Instruments Brno- Milan Ožvold, Professor, PhD.

Czech Agricultural University, Prague - Igor Jančuška, PhD.

Institute of Physics, Czech Academy of Scineces -
A. Dobrotka, MSc.

University of Palacký, Olomouc- Viera Kaššáková, PhD.

ČVUT Praha - doc. Ing. Jozef Janovec, DrSc.
Benteler Plzeň - Jozef Janovec, Assoc. Professor, DrSc.

Blumbecker Prag, s.r.o. - Milan Ožvold, Professor, PhD.

Union of Slovak Mathematicians and Physicists -
Viera Kaššáková, PhD.

Masaryk University in Brno
- Jozef Krajčovič, PhD.; Marián Palcut, PhD.

China
The Chinese Society of Rare Earth - Viera Trnovcová, PhD.

France
University Rennes – Marián Kubliha, Assoc. Prof. PhD.,
Stanislav Minárik, Assoc. Prof. PhD.

Germany
Fraunhofer Institut - prof. Ing. Peter Grgáč, CSc.

Technical University Dresden -
Marcel Žitňanský, Professor, DrSc.

Research centre Dresden – Rossendorf –
Peter Grgáč, Prof. PhD., Milan Ožvold, Prof.
PhD., Jozef Janovec, Prof. DrSc.,
Ľuboš Čaplovič, Assoc. Prof. PhD., Martin Kusý, PhD.,
Róbert Riedlmajer, Assoc. Prof. PhD.

Korea, South
POSTECH, Pohang -
Jozef Janovec, Assoc. Professor, DrSc.

Lithuania
Vilnius University -Viera Trnovcová, PhD.

Italy
Observatorium Catania - Andrej Dobrotka, MSc.

Poland
University of Warsaw - Andrej Antušek, PhD.

Univerzity M. Kopernik, Torun - Andrej Antušek, PhD.

Poznan University of Technology -
Peter Grgáč, Professor PhD.

Silesian University of Technology, Gliwice -
Peter Grgáč, Professor PhD.

Romania
Univerzity Brasov - Vladimír Labaš, Assoc. Professor, PhD.

Bucurest - Ján Kalužný, Professor PhD.,
Marián Kubliha, Assoc. Prof. PhD.

Slovenia
EuroschooL CM Ljubljana -
Jozef Janovec, Assoc. Professor, DrSc.

Congress centre GH Bernardin, Portorož -
IMária Hudáková, PhD.

Spain - Canary Islands
Institute of Astrophysics at Canaries, Tenerife
- Andrej Dobrotka, MSc.

MEMBERSHIPS IN INTERNATIONAL PROFESSIONAL ORGANISATIONS

Association for Heat Treatment of Metals of the Czech Republic
Peter Grgáč, Prof. PhD. - vicepresident

CVC Working Group International Andrej Dobrotka, MSc.

Czechoslovak microscopy society
Mária Dománková, PhD.
Czech and Slovak Crystallographic Association
Ľuboš Čaplovič, Assoc. Prof. PhD.;
Maroš Martinkovič, Assoc. Prof. PhD.
Martin Kusý, PhD.
European Physical Society
Marián Kubliha, Assoc. Prof. PhD.
Viera Trnovcová, PhD.
Róbert Riedlmajer, PhD.
Roman Čička, PhD.
Ondrej Bošák, MSc.
Ján Kalužný, Prof. PhD.

Vladimír Labaš, Assoc. Prof. PhD.
International Society for Solid State Ionics
Viera Trnovcová, PhD.

International Union of Crystallography
Ľuboš Čaplovič, Assoc. Prof. PhD.
Jozef Janovec, Assoc. Prof. DrSc.
Viera Trnovcová, PhD.

Minerals, Metals and Materials Society
Jozef Janovec, Assoc. Prof. DrSc.

Northatlantic society for the study of non-oxide glasses
Ján Kalužný, Prof. PhD.
Vladimír Labaš, Assoc. Prof. PhD.
Stanislav Minárik, Assoc. Prof. PhD.
Marián Kubliha, Assoc. Prof. PhD.

MEMBERSHIPS IN SLOVAK PROFESSIONAL ORGANISATIONS

Informatic Society for Engineering and Education
Jozef Krajčovič, PhD.

Union of Slovak Mathematicians and Physicists
Viera Trnovcová, PhD.
Ondrej Bošák, MSc.

Regional Committee of the IUCr
Ľuboš Čaplovič, Assoc. Prof. PhD.

Slovak Astronomical Society
Andrej Dobrotka, MSc.

Slovak Expert Group of Solid State
Chemistry and Physics
Maroš Martinkovič, Assoc. Professor, PhD.

Slovak Chemical Society
Marián Palcut, PhD.

Slovak Physical Society
Viera Trnovcová, PhD.
Marián Kubliha, Assoc. Professor, PhD.
Milan Ožvold, Professor, PhD.
Andrej Dobrotka, MSc.
Róbert Riedlmajer, PhD.
Viera Kaššáková, PhD.
Jozef Krajčovič, PhD.
Roman Čička, PhD.
Ondrej Bošák, MSc.
Igor Jančuška, PhD.
Ján Kalužný, Professor PhD.
Vladimír Labaš, Assoc. Prof. PhD.

Slovak Academy of Science/ Metal Science Society
Ľuboš Čaplovič, Assoc. Prof. PhD.
Mária Dománková, PhD.
Jozef Janovec, Assoc. Professor, DrSc.
Maroš Martinkovič, Assoc. Professor, PhD.

IMária Hudáková, PhD.
Lýdia Trnková, PhD.
Viktória Sedlická, MSc.
Martin Kusý, PhD.

MOST IMPORTANT SCIENTIFIC PUBLICATIONS

Monographs

Martinkovič, Maroš: Some aspects of turbine blades material research. Trnava : AlumniPress, 2007. - 95 pages.

Kubliha, Marián: Utilization of electrical and dielectric methods in materials science of non-metallic materials. Trnava: AlumniPress, 2007. - 70 pages.

Labaš, Vladimír: Application of numerical methods in materials research. Trnava: AlumniPress 2007. - 112 pages.

Minárik, Stanislav: Superconducting structures based on high-temperature superconductors. Trnava: AlumniPress 2007. - 71 pages.

Scientific articles

Bošák, O. - Kalužný, J. - Preto, J. - Vacval, J. - Kubliha, M. - Hronkovic, J: Electrical properties of a rubber blend used in the tyre industry. - In: Polymers for Advanced Technologies. - ISSN 1042-7147. - Vol 18 (2007), pp. 141-143.

Čaplovičová, M. - Daniš, Tibor - Búc, Dalibor - Čaplovič, Ľubomír - Janík, Ján - Bello, I.: An Alternative Approach to Carbon Nanotube Sample Preparation for TEM Investigation. - In: Ultramicroscopy. - ISSN 0304-3991. - Vol. 107 (2007), pp. 692-697

Grgáč, Peter - Kusý, Martin - Čaplovič, Ľubomír - Miglierini, Marcel - Kaňuch, Tomáš - Vitázek, Klement: Temperature Induced Transformation of Metastable Austenite in a Hypereutectic Iron-Based Rapidly Solidified Power. In: Materials Science and Engineering A. Structural Materials. Properties, Microstructure and Processing. - ISSN 0921-5093. - Vol. 449-451 (2007), pp. 1029-1032

Grgac, P - Liptak, M - Behulova, M - Caplovic, L - Lindenkreuz, H-G - Loser W: Influence of melt undercooling on the microstructure of levitated Cr-Mo-V tool steel. In: Materials Science and Engineering A. Structural Materials. Properties, Microstructure and Processing. - ISSN 0921-5093. - Vol. 449-451 (2007), pp. 658-661.

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Janovec, Jozef - Jenko, M. - Lejček, P. - Pokluda, Jaroslav: Grain boundary segregation of phosphorus and silicon in polycrystals and bicrystals of the Fe-2.6Si-0.055 alloy. In:

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Kalužný, J. - Pedlíková, J. - Zavadil, J. - Labaš, V.: Changes of sulphide glasses caused by the presence of As. In: Journal of Optoelectronics and Advanced Materials. - ISSN 1454-4164. - Vol. 10 (2007), pp. 3076-3078.

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Lejček, P. - Hofmann, S. - Janovec, Jozef: Prediction of enthalpy and entropy of solute segregation at individual grain boundaries of a-iron and ferrite steels. In: Materials Science and Engineering A. Structural Materials. Properties, Microstructure and Processing. - ISSN 0921-5093. - Vol. 462 (2007), pp. 76-85

Minárik, S. - Labaš, V. - Berka, M: Dielectrical relaxation dynamics and thermally stimulated depolarization current in polymers. In: Journal of Optoelectronics and Advanced Materials. - ISSN 1454-4164. Vol. 9 (2007), pp.1592-1596.

Olekšáková, D. - Kollár, Peter - Füzér, J. - Kusý, Martin - Roth, S. - Polanski, K.: The influence of mechanical milling on structure and soft magnetic properties of NiFe and NiFeMo alloys. In: Journal of Magnetism and Magnetic Materials. - ISSN 0304-8853. - Vol. 316 (2007), pp. 838-841

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Zeleňáková, A. - Olekšáková, D. - Degmová, Jarmila - Kováč, J. - Kollár, Peter - Kusý, Martin - Sovák, P.: Structural and magnetic properties of mechanically alloyed FeCo powders. In: Journal of Magnetism and Magnetic Materials. - ISSN 0304-8853. - Vol. 316 (2007), pp. 519-522

Lapin, Juraj - Pelachová, Tatiana - Dománková, Mária - Daloz, D. - Nazmy, M.: Influence of long-term creep exposure on the microstructure stability of cast Ti-46Al-2W-0.5Si alloy for turbine blades. - Vega 2/7085/27. In: Metallic materials. - ISSN 0023-432X. - Roč. 45, č. 3 (2007), pp. 121-128

Antušek, Andrej - Jaszunski, M. - Rizzo, Antonio: Ab initio

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- ISSN 0021-9606. - Vol. 126 (2007), 074303-1/074303-9

Ožvoldová, Miroslava - Trnovcová, Viera - Škubla, Andrej - Pedlíková, Jitka - Greguš, J. - Kadlečiková, Magdaléna: TeO₂ - PbCl₂ Glasses: Relationship of the Preparation Techniques to Structure and Optical Properties. In: Physics and Chemistry of Glasses: European Journal of Glass Science and Technology.

- ISSN 0031-9090. - Vol. 48, No. 4 (2007), pp. 304-306

Trnovcová, Viera - Fedorov, P.P. - Kokh, A.E - Furár, Ivan: Electrical and dielectric properties of B-BaB₂O₄ (BBO) and CsLiB₆O₁₀ (CLBO) crystals. In: Journal of Physics and Chemistry of Solids.

- ISSN 0022-3697. - Vol. 68 (2007), pp. 1024-1028

Trnovcová, Viera - Furár, Ivan - Ležal, Dimitrij: Influence of doping on physical properties of vitreous As₂Se₃. In: Journal of Non-Crystalline Solids.

- ISSN 0022-3093. - Vol. 353 (2007), pp. 1311-1314

Trnovcová, Viera - Furár, Ivan - Kadlečiková, Magdaléna - Pedlíková, Jitka - Ožvoldová, Miroslava - Bošák, Ondrej: Influence of Preparation Technique and Pr³⁺ Doping on the Absorption Edge, Photoluminescence, and Raman Spectra of 70TeO₂.30PbCl₂ Glasses. In: Journal of Optoelectronics and Advanced Materials.

- ISSN 1454-4164. - Vol. 9, No. 10 (2007), pp. 3223-3228

Trnovcová, Viera - Furár, Ivan - Hanic, František: Influence of technological texture on electrical properties of industrial ceramics. In: Journal of Physics and Chemistry of Solids.

- ISSN 0022-3697. - Vol. 68 (2007), pp. 1135-1139

INSTITUTE OF PRODUCTION SYSTEMS
AND APPLIED MECHANICS



INSTITUTE OF PRODUCTION SYSTEMS AND APPLIED MECHANICS

Director Karol Velíšek, Professor, PhD.
e-mail: karol.velisek@stuba.sk
tel: ++421918646053

Address Rázusova 2, 917 24 Trnava, Slovak Republic
tel.: ++421918646022,
fax: ++421/33/5511601
http address:
http://www.mtf.stuba.sk/generate_page.php?page_id=2836



Institute Departments

Department of Applied Mechanics

Department of Technological Devices and Systems

Staff

- Professors: 2
- Assoc. Professors: 4
- Senior Lecturers: 16
- Research Fellows: 2
- PhD Students: 4

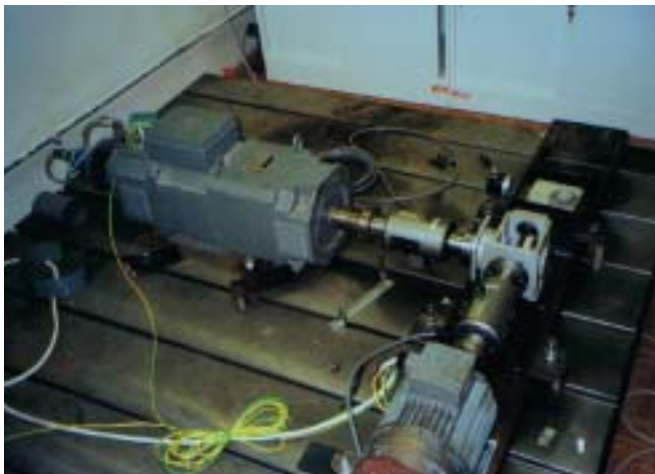
Study programmes

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

Research targets

- intelligent workpiece clamping
- 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
- research and development in the field of theoretical and applied mechanics

CENTRES OF EXCELLENCE



Research and testing laboratory of machine aggregates

The aim of the laboratory is to develop a complex ansamble of theoretical, simulation and experimental methods to analyse and synthetise mechatronic systems with emphasis laid on rotational machine aggregates.

The existing configuration of the experimental stand at the Laboratory of Machine Mechanics of Department of Applied Mechanics allows to investigate three gear types (harmonic gear, classical teeathed gear and spiroidal gear transmission). Our endeavour is to transform the present laboratory into accredited laboratory with universal equipment for research and testing of machine aggregates under various loading regimes and for different materials and lubricants. Experimental stand with simulator of dynamical loading and frequency control of drive allows to simulate under laboratory conditions some of the real technological loading conditions and to investigate their influence on dynamical properties of the complete machine aggregate. After necessary enlargement and improvement of the control subsystem the stand will be transformed into mechatronical system with the ability to fulfill under laboratory conditions certain tasks of testing of drives, gears and transmissions under laboratory conditions .

INTERNATIONAL PROJECTS

QUICK-NET, NETWORK FOR INNOVATIVE COOPERATION
(01.02.2006-01.08.2007)

Karol Velíšek, Professor, PhD.

* Creating network of companies and organisations for qualification increasing of innovation realised as support of intrernational cooperation for small and ontermediate business from Austria, Czech Republic, Hungary, Slovak Republic -like a source progress increasing of neighbouring economics, to reinforce relations and structures within the frame of EU.

NATIONAL PROJECTS

VEGA 1/2076/05 (01.01.2005-31.12.2007)

Milan Nad', PhD. Fibroacoustical Energy Transfer in Nonhomogeneous Systems

* Vibroacoustical behaviour of structures is an important area of investigation of mechanical systems. Applied aspects of the project involve the transfmision of vibroacoustical energy in civil and engineering structures, ship machinery and aeronautical structures. Engineering practice requires to create methods for modeling and analysis of these strcures, as well as methods for measurement and control of their vibroacoustical behaviour. Fundamental goal of the project is the study, analysis and development of numerical methods suitable to predict the flow of vibroacoustical energy through the system as well as prediction of operational parameters and system properties with the aim to optimise the global vibroacoustical characteristics. For selected mechanical systems the interaction among subsystems will be analysed with emphasis on minimalization of energy transfmision.

VEGA 1/2101/05 (01.01.2005-31.12.2007)

Bohumil Taraba, Assoc. Professor, PhD. Computer modelling of transfer phenomena applied for chosen technological and assembly processes and processes of heat treatment The research project is aimed at the development and application of computer modelling for the solution of temperature fields and stress-strain states of materials and structures on the conditions of chosen technological and assembly processes. The development of new solution techniques, material models and nonlinear structural elements for the thermal and stress-strain analyses including contact problems, their verification and implementation to the finite element codes forms a part of the project. It will be used the computer code ANSYS. The interest is for computer code SYSWELD.

VEGA 1/3164/06 (01.01.2006-31.12.2008)

Peter Košťál, PhD.

Application intelligent fixtures in manufacturing and assembly process

* Because in simultaneity myself make use of intelligent fixture in roboted and automated mode of production, spirit project is analyse their at manufacturing and assembling process. Working-out theoretical point of departure for application fixture from look frame will be working-out methodics their solution. For automated mode of production by kind technology and assembling process create model intelligent fixture with bearing on tenuity control automatic round clamping work, which coming in frame make use of hydraulic alternatively pneumatic energy. Near application fixture shadow fixative strength (by your leave adjustment), toughness clamping work and uniform position working fixture.



Modular Clamping fixture

VEGA 1/2073/05 (01.01.2005-31.12.2007)

Mária Behúľová, PhD.

Study, numerical simulation and optimisation of high-speed heating for progressive technologies of forming and heat treatment.

* Submitted project tñdeals with the study, analysis and numerical simulation of materials behaviour by high-speed heating particularly using resistive, induction and laser heating and their exploitation in the progressive forming and heat treatment technologies. The emphasis i put on a very close linking between numerical analyses and experimental measurements of elektro-magnetic, temperature and stress-strain fields and successive application of attained results for the design and optimisation of rapid heating in chosen forming and heat treatment processes. The assessment of the influence of technological parameters during rapid heating on the microstructure, final mechanical and utilisation propertis of materials composes an integral part of the project, together with experimental measurement of material propertis and the development of material databases for chosen steels. In the theoretical area, the research will be focused on the development of special material models and user subroutines for the solution of copled rapid heating problems using commercial finite elements codes.

VEGA 1/3193/06 (01.01.2006-31.12.2008)

Karol Velišek, Professor, PhD.

Multifunktion manufacturing-assembly cell

* Conception of integrated flexible manufacturing cell dedicated for small batch production system that manipulates with workpieces and produce from semiproducts individual parts for concrete final products. Parts are assembled to final product too. Unlike standard production system in this system the final product 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 is not used external industrial robot. Exchange grippers for manipulation and assembly are installed on end effector -vertical axis of system parallel with spindle. Realistion and using this conception projected like flexible production-assembly cell brings smaller occupied

place, smaller expense, higher ratio of production device usefulness.



Rotary feeding device

KEGA 3/4154/06 (01.01.2006-31.12.2008)

Jozef Mudrik, Assoc. Professor, PhD.

Building of Centre for Research and Pedagogy „Transfers and Transmissions“

* The establishing of 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 to preparation of students, which are studying on Master and Doctoral Degree - Enviromental and safety engineering, Manufacturing devices and dystems, Information technology and automation in industry.



Experimental device for gearbox checking

KEGA 3/5211/07 (01.01.2007-31.12.2009)

Karol Velišek, Professor, PhD.

Creating and building of virtual laboratory for pneumatic and electro-pneumatic control systems Virtual laboratory of pneumatic and electro-pneumatic system control will serve for education of pneumatic and electro-pneumatic system design and simulation of system work. In such lab type the students will work per internet. The lab will help the students to develop their technical skills.

RAV MŠ SR 4/0102/06 (01.01.2006-31.12.2007) Jozef Mudrik, Assoc. Professor, PhD.
Analysis if dynamic properties by the selected mechatronical gear configurations To create the coherent set of theoretical and experimental analysis and synthesis methods by the mechatronical sets with direct applications on the rotating machine unit designed for performing of predetermined technological processes is the project aim. The project results will be applied by the construction and operation of mechatronical sets in mechanical devices.

GRADUATE THESES

Bachelor Theses

Belák, M.:Automatic product changing system in flexile manufacturing system

Páleník, P.:Automation of discontinuity production processing

Horváth, M.:Charakteristics of disassebly processes and utilization of them into actual praxis

Kerak, P.:Kinds of spur gearings and their application in multispindle operation heads

Lašák, M.:Dynamic effect of the cut powers on the work piece and the clamp in the process of unrotary components's snagging

Fiantok, J.:End - effectors of Industrial Robots

Miškovič, M.:Design of regulation station

Krafčík, M.:Mechanization and automatization dismounting's activities

Zlacký, M.:Calculation methodology for fixative force by fixation of non-rotatable work pieces

Podmajerský, I.:Kinematic structure models of industrial robots and manipulators with parallel kinematic

Jakúbek, L.:Models of mechanical active grippers with lever mechanism

Charvátová, P.: Implements for progressive methods of cultivation

Čavara, P.: Adesing of algorithm assembly process for assembly choosed product in FAC

Svinčák, P.: Suggestion of automated control in selected assembly devices

Hamar, B.: Proposal of disassembly processes for chosen assembly units

Marcinka, M.: New trends in territory of manufacturing automation equipments

Kučík, M.: Survey of using jigs and technological equipments for superfinishing machines

Záhora, P.: Overview of Equipment Used for Production of Printed Circuit Boards

Lipták, R.: Review of machine and machinery for machining using energetic rays

Baranovič, M.:Knowlege of devices for heat treating according

Masters Theses

Hencz, O.: Projection electro-pneumatic control 3-axis PICK and PLACE manipulator's

Horváth, Š.:Implementation of define-purpose machines to the automatic line

Zán, M.: Implementation of robotic station for agglutination of roof window to existing car assembling link

Debrecký, L.:Model and simulation of assembly process ordered product in flexibile assembly part

Tománek, S.: Simulation of components fixative for make fixative force

Šánta, T.: Simulation of clamping device for choise nonrotary workpiece in system CATIA Benovič, F.: Proposal of mechanism for binding for horizontal chanel baling press

Bašnák, I.: Organization of Production Process in Term of Spatial and Time Structure

Novosád, R.:Rationalization and optimalization of the line for manufacturing bottom and sideboard sections in SLKB, a.s. Komárno

Boledovič, S.:Control of manipulator for shelf collator

FOREIGN VISITORS TO THE INSTITUTE

Poland

Technická univerzita Poznaň - Waldemar Matysiak; Prof. Ing. Stanislav Legutko

Serbia

Technická univerzita Novi Sad - prof. Sinisa Kuzmanic ; Assoc. prof. Zoran Anisic

Romania

Technická univerzita Cluj-Napoca - Dr. Ing. Domnita Florina Fratila ; Prof. Dr. Ing.Olimpia Ros ; Liviu Adrian Crisan

Bulgaria

Technická univerzita Sofia - Prof. Alexander Makedonski

VISITS OF STAFF MEMBERS TO FOREIGN INSTITUTIONS

Czech Republic

University Tomáš Baťa, Zlín - Karol Velíšek, Professor, PhD.
; František Pecháček, PhD.

VUT Brno - František Lacko, PhD. ; Jozef Mudrik, Assoc.
Professor, PhD. ; Karol Velíšek, Professor, PhD. ; Peter
Košťál, PhD.

ČVUT Praha - Bohumil Taraba, Assoc. Professor, PhD.

Technical University, Plzeň - Karol Velíšek, Professor, PhD.;
Peter Košťál, PhD., František Pecháček, PhD.

Austria

TU Viedeň - Karol Velíšek, Professor, PhD. ;

František Pecháček, PhD.

Montanuniversity Leoben - Mária Behúlová, PhD.

Poland

KOMEKO 2007 - Karol Velíšek, Professor, PhD. ;

Petr Košťál, PhD.

Hungary

MicroCAD 2007 - Karol Velíšek, Professor, PhD.

Univerzita Miskolc - Peter Košťál, PhD.

Romania

North University of Baia Mare - Karol Velíšek, Professor,
PhD. University of Sibiu - Peter Košťál, PhD.

TU Cluj - Napoca - Karol Velíšek, Professor, PhD.

Bulgaria

Univerzita Sofia - Andrea Mudriková, PhD. ;

Marcela Charbulová, PhD.

Germany

Univerzita Chemnitz - Mária Behúlová, PhD.

China

Technical University, Peking - Karol Velíšek, Professor, PhD.

Croatia

University Zadar - Karol Velíšek, Professor, PhD. ; Peter
Košťál, PhD.

MEMBERSHIPS IN INTERNATIONAL PROFESSIONAL ORGANISATIONS

Österreichische Ingenieur und Architekten
Verein - Karol Velíšek, Professor, PhD.

International Informatization Academy -
Štefan Král, Professor, PhD.
Jozef Mudrik, Assoc. Professor, PhD.

Society for Assembly Machine -
Peter Košťál, PhD. ; Karol Velíšek, Professor,

PhD. ; František Pecháček, PhD.

The Czechoslovak Association for Crystal Growth
Mária Behúlová, PhD.

European Acoustical Association -
Tibor Nánási, PhD.

MEMBERSHIPS IN SLOVAK PROFESSIONAL ORGANISATIONS

Slovak welding Society - Helena Kraváriková, PhD.

Slovak Standards Institute/Technical Committee

Tibor Nánási, PhD. ; Milan Nad', PhD. ;

Bohumil Taraba, Assoc. Professor, PhD.

Mechanical devices engineering association

Jozef Mudrik, Assoc. Professor, PhD. ;

Štefan Král, Professor, PhD.

Slovak Associations of mechanical Engineers

Karol Velíšek, Professor, PhD. ; Peter Košťál, PhD. ;

František Pecháček, PhD.

Slovak expert group of solid state chemistry and physics
- Mária Behúlová, PhD.

Slovak Acoustical Society Milan Nad', PhD.

Slovak Academy of Science/Slovak mechanical Society
Jozef Mudrik, Assoc. Professor, PhD.

Slovak Academy of Engineering

Jozef Mudrik, Assoc. Professor, PhD.

MOST IMPORTANT SCIENTIFIC PUBLICATIONS

Monographs

Velíšek, K. - Košťál, P. Mechanization and automatization.
Bratislava: STU, 2007. ISBN 978-80-227-2753-2

Král, Š. - Lacko, F. - Oravcová, J. - Riečiariarová, E. - Tomaníček,
S. Theory of design and technical documentation.
Bratislava: STU, 2007. ISN 978-80-227-2644-3

Scientific articles

Behúlová, Mária - Taraba, Bohumil: Numerical simulation as
a tool for prediction of material behavior during induction
quenching. In: Annals of DAAAM and Proceedings of
DAAAM Symposium. - ISSN 1726-9679. - Vol. 18, No. 1.
Annals of DAAAM for 2007 & Proceedings of the 18th
International DAAAM Symposium „Intelligent Manufacturing
& Automation: Focus on Creativity, Responsibility, and
Ethics of Engineers“ : Croatia, Zadar 24-27th October
2007 (2007). - Viedeň : DAAAM International Vienna, 2007,
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Košťál, Peter - Mudriková, Andrea - Velišek, Karol: Virtual laboratory of pneumatic systems. In: Annals of DAAAM and Proceedings of DAAAM Symposium. - ISSN 1726-9679. - Vol. 18, No. 1. Annals of DAAAM for 2007 & Proceedings of the 18th International DAAAM Symposium „Intelligent Manufacturing & Automation: Focus on Creativity, Responsibility, and Ethics of Engineers“ : Croatia, Zadar 24-27th October 2007 (2007). - Viedeň : DAAAM International Vienna, 2007, pp. 389-390

Mudriková, Andrea - Košťál, Peter - Velišek, Karol: Material and information flow in flexible manufacturing cell. In: Annals of DAAAM and Proceedings of DAAAM Symposium. - ISSN 1726-9679. - Vol. 18, No. 1. Annals of DAAAM for 2007 & Proceedings of the 18th International DAAAM Symposium „Intelligent Manufacturing & Automation: Focus on Creativity, Responsibility, and Ethics of Engineers“ : Croatia, Zadar 24-27th October 2007 (2007). - Viedeň : DAAAM International Vienna, 2007, pp. 485-486

Ďuriš, Rastislav - Murín, Justín: A Nonlinear Truss Finite Element with Varying Stiffness. In: Applied and Computational Mechanics. - ISSN 1802-680X. - Vol. 1, No. 2 (2007). - Plzeň : University of West Bohemia, 2007, pp. 417-426

Kraváriková, Helena: Modeling of the technological processes. - Článok je uverejnený aj v zborníku MSE 2007. In: Academic Journal of Manufacturing Engineering. - ISSN 1583-7904. - Vol. 5, No. 2 (2007), pp. 73-75

Labaš, Vladimír - Labašová, Eva - Árendás, Peter: Calculation of temperature field by welding PE pipes. In: Plastics and Rubber. - ISSN 0322-7340. - Roč. 44, č. 1-2 (2007), pp. 12-15

Nad', Milan: Structural dynamic modification of vibrating systems. - 2/4154/06. In: Applied and Computational Mechanics. - ISSN 1802-680X. - Vol. 1, Num. 1 (2007). - Plzeň : University of West Bohemia, 2007, pp. 203-214

Nánási, Tibor: Parametric studies in elastic stability of non-conservative beams. In: Applied and Computational Mechanics. - ISSN 1802-680X. - Vol. 1, No. 2 (2007). - Plzeň : University of West Bohemia, 2007, pp. 565-570

Taraba, Bohumil: Computer modeling of the part thermal loads during cooling process in Quenching oil. In: Academic Journal of Manufacturing Engineering. - ISSN 1583-7904. - Vol. 5, No. 2 (2007), pp. 128-130

Taraba, Bohumil: Computer modelling of induction heating combined with experiment. In: Annals of The Faculty of Engineering Hunedoara. - ISSN 1584-2665. - Vol. 5, No. 2 (2007), pp. 155-160

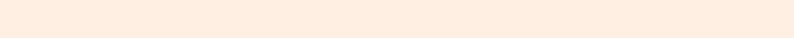
Košťál, Peter - Hrušková, Erika - Velišek, Karol: Clamping fixture for flexible manufacturing cell. In: Academic Journal of Manufacturing Engineering. - ISSN 1583-7904. - Vol. 5, No. 2 (2007), pp. 61-64

Košťál, Peter - Velišek, Karol: Intelligent clamping fixtures for box shaped workpieces. In: Scientific Bulletin. - ISSN 1224-3264. - Vol. XXI / nadát. International Multidisciplinary Conference. 7th. Baia Mare, Romania, May 17-18, 2007 (2007). - Baia Mare : North University of Baia Mare, 2007, pp. 355-358.

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INSTITUTE
OF PRODUCTION TECHNOLOGIES



INSTITUTE OF PRODUCTION TECHNOLOGIES

Director Koloman Ulrich, Professor, PhD.
e-mail: koloman.ulrich@stuba.sk
tel: ++421918646055

Address Bottova 23, 917 24 Trnava, Slovak Republic
tel.: ++421918646037,
tel/fax: ++421/33/5521007
http address:
http://www.mtf.stuba.sk/generate_page.php?page_id=2835



Institute Departments

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

Staff

- Professors: 11
- Assoc. Professors: 10
- Senior Lecturers: 10
- Research Fellows: 7
- PhD Students: 25

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 bonding
- 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, creatives, measurement and assembly
- CIM, CAD/CAM, CAPP, CAQ, CAA
- 3D art engraving
- manufacturing of dies
- quality of measurement
- formability of new materials
- high parametrical forming
- hardening surface layer
- experimental methods for forming
- computer simulation

CENTRES OF EXCELLENCE



CNC Milling Machines (Deckel FP 2A, VMC Eagle 1000)



3D scanners

3D scanners (optical 3D scanner GOM ATOS, laser 3D scanner Roland PICZA LPX – 250) The laboratory of design and manufacture free form surfaces offers the utilization of Reverse Engineering for machine industry and applied industrial art (for example mould manufacturing, automobile industry, design and manufacturing of coin_s relief, plaquettes and common art surfaces, ...). By 3D scanners the real parts are transformed into digital form and at the next -

if it is necessary – by software is modified and by utilization of CNC technology is manufactured their duplicate and - if it is needed – carry out the inspection of free form surfaces (for example CAD Comparison). We have rich experiences in the field of design of 3D models with free form surfaces. The manufacturing of these 3D free form surfaces is realized by 3-and 4-axis CNC machines. We actively co-operating with firms from the field of machine industry, for example: HKS Trnava, Zlievareň Trnava, Sony Slovakia a.s, EBO Jaslovské Bohunice, TC Engineering SK s.r.o Nemšová. We provides specialistic consultations at solving technical problems of mechanical practice

INTERNATIONAL PROJECTS

CII-PL-0007-02-0607 Modern metrology in quality management systems - stagell (01.01.2006 - 31.12.2007) Ladislav Morovič, MSc.

* To increase the international significance of the universities involved in the project, it is essential: - to organise long-term and short-term exchange of outstanding scientists - to organise short-term exchange of experts representing the partner universities - to hold international conferences on measuring technology and practical applications in machine manufacturing systems - to presents the scientific output results. 2. To upgrade the qualifications of young scientists from the collaborating universities, it is crucial: - to create international research teams - to organise shorter and longer visits to the collaborating universities - to extend the research base to assure high level research 3. To develop cooperation with other research institutions and industrial organisations it is necessary: - to initiate joint research projects concerning the up-to-date problems of industry - to popularise and implement state-of-the-art measurement techniques -to focus on industry- oriented research and development projects - to present the results ov the cooperation with other centres and industrial organisations.

CII-RO-0058-03-0708 THE Implementation of European Credit Transfer System into the Short Time Higher Education within Bologna Process at Technical University of Cluj Napoca (01.01.2007-31.12.2008) Ladislav Morovič, MSc.

* Other objectives: - The appointment of an ECTS institution coordinator; - The appointment of ECTS departmental coordinators by subject area/disciplines in all departrments intending to use ECTS - The allocation of ECTS credits to course units, - The production of an „Information package“ in all subject areas/disciplines in which ECTS will be/is used, in the native language and in English - The use of students application forms, transcripts of records and ECTS learning agreement. - The establishing of a program that will be use for the mobility of the students as well as a student could study one year in Romania then one year in Austria and then one year in Hungary. The results of this student will be recognized using the criteria established between partners of the network. These will offer the possibilites of developing MSc or postgraduate programs together with other foreign universities and the exchange of students between universities from Europe whole world.

CII-PL-0007-03-0708 Geometrical Product Specifications - a new tendency in the design and realization of technological processes (01.01.2007 - 31.12.2008) Ladislav Morovič, MSc.

* Supporting further development of the universities participating in the project - expansion of activities within other international (DAAM, TEMPUS) and national (SIMP, PAN) programmes - Further involvement of collaborating universities in national and international research projects+also the development of research potentials of universities in the field of cooperation with economic entities.

CII-RO-0058-01-0506 (01.01.2006 - 31.12.2007) Michal Štefánek, Assoc. Professor, PhD.

The implementation of European Credit Transfer System into the short time higher education within Bologna process at Technical University of Cluj Napoca

* This Project and its Network intends to continue the activity and the results of the Networks Ro-0103, Ro-0129 and Ro-137, developed in the years 1999 - 2005. These networks had 10 members universities from Romania, Austria, Hungary, Bulgaria, Poland and Slovakia. In the Project there are specified tasks for University workplaces.

NATIONAL PROJECTS

APVW 99-P01205012 (01.08.2005-30.07.2007) Koloman Ulrich, Professor, PhD., responsible comanager Laser deposition of layers improving the utility properties and life of production tools

*Laser surfacing or deposition of materials in the form of powders or wires on metallic surfaces with the aim to produce thin layers with excellent tribological and anti-corrosion properties with a direct orientation on industrial application represents almost totally new method. This method was developed only at several workplaces in the world, including our

company. The first results are not older than 8-10 years. The experimental works were performed mainly by laser fusion of a thin layer deposited by flame or plasma spraying of powders or by other method with the aim to attain a uniform layer metallurgically bound with the substrate, what is the main precondition of a high-strength bond of the layer with the substrate material. The results of those experiments have clearly shown a great potential of application of this procedure for a wide spectrum of applications in industry, mainly for an operative deposition of local or large-area layers with special properties.

APVW 20-020904 003/2005 (01.01.2005-31.01.2007) Koloman Ulrich, Professor, PhD., responsible comanager Research of mechatronics systems and progressive technologies for surface material engineering

* Project is aimed to the complex tasks solution in the field of controlling the technological processes and the owns technological processes for surface material engineering, on the base of laser and electron beam methods. In the frame of project its determine the optimization criterions of mechatronic complex of the technology. It will be studied the theoretical questions in the field of monitoring and

diagnosis of laser processes. It will be studied the theoretical aspects of structural and thermal effect of powder applications. On the model systems it will be studied the influence of basic parameters of laser and electron beam powder application to the structure of applied layer and joint quality. It will be analysed the questions of parameters influence and conditions of technological layers treatment to the quality of applied layers with the aim of propose and test the new technical procedures in the field of laser and electron beam creation of layers used in the industry.

APVW 0067-06 017 (01.02.2007-31.12.2008) Milan Turňa, Professor, PhD., responsible comanager Modern System of Generation and Monitoring of Electron Beam for Industrial Applications

* The project deals with research of new modules of the EB welding equipment with output power up to 30kW for competitive industrial applications. The parameter of new modules of the high-voltage source with beam voltage of 60kV and with output power up to 30kW will be examined. The high-voltage source will be solved as middle-frequency source with amplitude regulation and the following target parameters: stability of output voltage max._0.5%, ripple of output voltage max._0.3%, stability of welding current _0.5%, dynamism of the voltage increase at nominal load 60kV/5ms, stability of cathode operational point _0.1 and cathode lifetime min. 120 hours in continuous operation. The electron gun module will be equipped by observation and navigation system of electron beam on the weld joint in the beam axis by CCD camera. The functional model of the designed EB welding equipment will be equipped by the system of discharge protection and it will be controlled by a distributed control system with possibility of welding parameter recording.

APVT 20-011004 (01.01.2005-31.10.2007)

Pavel Blaškovič, Professor, DrSc. Optimization of welding technology at processing of distinguished fragments manufacture in progressive agriculture equipments

* The aim of the project solution is to optimise welding technology at processing of distinguished fragments manufacture in progressive agriculture equipments. The main part of the project will be an expert system for choice of steel and complementary materials with complete data base system of optimal organisation helping PC support for agriculture equipments new generation. System will be centred on optimisation welding technology of constructions and their individual parts orientated to high quality and durability extension and or fidelity. The criteria for proposed solution will be assumed economic effectiveness of new production process, increasing of labour productivity and/or competition. In fact of choice of optimal welding technology to lay on the optimal material catalogue with the aim to use it for the similar products.

APVT-20-010804 (01.01.2005-31.12.2007)

Roman Kolečák, PhD.

Development of the leadfree active solder and research of material solderability of metallic and ceramic materials with the utilization of ultrasonic activation

* The project is focused on the development of a universal

lead free solder, aimed for a fluxless environmentally acceptable soldering of metallic and ceramic materials. Clarification of the mechanism of joint creation in case of soldering of ceramic and non-metallic materials with the utilization of ultrasonic activation. Research of material solderability of ceramic (Al₂O₃, SiO₂, ITO, TiO₂, etc.) and non-metallic (Si, Ge, C) materials, of a high or technical purity, with the same kind or in combination with metals (Al, Mg, Ti, Cr, Co, Mo, Ni, Cu, Zr, Hf, Ta, W, etc.). Influence of the ultrasonic soldering parameters on the solderability and quality properties of joints. Study of interactions at the border between the soldered material and solder. Detection of quality criteria for solderability. Determination of solderability of selected materials with the utilization of ultrasonic energy.

KEGA 3/4157/06 (01.01.2006-31.12.2008)

Koloman Ulrich Koloman, Professor, PhD. Creation of multimedia programs for welding specialists' education

* Multimedia programs including videoclips of modern welding and joining technologies focused on education of top welding engi-neers in welding engineering branch. Processing of selected companie_s materials, experience and research results of welding department of MTF into a modern presentation way.

KEGA 3/416/06 (01.01.2006-31.12.2008)

Jozef Bilik, Assoc. Professor, 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 be 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.



Teaching by help of modern didactical technique

VEGA 1/2074/05 (01.01.2005-31-12.2007)

Anton Pokusa, Professor, PhD. Non-conventional technology for casting's coating

* The presented technology enables to create special coating on casted parts during casting from metal component of mould facing. It requires to analyze colloid solutions composition influence on physical parameters of created

surface layers and establish the influence of transition structures in boundary layer on bond's mechanical and coating's tribological propertis. It will be also necessary to analyze structures, created during mould facing and molten metal interaction and thermodynamic effects on mould - coating - molten metal boundary.

VEGA 1/2070/05 (01.01.2005-31.12.2007)

Jozef Bilik, Assoc. Professor, PhD.

Unconvention hightparametric forging.

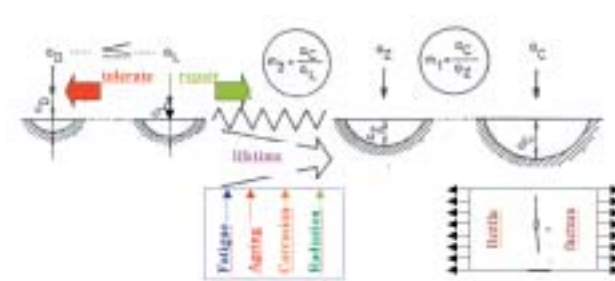
* Forging is based on the mechano-thermic effects with the aim to reach the required high metallurgical (chemical composition, structure and phase stage) a technological (shape, dimension and properties) parameters for exploitation of forging - components with the dynamical strain and abrasion of the surface layers (surface engineering).

VEGA 1/2068/05 (01.01.2005-31.12.2007)

Koloman Ulrich, Professor, PhD.

Determination of defect admissibility in fusion welded joints.

* One of new approaches for the evaluation of defect significance in welded structures represents the critical analysis of factors and conditions of reliable and safe operation of a welded structure in which defects have been revealed. The admissibility limits of defects derived from the assessment of the structure for the given fitness for purpose can be wider and/or less strict. Applying the critical analysis methods these limits can be assessed as still satisfactory for the given conditions. The aim is to elaborate defect admissibility limits in fusion welded joints more than 10 mm in thickness for ferritic steels for pressure vessels and structures.



Principle of evaluation of defect acceptance by the fitness on purpose method

VEGA 1/2102/05 (01.01.2005-31.12.2007)

Roman Lazar, PhD.

Nitrooxidation of steel sheet metals and its influence on strength characteristics of pressed pieces

* Project submittes the procedure f surface treatment for low-alloyed deep-drawing sheet metals using a new method of thermo-chemical processing. called nitrooxidation in fluidised laver . The project is based on current demands in application of non-conventional procedures of thermo-chemical treatment, using suitable heat-conducting environment. The main pupose of the project is to monitor the influence of nitrooxidation on mechanical and forming propertis of chosen materials.

VEGA 1/2099/05 (01.01.2005-31.12.2007)

Pavel Blaškovič, Professor, DrSc.

Identification of methods for measuring tribological parameters in mechanical engineering and metallurgy

* Identification of methods for measuring of tribological parameters in mechanical engineering and metallurgy. Investigation of literature about application of testing methods for friction wear and lubrication in the field of mechanical engineering and metallurgy. Identification of application of labor equipment for friction tests, wear and lubrication in engineering and metallurgy. Scientific verification with comparison of world standard and with praxis. After verification physical control of labs. Advise to optimization of testing methods comparable with world standard.

VEGA 1/2114/05 (01.01.2005-31.12.2007)

Marián Murgaš, Professor, PhD.

Austenitic chromium-nickel abrasion resistant cast iron

* The development of the chromium-nickel abrasion resistant cast iron with the mainly austenitic matrix having the guiding chemical composition. The quantification of the effect of the main alloying elements of Ni, Mo and Mn on the structure characteristics of the cast iron with the graphic processing of the determined dependancies and with using of the regression analysis into the semiempirical relations. The statement of the complex of the theoretical and application aspects that will be commonly applicable on the carbide chromium resp. chromium-nickel cast irons alloyed by nickel from 1 to 6 % with the mainly the austenitic matrix.

VEGA 1/3163/06 (01.01.2006-31.12.2008)

Jozef Peterka, Professor, PhD.

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 falls 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 imported 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 1/3191/06 (01.01.2006-31.12.2008)

Milan Turňa, Professor, PhD.

Progresive metallurgical 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 for welding, brazing/soldering, adhesive bonding, cutting and allied processes applied 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)

Alexander Janáč, Professor, PhD.

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 determining 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 period of project. Experiments in area of measurement will be exactly evaluated with aim to obtain new scientific knowledge.



Laser Doppler Displacement Meter SD-500

VEGA 1/3192/06 (01.01.2006-31.12.2008)

Mária Kapustová, 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 off forgings bases on application of new materials and nontraditional technologies, for purpose of increased forgings quality and achievement of lower usage energy and materials. After this manner the production of forgings will be cheaper, what essentially increases competitiveness our forges within countries of EU. Sizeable material saving representatives die forging technology without fin, eventually 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 forged production. The achievement of its application is conditional by following of temperature influence for formability of materials. The important economic effect representatives forges workbench ekologization. The provision of healthy workbench is one of the basic legislative tasks of employer.

VEGA 1/4108/07 (01.01.2007 –31.12.2009)

Monika Bónišová, PhD.

New trends and next development of superfinishing technology.

* Supposed project is aimed to new fields in development of superfinishing because it is always possible to implement new knowledge to technology. These new knowledge either improve the whole process of machining by decreasing the wearing of tools and machines, improving the quality of machine surface during superfinishing (by decreasing the roughness of surface), enable the machining of hardly reachable surface areas of component during superfinishing, they decrease the manufacturing costs or economize the superfinishing time.



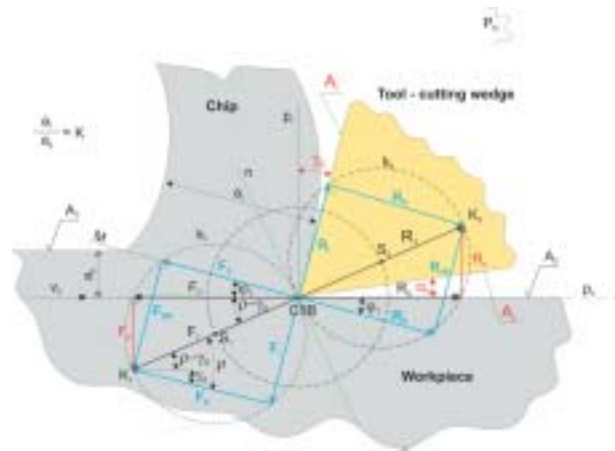
Shapes of superfinishing stones

VEGA 1/4111/07 (01.01.2007-31.12.2009)

Zdenko Lipa, Professor, PhD.

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 is 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.



Cutting forces and cutting resistances by machining

VEGA 1/4109/07 (01.01.2007-31.12.2009)

Alexander S. Chaus, Professor, DrSc.

Optimisation of heat treatment conditions of steels for cast cutting and forging tools.

*The aim of the project is gaining the new knowledge from the field of heat treatment of steels to cast, cut and forging tools enabling responsibility and durability of these tools in manufacturing conditions. The influence of heat treatment regimes on structure and basic features of steels on cast cut and drop tools of traditional chemical composition and also steels submitted to treating and modifying will be investigated. The main emphasis will be put on the study of heat treatment influence on the kinetics of primary structure transformation and phase structure of investigating steels with the estimation of mutual relationship among technological parameters of stripes operations, quenching and tempering on one side and structural changes and final feature on another side. In consideration of the fact that in mastic tooling materials is the carbide component especially important coefficient influencing by most significant way their resulting features, the further aim of this project will be the study of morphology and character of distribution of eutectic and secondary carbides in the structure of investigated steels after annealing, quenching and tempering in the relation of steels properties. On the basis of gained statements the optimalization of regimes of steels heat treatment to cut, cast and forging tools.

GRADUATE THESES

Bachelor Theses

Hanzen, V.:Analyse core mixture used in the Foundry factory Trnava Ltd. for cast stocks automobile industry

Sojka, J.:Bearing and friction materials made from metal powders

Núdzik, M.:Possibilities of production of vermicular graphite cast iron in cupola furnace

Krafský, R.:Computer simulation casting Al-Si cast in metal molds Kováčik, S.: Rewiev of metal powders production methods by milling

Vrabec, J.: Monitoring of changes of electrolyte properties by plasma polishing

Škantár, M.: The influence of the physical properties on the changing fluidity of powders

Ridzoň, M.: The influence of the physical properties on the changing fluidity of powders

Nosál, D.: Production of modeling plant for art casting

Šurina, S.: Analysis of technological conditions during metal extrusion

Konečná, L.: The analysis of temperature conditions by the simulation process of forging

Zemko, P.: Modeling of drawing tools by using computing technique

Horváth, T.: Watching working life of rubber-metal components created through forming

Boleček, M.: Technology of production angular extracts

Florkovičová, R.: Impact speed forming amount of deformation

Karika, G.: Influence of metal plates properties to a bending process

Kravárik, L.: The search of simulation programmes for bulk forming

Jankech, J.: High productive machines for nail production

Doboš, R.: Importance of simulation programs for the further development of die forging technology

Bernadič, L.: Produced mechanisms of prestressed concrete wires and strands

Machovich, I.: Analyses of physical processes by welding and hard surfacing

Hegedüs, J.: Application of welder appliance at production of great volume objects

Suchý, M.: Physical properties of lead-free solders
Krotek, V.: Hybrid laser welding

Polányi, M.: Corrosion testing of welds stainless steel

Slahučka, M.: Laserwelding of Aluminium in automobile industry

Sahul, M.: Laser welding of steels in automotive industry

Remenár, V.: Non-destructive methods of welded joint testing

Bohušová, K.: Resistance Welding in Automobile Industry

Roľník, R.: Overview of new methods for non-destructive testing of basic substance and welded joints

Boris, J.: Tracking of a response of plasmatic arc voltage as function of plasma burner gradient

Provazník, M.: Brazing of ceramic materials

Augustín, R.: Al influences on changes of properties Pb-free solders

Ondruška, J.: Joining of Combined Metals by Explosion Welding

Mulík, P.: The Steel Welding by High Efficiency Lasers

Frunyó, Z.: Cooling of tools near machined

Vnučko, M.: Numerical control of manufacturing machine

Jassa, F.: Cutting materials in Comex s.r.o. company

Drienovský, M.: Digitizing 3D object in practice

Bartošek, L.: Finishing methods of machining for steels

Geryk, A.: Geometry of cutting wedge - application on PC

Slovák, M.: Tools and components supervising by contacts probes

Horváth, M.: Paint robots

Lenghart, J.: Measure pressing on the coordinate measuring machine in PSA Peugeot Citroën Trnava

Puschenreiter, L.: Modification of injection moulds

Chmelina, P.: Proposed construction drilling curtailment

Zvončan, M.: Assembly of industrial linkage female plug and sock plug

Bernovič, M.: Design of the machine product installation

Valachovičová, L.: Production proposal for „smooth rings“

Král, D.: Marking of indexable cutting inserts, their geometry, methods of clamping for many various methods of mechanical cultivation

Vicena, A.: Computer controlled renewal of cutting tools

Porubský, R.: Computer aided design of tank

Volek, M.: Experimental comparison of conventional and highly abrasive abrading agents at recess grinding

Chudík, P.: The accessories of universal milling machines

Blaško, M.: Progressive trends in finish machining

Varačka, M.: Progressive trends in the technology of turning

Kováčik, M.: Progressive trends in the technology of milling

Beňo, M.: Renovation of pressuring tools used in company FORMANA Myjava

Kubovič, P.: Software for teaching of CNC machine programming

Valášek, J.: Turning on Single-Spindle and Multi-Spindle Lathes

Škorvánek, Z.: Trends of tool cooling on cutting

Zahorec, N.: Trends in turning operations

Trencsik, C.: Trends in milling operations

Bazala, P.: Creation NC programs for shaping rotary parts

Hodulík, R.: Jigging of workpieces and cutting tools

Belás, R.: High productive turning in conditions of PSL a.s. company Považská Bystrica

Lezo, D.: High-speed milling for non-ferrous materials and its application in practice

Masters Theses

Havaš, I.: Digitalization of machined models

Györi, L.: Roughness of shape areas

Dinka, R.: Assembly of gear-shift mechanism

Líška, J.: Design and manufacturing form by CNC milling machine for the company COMP - LET Ltd.

Zemko, M.: The maker's emblem design and manufacturing

Školníkov, S.: Design and Manufacture of Jewel Box by five axis machining

Urban, I.: Projecting and production of a mould for a propeller in COMP-LET Ltd

Škantár, T.: Model Proposition and Manufacturing of the Component „Lower Cassette“

Rakús, P.: The lighter assembly design

Mitasová, Z.: Design of commemorative coin with utilization of software ArtCAM

Matlák, S.: Renewal methods of cutting tools

Bérešová, T.: Machining materials with big firmness and heavy-handedness

Buchtová, K.: Machinability by grinding

Seres, C.: Machining of underframes on portal and horizontal machines

Masár, M.: Optimization technology of the short thread holes

Kúr, G.: Testing properties cutting fluids

Buranský, I.: Software for training of CNC milling

Harmata, M.: Joining technological methods in assembly engineering products

Tomaničková, M.: Assignment of material ratio of the surface profile

Veres, T.: Strategies of milling free form surfaces

Ladzianský, M.: Creating of measurement a deduction animations from the measures

Szabó, Z.: The choice of method for measuring the roughness of grinding texture

Gášparovič, J.: Evaluation of surface quality after grinding

Petrik, T.: Evaluation of surface quality after superfinishing

Kubicová, M.: Performance ratio of grinding

Švantner, V.: Computer Aid Utilization in Designing, Manufacturing and Revision of a Plastic Product

Šimora, J.: Material and labour cost reduction of coulisse parts

Varga, R.: Application of selected tools of computational techniques in moulding design for polymer injection technology

Rýdzi, J.: The use simulation programmes in the technology of production in forging on hammers

Kováč, P.: Sheets steel appropriate for component produced by drawing

Prošňanský, J.: Optimization of mechanical working technology of selected bodyproduct

Krajčovič, P.: Designing forming lines in stamping shops

Auxt, Š.: Technological aspects of minisprint's production by forward extrusion

Drobný, J.: Verification of computer simulation of examinations

Lišková, J.: Effect kinds wires rod on mechanical properties drawn wires

Baboľ, M.: Effect of lubrication on the terminalpoint of drawing takings from slim metal plate

Domin, P.: The influence of bearer drawing taper size on its endurance and mechanical properties of drawn wire

Uhrin, T.: Research the influence of friction by the forming non - ferrous alloys

Ridzoň, M.: The increase of punching tool operating life during hot forming process

Peller, G.: Acceptability evaluation of welded joint defects

Molnárová, M.: Laser cladding of wear resistant laser on steel

Čunderlík, M.: Sugestion technology of large-sheet bimetal Al-steel

Gottstein, M.: Sugestion Technology Mode of Production Trimetal Al-Cu-Structural Carbon Steel

Demianová, K.: Sugestion of welding technology for Al-Mg alloy

Belokostolský, T.: The welding technology application of Mg alloys of selected metals

Herdová, Z.: Sugestion of Welding Technology of Zr alloy for nuclear power engineering by electron beam

Žitňanská, K.: Comparasion of mechanical properties of chosen constructional steels with instrumented indentation test

Bárta, J.: Arbitration of soldering technologies and lead-free solders used in Sony Slovakia

Horvatič, V.: Reasons of problematic electrode sticking at resistance spot welding steel zinc plates

Mikula, Š.: The study of the splash formation conditions at resistance spot welding of sheets zinc

Rumanová, E.: Studying of the properties of coatings created by laser cladding with direct addiction of metal powder

Mokoš, R.: Study of the soldered joint properties for microelectronics

Viskup, T.: Study of duplex steels welded joints propertie maked by welding by electron bem

Fraňo, D.: The study of the weld deposits for abrasive wear conditions

Szabo, T.: Determination of thermal input during oxygen cutting

Arendáš, M.: The influence of Al to the soldering properties of lead-free solder

Balvan, M.: Laser beam welding of austenitic steels

Benák, M.: Welding of bimetalic tube plate explosion

Mikula, M.: The welding of combined steels by laser

Mihál, M.: Laser beam welding Monel with Titanium

Turanský, J.: Welding of metal plates changed by nitrooxidation using a laser beam

Úradníček, V.: Metal Processing of Reversible Material Made on the Al-Si Alloy basis

Černák, P.: The proposal of cast technology of figure plastic art with core to the moulding mixture on the principle of gypsum - anhydrit

Smková, Z.: Recycling reversible of foundry Al - Si alloys

Bubanec, Ľ.: Research of influence of hydrostatic pressure on the decrease

Šoltýs, D.: Investigation of influence on orientation and posture of polished part in working container on the reduction value through plasma polishing

Bartáková, M.: Pouring method production wax patterns

Viernus, V.: The production of foamable precursor by PM technology

Dissertations

Hodúlová, Erika: The study of soldering joints of boundary made by led free solders. Bratislava: STU, 2007. - 139 s.

Kováříková (Sukubová), Ingrid : Study of selected buttering sorts resistant against abrasive wear. Bratislava: STU, 2007. - 136 s.

VISITS OF STAFF MEMBERS TO FOREIGN INSTITUTION

Czech Republic

Czech Technical University Praha -Milan Turňa, Professor, PhD. ; Matej Beznák, Assoc. Professor, PhD.; Jana Moravčíková, MSc. ; Viktor Tittel, Assoc. Professor, PhD.

Technical University Brno -

Ivan Baránek, Assoc. Professor, PhD. ; Jozef Peterka, Professor, PhD. ; Alexander Janáč, Professor, PhD.

Ambassy of Corea -

Alexander Chaus, Professor, DrSc.

Laser Centrum Praha -

Milan Turňa, Professor, PhD.

TDS Brno - Milan Marônek, Assoc. Professor, PhD.

Technical University Ostrava -

Marián Murgaš, Professor, PhD.; Viktor Tittel, Assoc. Professor, PhD.

MSC Software Brno -Mária Kapustová, PhD.

Pramet Tools, s.r.o. -

Ivan Baránek, Assoc. Professor, PhD.

VÚPCH EXPLOSIA Pardubice -

Zuzana Turňová, PhD.

Blumbecker Prag, s.r.o. -

Milan Ožvold, Professor, PhD.

International Fair of Engineering Brno -

Augustin Görög, Assoc. Professor, PhD. Ingrid Görögová, MSc.Eng.

Czech Foundry Society, Brno -

Marián Murgaš, Professor, PhD.

Rožnov pod Radhoštěm -
Anton Pokusa, Professor, PhD.

Kuřim – Seminar of optical metrology
Ladislav Morovič, MSc.

Croatia
Croatian Association of Production
Engineering Beograd -
Katarina Brodzáková, MSc.; Štefan Václav, PhD.;
Ladislav Morovič, MSc. Eng.

Jozef Peterka, Professor, PhD.;
Koloman Ulrich, Professor, PhD.

Korea, South
POSTECH, Pohang – Alexander Chaus, Professor, DrSc.

Poland
Cracow University of Technology -
Ing. Ingrid Görögová, PhD.

Univerzita Gdańsk - Milan Marônek, Assoc. Professor, PhD.

Technická univerzita Kielce -
Jozef Peterka, Professor, PhD.; Peter Pokorný, PhD.,
Ingrid Görögová, MSc. Eng.

Germany
Mnichov - Zuzana Turňová, PhD.
EMO Hannover - Ivan Baránek, Assoc. Professor, PhD.

Belarus
National Academy of Science Belarus -
Alexander Chaus, Professor, DrSc.

Belarussian Steel Works, Zlobin -
Alexander Chaus, Professor, DrSc.

Latvia
Kaunas University of Technology -
Alexander Chaus, Professor, DrSc.;
Matej Beznák, Assoc. Professor, PhD.

MEMBERSHIPS IN INTERNATIONAL PROFESSIONAL ORGANISATIONS

HYDROMAG – International Association for Hydromagnetic Phenomena and Application, University of Cambridge -
Great Britany
Marián Murgaš, Professor, PhD.
Marcela Pokusová, Assoc. Professor, PhD.

International Tribology Society
Pavel Blaškovič, Professor, DrSc.

International Welding Institute IIW
Pavel Blaškovič, Professor, DrSc.;
Roman Koleňák, Assoc. Professor, PhD.;
Milan Marônek, Assoc. Professor, PhD.;
Koloman Ulrich, Professor, PhD.

Iron and Steel Institute of Japan
Marián Murgaš, Professor, PhD.
Marcela Pokusová, Assoc. Professor, PhD.

MEMBERSHIPS IN SLOVAK PROFESSIONAL ORGANISATIONS

Slovak Tribology Society -
Pavel Blaškovič, Professor, DrSc.

Slovak Welding Society - Pavel Blaškovič, Professor, DrSc.;
Milan Marônek, Assoc. Professor, PhD.;
Erika Hodúlová, PhD.; Koloman Ulrich, Professor, PhD.;
Pavel Kovačócy, Assoc. Professor, PhD.;
Vladimír Púčik, MSc.;
Roman Koleňák, Assoc. Professor, PhD.;
Marián Kasala, MSc.

Slovak Associations of Steel Constructions -
Koloman Ulrich, Professor, PhD.

DAAAM Slovakia - Jozef Peterka, Professor, PhD.

Slovak Standards Institute/
Technical Standards Committee 11
Pavel Blaškovič, Professor, DrSc. ;
Koloman Ulrich, Professor, PhD.

Slovak Standards Institute/
Technical Standards Committee 4
Dr. Koloman Ulrich, Professor, PhD.

Slovak Chamber of Commerce and Industry -
Ivan Baránek, Assoc. Professor, PhD.

Association of Universities of the third age
- Ivan Baránek, Assoc. Professor, PhD.

Nuclear Safety Committee Milan Turňa, Professor, PhD.

Slovak Metrology Society
Augustín Görög, Assoc. Professor, PhD.

Slovak Academy of Science / Metal Science Society
Viktor Tittel, Assoc. Professor, PhD.
Alexander Chaus, Professor, DrSc.

MOST IMPORTANT SCIENTIFIC PUBLICATIONS

Monographs

Gelin, F.D. - Chaus, Alexander: Metal materials. - Minsk :
Vyšejšaja škola, 2007 - 396 p. - ISBN 978-985-06-1362-2

Komarov, O.S. - Kovalevskij, V.N. - Kerženceva, L.F. -
Chaus, Alexander: Technology of constructions materials-
2. vyd. - Minsk : Obščestvo s ograničennoj otvetstvennost'-
ju „Novoe znanie“, 2007. - 566 p. - ISBN 978-985-475-
237-2

Baránek, Ivan: Materials for HSC. - 1. vyd. - Trnava :
AlumniPress, 2007. - 103 p. - ISBN 978-80-8096-037-7

Bílik, Jozef: The teoretical and technological aspects of
surface layers mechanical strenghtening. - 1. vyd. - Trnava :
AlumniPress, 2007. - 92 p. - ISBN 978-80-8096-020-9

Beznák, Matej: Production of forging tools by investment casting into ceramic moulds. - 1. vyd. - Trnava : AlumniPress, 2007. - 112 p. - ISBN 978-80-8096-034-6

Pokusová, Marcela: Electromagnetic processing of aluminum alloys. - 1. vyd. - Trnava : AlumniPress, 2007. - 102 p. - ISBN 978-80-8096-043-8

Koleňák, Roman: Solderability of metal and ceramic materials by active solders. - 1. vyd. - Trnava : AlumniPress, 2007. - 164 p. - ISBN 978-80-8096-025-4

Scientific articles

Kolenič, F. - Iždinská, Z. - Fodrek, P. - Ulrich, Koloman - Emmer, Š. - Kováč, L. - Pikna, L. Influence of EB Welding Parameters on Properties of Welding Joints in Duplex steel type SAF 2205. In 60 th Annual Assembly and International Conference: Proceedins of the IIW International Conference Welding and Materials. Technical, Economic and Ecological Aspects. Zagreb, Croatian welding society, 2007, pp. 1 - 13. ISBN 978-953-7518-00-4

Kovaříková, Ingrid - Blaškovitš, Pavel - Kolenič, F. - Fodrek, P. - Blažiček, P. - Marônek, Milan: Study of Properties of Layers Deposited with Laser by Use of Powder Fillers Containing Diborides. In 60 th Annual Assembly and International Conference: Proceedins of the IIW International Conference Welding and Materials. Technical, Economic and Ecological Aspects. Zagreb, Croatian welding society, 2007, pp. 1 - 10. ISBN 978-953-7518-00-4

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Peterka, Jozef - Morovič, Ladislav - Pokorný, Peter - Polakovič, Miloš: Inspection of free form surfaces. In: Scientific Bulletin. - ISSN 1224-3264. - Vol. XXI / nadát. International Multidisciplinary Conference. 7th. Baia Mare, Romania, May 17-18, 2007 (2007). - Baia Mare : North University of Baia Mare, 2007, pp. 597-601.

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Marônek, Milan - Lazar, Roman - Dománková, Mária: Low-carbon sheet metals treated by nitrooxidation in fluid layer and their properties. In: Scientific Bulletin. - ISSN

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Turnová, Zuzana: Risk assessment on welding workplaces. In: Welding in the World. - ISSN 0043-2288. - Vol. 51., Special Issue (2007), pp. 775-782

Beznák, Matej - Chaus, Alexander - Čaplovič, Lubomír: Wear resistance of powder high-speed steels with additions of molybdenum disulphide. In: Trenie i iznos. Friction and wear. - ISSN 1068-3666. - Vol. 28, No 6 (2007), pp. 1-4

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Murgaš, Marián - Pokusová, Marcela: Synthetic alloy. In: Sborník vědeckých prací Vysoké školy báňské - Technické univerzity Ostrava : Řada hutnická. Roč. L, č. 1. - Ostrava : Vysoká škola báňská - Technická univerzita v Ostravě, 2007. - ISBN 978-80-248-1548-0. - pp. 173-178
Pokusová, Marcela - Mihál, Stanislav - Murgaš, Marián: Processing of silumin with the increased content of iron. In: Sborník vědeckých prací Vysoké školy báňské - Technické univerzity Ostrava : Řada hutnická. Roč. L, č. 1. - Ostrava : Vysoká škola báňská - Technická univerzita v Ostravě, 2007. - ISBN 978-80-248-1548-0. - pp. 203-208

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Kapustová, Mária - Lubinová, Mária: Research of plasticity and microstructure brass Ms58Pb at forging temperature 750 oC. - Článok je uverejnený aj v zborníku MSE 2007. In: Academic Journal of Manufacturing Engineering. - ISSN 1583-7904. - Vol. 5, No. 2 (2007), pp. 57-60

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INSTITUTE OF INDUSTRIAL ENGINEERING, MANAGEMENT AND QUALITY

Director Miloš Čambal, Assoc. Professor, PhD.
e-mail: milos.cambal@stuba.sk
tel: ++421918646050

Address

Paulinska 16, 917 24 Trnava, Slovak Republic
tel.: ++421918646032;
tel: ++421/33/5511032
fax: ++421/33/5511758
http address:
http://www.mtf.stuba.sk/generate_page.php?page_id=2837



Institute Departments

Department of Industrial Engineering
Department of Management
Department of Quality Engineering

Staff

- Professors: 4
- Assoc. Professors: 11
- Senior Lecturers: 20
- Research Fellows: 4
- PhD Students: 70

Study programmes

- Industrial Management
- Production Quality
- Production Quality Engineering

Research targets

- progressive forms of managers 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 customers satisfaction in quality management and marketing



Civil association VIVAEDUCA was registered at Home Office on 31. 12. 2002 and given ICO 37846761 by Statistical office of SR:

The main purposes of VIVAEDUCA are:

- development and protection of spiritual values
- support and development of behavior and education
- reducing of unemployment by supporting acquire of knowledge, education, consultancy and by preparation of the graduates to the work experience,
- increasing of social standing and asserting of graduates

INTERNATIONAL PROJECTS

014637 IRE 6 (01.06.2005 – 28.02.2008)

Alexander Linczényi, Professor, PhD.

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

* To identify the regional economy from the point of view of innovation, to analyse the industrial and technological trends in the relevant industrial sectors, to analyse the regional firms, especially their strenghts and opportunities, their acces to new technologies, regional innovation infrastructures, financial services, trans-regional co-operation, involvement into the collaborative networks etc. To identify the needs of regional companies, mainly technology-based SMEs in terms of research, inovation and technology development and dto 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 – 31.03.2008)

IPeter Ončák, MSc.

Modular system of distance learning in project management with e-learning and IT 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.



NATIONAL PROJECTS

KEGA 3/3016/05 (01.01.2005-31.12.2007)

Renáta Nováková, Assoc. Professor, PhD.

Introduce a subject „Management of Quality“ on Secondary schools

* The main target of the project is the professional assignment of introducing subjekt „The Management of Quality“ on Secondary schools.

KEGA 3/3068/05 (01.01.2005-31.12.2007)

Rudolf Rybanský, Assoc. Professor, PhD.

E-Learning Utilisation in Reaching of Production Logistics Subject

* The aim of the project is utilisation of E-learning method for teaching new subject Production Logistics. It is a part of new study program at the Faculty of Materials Science and Technology of Slovak University of Technology in Trnava. It is conception independent form hardware and software platform oriented for access the subject content to students of this university and also to public. The advantage of the project is connecting the handicap people to this project because its content will be made available on Internet for free. The user can log to the net by login and to train, test oneself or interactive change the information with particular lector.

KEGA 3/3113/05 (01.01.2005-31.12.2007)

Iveta Paulová, Assoc. Professor, PhD.

Distance Education in the Efficiency Improvement Methods and Total Quality Management Effectiveness area.

* The project is developed in order to help quality managers in every branch of native economy to change the improvement, performance and overall organization management effectiveness development approach. The methodology for tools and techniques application, which affect total quality management performance and effectiveness, the TQM principles including, will be handled.

KEGA 3/3190/05 (01.01.2005-31.12.2007)

Jarmila Šalgovičová, Assoc. Professor, PhD.

Project of distance education in quality management of non-governmental health-service institutions field

* The project targets the distance education of selected non-governmental health-service institutions staff in assurance and improvement of services quality in the area

of human medicine. This should consequently improve the population's health state and clients satisfaction, decrease the costs and bring better economic results to the providers of medical health care.

KEGA 3/4155/06 (01.01.2006-31.12.2008)

Andrea Holková Andrea, Assoc. Professor, 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 1/2578/05 (01.01.2005-31.12.-2007)

Peter Ončák, MSc.

Analysis of International Trends in Project Management, Present State of Project Management in Slovakia and Proposal for its More Effective Implementation in Slovak Conditions

* The aim of the submitted project is to analyse the present state of project management implementation in Slovakia, both in public and private sectors. It tends to map in details the state and obstacles of its further development, and analyse the scope of implementation of programme system for the project management support. The research will use the methods applied in advanced countries, which will enable comparison of Slovakia with the above mentioned countries.



VEGA 1/2579/05 (01.01.2005-31.12.2007)

Milan Jedlička, Assoc. Professor, PhD.

New marketing-management trends leading to increase corporate competitiveness

* The main idea of the project is to search into impact of the new trends exploitation in marketing-management and marketing communication and effects of their exploitation by increasing of corporate competitiveness. The category on which is focused the attention in this project is mostly category of all Slovak industrial corporations that accept changes resultant from development of social and economic system and also scientific and technical progress.

VEGA 1/2580/2007 (01.01.2005-31.12.2007)

Jozef Sablik, Professor, PhD.

Substance and value of firm industrial and intellectual property, its creation, maintenance, protection, valuation and its main contribution to the firm value maximalization

* The goal of this project will be focusing on the value of this kind firm assets, especially on its contribution to generating of future economic benefit and herewith relating actuality of its creation, maintenance, protection and value statement, so it could be the solid basis for maintenance and subsequent increasing firm market value. Project will be focused on the intangible assets in the industrial plants in Slovak republic.

VEGA 1/2586/05 (01.01.2005-31.12.2007)

Andrea Holková, Assoc. Professor, PhD.

Exploitation of personnel indicators at human resource management in business practice in connection with slovak republic's entry to the EU

* The project basis is emphasis the importance of personnel indicators and applying their as possible alternative of capital indicators in managing practice of managers.

The project will hold set of methods and indicators, that is of possibility utilize near individual company activities, at the preparation of managers on all levels of management and contribution them applications in managing practice.

VEGA 1/3764/06 (01.01.2006 – 31.12.2008)

Jarmila Šalgovičová, Assoc. Professor, PhD.

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 effectiveness of the services offered. This should consequently improve the population's 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.

GRADUATE THESES

Bachelor Theses

Štefančíková, Zuzana: Application of the KAIZEN versus reengineering in the management quality.

Krč-Kubečková, Andrea: Customer's satisfaction measurement

Kelemenová, Zuzana: Investment plan proposal for ŽOS Trnava, a.s.

Solus, Jozef: Proposal of measurements for increasing the effectivity of the remuneration system of employees in the company C.I.M.A. Slovakia, s.r.o. Spišská Belá

Hančík, M.: The proposal of criteria for improvement of the educational system as a condition to optimize a corporate spirit in the company called Hornonitrianske bane Prievidza, a.s. :

Ferenčíková, A.: The concept of improving human resources and social area in ŽOS Trnava, j.s.c.

Beňová, M.: Project measure ergonomic rationalization work process in Company VYZKONT, limited company Trnava

Machara, Marek: Proposal of arrangements of opportunities to fund projects and orders in conditions of the enterprise KONŠTRUKTA - Industry, a.s., Trenčín

Kiseli, Pavol: Human reliability analysis in socio-technical systems in SE, a.s. Jaslovské Bohunice

Fáberová, A.: The proposal of arrangements on procuring of asset in company SEMAT, a.s. Trnava

Révaiová, Veronika: The proposal of arrangements for evaluation of education in the company Combin Banská Štiavnica, L.t.d.

Gergelová, A.: Suggestion of arrangements for improvement of working environment at manufacturing workplaces in BetonRáco, spol. s r.o. Trnava

Adamovičová, Z.: Activities of informations management

Šurina, Ondrej: Concept of arrangements for processing the personal strategy of ŽOS Trnava, a.s.

Koltnerová, Kristína: Proposal for arrangements aiming at key employees stabilization with the usage of motivation and career growth tools in conditions of ŽOS Trnava, a.s.

Hoblíková, R.: Proposal of measures for creation the methodics of procedure for market research in conditions of CHEMOLAK, a.s. Smolenice

Šemšejová, Monika: Measures and actions to create personal marketing system

Sandtnerová, Patrícia: Proposal of measures for efficiency evaluation of employee's education in Siemens s.r.o. Bratislava

Zbíňová, Adriana: Suggestion measurement to utilization concept of personal marketing in managing human resources in company Q-EX, a.s. Trenčín

Polčanová, Erika: Remedy Suggestions for rivalrous of the Strojstav, a.s. firm Nové Mesto nad Váhom

Kiačík, Peter: Project of measures for providing of supplies in company Old Herold, s.r.o. Trenčín

Masaryk, Pavol: Proposal of measures for improvement of goods and materials identification in Chemolak Smolenice, a.s.

Sopková, Gabriela: Proposal of the measures for improvement of motivation system of employees in MOGUL SLOVAKIA, s.r.o. Hradište pod Vrátnom

Sýkorová, Dagmar: A proposal of steps for the employee motivation system improvement in Vetter Slovakia, Ltd. Trnava

Majtán, Matúš: Proposal of measurements for improvement of management organizational structure in the joint stock company Slovnaft Montáže a Opravy

Rekemová, Monika: Suggestion for improving of employee bonus system in Duras, s.r.o. Selec

Štefunková, Martina: Proposal furnished on system improvement remuneration staff at firm

Krajčovič, Juraj: The arrangements layout improving system of rewarding employees in the company TOPOS Tovarníky, s.c.

Jankejech, Marek: Proposed measures to improve educational system of employees in AQUASTYL Slovakia Co.Ltd. Považská Bystrica

Ollárová, Eva: Suggestion of measures for the development of the educational system for the employees at the SPP, a.s. Bratislava

Žilinská, Nika: Proposal of the measures to improve the system of educating the employees in ŽOS Trnava, a.s.

Gabrišová, R.: Arrangement application improving supplies logistics in the „Machines and mechanisms joint stock company“ Bratislava

Lišková, Katarína: Suggestions for precautions for increase of effectiveness and equal capacity utilization of raw material flow in the incoming area in the company Delphi Slovakia s.r.o. Senica

Morongová, Martina: The proposal of the measure for making the price setting process more effective in the Techklíma, s.r.o. company Nové Mesto nad Váhom

Pastva, Peter: Devices of suggestions for improving the efficiency of transportation process in the company HT Eurofil, s.r.o. Nitra

Rolníková, Eleonóra: Proposal of proceedings for making the planning of investing shares more effective in company Matador, Inc. Púchov

Kráľovičová, Jana: The proposal of arrangements for improving the supply and purchase efficiency in I.D.C. Holding, a.s. Bratislava

Samson, Róbert: Effectiveness Proposal of maintenance activity in the production plant in INA Skalica, s.r.o.

Guman, Lukáš: Proposition of arrangements to increase effectivity in management of utilization of banking services in financial economy of machine industry company Topos Tovarníky, a.s.

Csergeová, G.: Proposition of arrangements to increase effectivity of staff educational system in company CHEMOSVIT, a.s. Svit

Hrádelová, L.: Arrangements suggestion for making the recruitment system and selection of employees more effective in company Avent Slovakia, Ltd. Piestany

Orlická, Marianna: Proposal of actions to increase the efficiency of the system of obtaining and selecting of personnel in the enterprise called ŽOS Trnava, a.s.

Kífer, František: Proposal steps for doing more effective choiced external economical relations of enterprise Eurotechnik - SL, s.r.o. Stará

Gažovičová, L.: Measure design for the recruitment and the selection of employees in CHEMOLAK, Inc. in Smolenice

Skýpalová, Zdenka: Suggestion of actions to improve further education of the employees in the company Slovnaft Montáže a Opravy, a.s. Bratislava

Martinusová, Veronika: The proposal of measures for improvement of distribution logistic in the bussiness firm ZF Sachs, a.s. Trnava

Janíková, Jana: Proposal of measures for improvement of appraisal and remuneration of employees in S-KTX, coop., Malacky

Ružičková, Ľubica: Measures proposal for improvement of software projects test management in s IT SOLUTIONS, spol. s r.o. Bratislava

Krajčovičová, Zdenka: The proposal of arrangements for betterment of personal activities focused on getting, selecting, hiring and firing employees

Tomková, Jana: Projection measurements to improve operating conditions of assembly workstations in Delphi Slovakia, spol. s r.o.

Šedlár, Marek: Propose the measures to improve working conditions on production workplaces in Panasonic, s.r.o. Trstená

Minárechová, Jana: The draft of steps to improve the system of valuation at relation with employees wages in Slovenský

vodohospodársky podnik, š.p. Banská Štiavnica - OZ Piešťany

Čížeková, M.: Improvement proposal of recruitment and selection system in joint-stock company Johns Manville Slovakia, Trnava

Sklenář, Václav: Propose measures to improve the adoption of the Internet in the course of management of company IdentCode Consulting s.r.o. Komarno

Talianová, Jana: The proposal of the measures for improvement in realization of costs analysis and for more effective using in financial decisions making in Amylum Slovakia, Ltd.

Barniak, B.: Improvement proposal for production system of logistics in the company ELTECH Slovakia, s.r.o. Dolné Orešany

Varga, Pavel: Suggestion of measures to improve the usage of Elearning in the company DOKA DREVO, s.r.o.

Novák, Tomáš: Proposal of steps that should enhance the using of e-learning in VUJE, plc, Trnava

Marettová, Mária: The proposal of arrangements to improvement of utilizing information-communication tools for team collaboration in the Slovnaft PLC Bratislava

Stanová, Hana: Proposal of steps for better using of intranet in the company Slovnaft a.s.

Gavorníková, K.: The proposal of the arrangement for the advance of the application of marketing mix in OD-PLAST, s.r.o. Trnava

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Horňák, František: Development of creative potential of managers as a support for innovation processes in an enterprise. - 1. vyd. - Trnava : AlumniPress, 2007. - 72 p. ISBN 978-80-8096-018-6

Strategic management in managerial practice. - Trnava : Tripsoft, 2007. - ISBN 978-80-89291-04-5.

Nováková, Renata: Purchasing process in the quality management system. - 1. vyd. - Trnava : AlumniPress, 2007. - 127 p. ISBN 978-80-8096-015-5

Šalgovičová, Jarmila - Paulová, Iveta - Kučerová, Marta - Míkva, Miroslava: Quality management in health services. Distance learning. - 1. vyd. - Trnava : AlumniPress, 2007. - 156 p. - ISBN 978-80-8096-039-1

Šalgovičová, Jarmila: Quality management in health service. Quality planning. - 1. vyd. - Trnava : Tripsoft, 2007. - 144 s. - ISBN 978-80-89291-03-8

Scientific articles

Cibulka, Viliam: Actively managing of logistics chain process efficiency of logistics system. In: Materials Science and Technology [online]. - ISSN 1335-9053. - Roč. 7, č. 3 (2007)

Cibulka, Viliam: An access to the valuation and procedures of valuation of logistics system efficiency in a company. In: Materials Science and Technology [online]. - ISSN 1335-9053. - Roč. 7, č. 2 (2007)

Cibulka, Viliam: Collection of programs for valuation of efficiency of logistics chains process changes of company logistics system. In: Materials Science and Technology [online]. - ISSN 1335-9053. - Roč. 7, č. 3 (2007)

Hatiar, Karol - Sakál, Peter - Cook, T.M.: HCS model 3E - micro-solution of macro-problems - I/II. In: Research Papers MTF. - ISSN 1336-1589. - Č. 22 (2007), pp. 25-30

Hatiar, Karol - Sakál, Peter - Cook, T.M.: HCS model 3E - micro-solution of macro-problems - II/II. In: Research Papers MTF. - ISSN 1336-1589. - Č. 22 (2007), pp. 31-38

Chovanová, Henrieta: Organizational Project Management Maturity Model (OPM3). In: Research Papers MTF. - ISSN 1336-1589. - Č. 22 (2007), pp. 55-60

Jedlička, Milan: Forming of marketing strategy. In: Research Papers MTF. - ISSN 1336-1589. - Č. 22 (2007), pp. 61-66

Rašla, Vladimír - Sakál, Peter: Effective internal crisis communication. In: Research Papers MTF. - ISSN 1336-1589. - Č. 22 (2007), pp. 123-128

Sakál, Peter - Hatiar, Karol: Experiences and knowledges by solving of research project No.019/2001: „Transforming industry in Slovakia through participatory ergonomic“ II. In: Materials Science and Technology [online]. - ISSN 1335-9053. - Roč. 7, č. 2 (2007)

Vaňová, Jaromíra: Application of controlling in personnel management. In: Research Papers MTF. - ISSN 1336-1589. - Č. 22 (2007), pp. 145-148

Šalgovičová, Jarmila - Bílý, Matej: Quality of organisations providing audit and certification of management systems. In: Research Papers MTF. - ISSN 1336-1589. - Č. 22 (2007), pp. 133-138

Paulová, Iveta: Application of ethics in quality management. In: Research Papers MTF. - ISSN 1336-1589. - Č. 22 (2007), pp. 117-122

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Nováková, Renata: Macroeconomic and Microeconomic Importance of the Quality. In: Upravenie ekonomikoj: modeli, metody, technologii. TOM 2 .Ufa : UGATU, 2007. - ISBN 978-86911-691-8. - pp. 270-273

Paulová, Iveta: Application of methods, tools and techniques in total quality management. In: Quality. - ISSN 1512-9268. - Quality 2007 : Proceedings. - Zenica : University of Zenica, 2007, pp. 161-164

INSTITUTE OF SAFETY
AND ENVIRONMENTAL ENGINEERING



INSTITUTE OF SAFETY AND ENVIRONMENTAL ENGINEERING

Director Karol Balog, Professor, PhD.
e-mail: karol.balog@stuba.sk
tel: ++421918646041

Address

Botanická 49, 917 24 Trnava, Slovak Republic
tel.: ++421918646023,
tel/fax: ++421/33/5522244
http address:
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: 2
- Assoc. Professors: 5
- Senior Lecturers: 1
- Research Fellows: 1
- PhD Students: 10

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 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

CENTRES OF EXCELLENCE



Solar laboratory

INTERNATIONAL PROJECTS

15130100006 (01.09.2005 –31.12.2007)

Ivana Tureková, Assoc. Professor, PhD.

Transfer motivation centre for education of mechanical engineering adaptability (Equal)

* The projects focuses on the following priorities: - To increase qualifications and consequently employment of target groups via developing new professional skills necessary for the use of new innovative technologies; - To provide consulting services for the companies regarding the professional development of the employees and sub-suppliers applying top technologies; - To develop topical education moduli for practice on the basis of technologies transfer; - To elaborate methodology of human resources development strategy in mechanical engineering oriented production companies; - To establish a specialised centre for consultancy and education ; - To support the interest of unemployed in further education; - To employ highly qualified experts on the EU job market;

14150100019 (01.08.2006-28.02.2008) Karol Balog, Professor, PhD. Establishment technical-consulting laboratory for utilizing and consequently propagation of solar energy.

* The project is orientate on alternative source of energy propagation - mostly solar energy through thermal and photovoltaic panels. To that purpose technical-consulting laboratory provide consultations, presentations and lectures with practical demonstrations of several solar systems functioning. By the web page it is able to see online actual power of installed solar equipments.



HPLC Hitachi

NATIONAL PROJECTS

VEGA 1/2069/05 (01.01.2005-31.12.2007)

Bohumil Škárka, Professor, DrSc.

The progressive, enviromentally appropriate methods for valorazation and disposal of the materials from the machine industry

* Selection of the waste materials from machine technology, above all from the shapping of metal superficies, welding, soldering and casting, judgement of their enviromental risks, application of appropriate methods on the disposal of their toxic elements with the aim of their possible next utilization (ozonization, aeration, bioremediation with soil bacteria, phytoremediation), observation of the effeciency of these detoxication and regeneration processus by progressive analytical methods chemical, physical, physico-chemical and biological (HPLC, GC, polarography, UV-VIS spectrophotometry, measurement of the eecotoxicity). Development of new enviromentally appropriate materials: solder, catalyzators from abrasive muds.

VEGA 1/2421/05 (01.01.2005-31.12.2007)

Karol Balog, Professor, PhD.

Limiting Condition of Nonflaming and Flaming Initiation and Propagation of Burning Process of Wood and Wood Sawdust Investigation of bimodality of burning process of wood and wood sawdust in dependence on thermal exposition, oxygen concentration in surrounding atmosphere, ingredient and geometrical arrangement of specimens. Studies of smoldering initiation under prolonged heat exposition. Modeling of limiting conditions of steady selfsupporting flaming and nonflaming burnig. Correlation of flammability parameters of wood and wood sawdust at investigation of mass burning rate, heat release at thermal degradation, rate of spread of burning propagation, flash and selfignition temperature, time to ignition and activation energy with physico-chemical propertis of wood and wood sawdust, CO and CO₂ release and fire retardants. One output of the project studies will be the proposal of method for the fire risk assessment of materials with tendency to nonflaming and flaming burning process propagation.

VEGA 1/2112/05 (01.01.2005-31.12.2007)

Ivana Tureková, Assoc. Professor, PhD.

Objectivization and optimalization of the risks valuation in technological processes

* This proposed academic project has the aim to propose mathematical model for objectivization and optimalization to the identified risks and hazards in technological processes. Is very important by the values identification of the work risks and hazards to create the data banks with lnumerical values of the particular risks, and then there will be the presumption for their comparison. From this reason the submission of the data banka and her correct function will be the theme of the problem solution in the second stage of academic project.

GRADUATE THESES

Bachelor Theses

Javorík, A.: Analysis of the dangers from the physical factors on the cleaning and conserving appliance

Pavlovičová, T.: Analysis waste of production non metallic materials

Šušoljaková, M.: Analyse of the risks of international transportation of flammable liquid

Bátorová, R.: Analysis of Landfill Gas on chosen landfill

Tomašíková, M.: Analysis of the system of communal refuse separated collection

Hlinková, Jaroslava: Analysis of system of separated collecting of waste in Martin

Komínek, R.: Application der elektrischen Feuerwehrsinalisierung in verschieden technologischen Bedienungen

Slobodová, P.: Application environmental accounting in condition company DREAM PICTURES, s.r.o., Trnava

Svátková, E.: Car wrecks as a source of materials and raw materials

Sztruhár, F.: Safety of electric equipments in hazardous area of Slovnaft, a.s.

Kuševová, T.: Safety and environmental aspects combustion polymers

Csontos, I.: Safety requirements to disinfection, deratization and disinfection work in closed spaces

Padáčová, I.: Security requirements for nomenclature and maintenance of textile products

Daniš, M.: Safety requirements for train transportation of flammables

Csehová, L.: Safety request on operation in the Termalpark

Kováčová, Bohuslava: Biomasse, ihre Bearbeitung und Ausnutzung Paldanová, Kamila: The sorption of soluble organic substances

Samák, M.: Characteristics of combustible sources used for tests of flammability of solid compounds

Hrušovský, I.: Rodent control, disinfection and disinfestation in closed areas

Silná, M.: Environmentally oriented product policy

Uhrinová, Edina: Eutrophication water and technology her reduction

Franz, R.: Quality assessment of drinkable water sources

Hideghétyová, M.: Ecotoxicity evaluation of waste-water from a selected factory

Šimún, V.: Identifying of danger and risk assessment at a selected workplace in Matador company

Suchý, M.: Identification risk factors affecting humane organism in ZF Boge Elastmetall Slovakia, a.s.

Sabadková, Eva: Scrap management agenda in Cemmac, a.s., Horne Srnie

Šajtlava, I.: Coordination of Safety and Health Protection at Work (BOZP) at the assembly of the technological equipment of the power generations

Slažák, T.: Elimination of insects and dangerous animal bothering population

Ivanová, E.: Methods of Estimation the Inorganic Compounds at soils

Filipiak, O.: Monitoring of heavy metals occurrence in soil and plants in the region of Brezno

Packová, Jana: Monitoring of the air quality in the defined locality

Greguš, R.: Monitoring of environment humidity in selected facilities of the power plant and its consequences on selected building and technological equipment

Gálik, K.: Monitoring of environment in the vicinity of the nuclear power plants

Tajboš, M.: Possible risk effect of dust on personnel in Foundry ZLH, a.s., Sabinov

Lackovič, Peter: Possibilities accumulation of heat from solar heat collector

Lackovič, Peter: Possibilities accumulation of heat from solar heat collector

Šinský, J.: Possibilities of applications geographic information system at protection

Benedikovič, Peter: Possibilities of use solar thermal collectors

Heribanová, S.: Water utilization for energetics Galgoci, M.: The possibilities of ignition wooden dust from hot surfaces

Kandel, M.: Presentation of the Policy BOZP of Slovenská sporiteľňa, inc.

Hanzalová, K.: Dangerous at work with cyanides and their disposal of accidents

Míkvy, Ondrej: Untraditional facilities utilize of solar cells

Beluská, Miroslava: Removing of trace metals from sewage water by nontraditional sorbents

Sokol, Marek: Pedogeochemical mapping of soil aberation

Obúlaná, Z.: Polycyclic aromatic hydrocarbons in environment

Pisarčík, O.: Incident investigation guidelines Šarvaicová, K.: Evaluation of the quality of superficial water at Trnava region

Okruhlica, M.: Evaluation of risk of dustiness in the company OK Plast, s.r.o.

Uherčíková, A.: Assessment of effects of junkyard to environment

Hollá, Stanislava: The influence of selected waste dump on environment

Lanáková, A.: Assesment of ecotoxicity of chemical consumer goods Nikel, J.: The transportation of the flammable substances by the road

Hanuliaková, M.: Preparing of silver carboxylates in term of safety and health protection at work, VÚTCH-CHEMITEK, spol.sr.o. Žilina

Uhrinová, Edina: Ramsar locations important element in the protection of environment

Fančovičová, Júlia: Control of waste economy in the Slovak Spa Piešťany

Bodnárová, Miroslava: The methods of risk - management in food industry

Horúcka, R.: The treatment and processing radioactive wastes Dolinská, Stanislava: Ecotoxicity Assessment of Selected Engineering Materials

Novota, M.: State and possibilities of utilization of complementary water-supply Pernek

Kováčová, Lýdia: Study of Biodegradability of Selected Materials

Kralovič, R.: Transformation stations of Slovak railways and their influence on environment

Procházka, Matúš: Influence of anthropogenic activity to groundwater quality

Horváth, Viktor: Influence of anthropogenic activities on quality of surface water

Slovák, Miroslav: Influence of wastes from animal manufacture to environment

Šulejová, E.: The Influence of the Suction of Sediments on the Quality of Water in the Sunny Lakes in Senec

Nagy, P.: Influence of add-on conditions on initiation of burning process of industrial dusts

Soviš, D.: Production process business Nissens and its effect on environment

Štefánková, J.: Utilization of Geothermal Energy in Slovakia

Czippelová, Veronika: Exploitation of the Setur turbine in conjunction with a heat pump

Bekeč, T.: The use of Six Sigma method within the framework of environmental management at the company Johnson Controls, a.s., Bratislava

Bihary, M.: Exploitation of the progressive methods used for waste disposal in Urban Mass Transportation plants

Kovačič, J.: Creation and reasons accident damage event in railway transport and its impact on environment

Kovačič, M.: Providing for safeness in the event extraordinariness in railway station Trnava

Lyžičiar, R.: A Guideline to categorization of work activities Kausitzová, K.: Enhancement (recycling) of Biological Waste by composting

Kohútová, J.: Analysis of windthrow disaster results on the territory of the Tatra National Park

Kováčová, Mária: Valorization of effectiveness of biogas production from biomass

Prekopová, Ľ.: Assessment of quality of drinking water in the microregion of The White Carpathians resources

Knaperková, Miroslava: Valorization of effectiveness of Waste water treatment in Banská Bystrica

Turečková, Alexandra: Bewertung der Wirkung gewahlter die Abwasserkläranlage

Čečotková, Mária: Activities of informations management

Masters Theses

Krchnavá, K.: Risk analysis in Presná s.r.o. company

Dedik, T.: Safety standard to operation the ice-ring

Bašo, M.: Audit of safety of work

Abrrhan, T.: Review of quality of the surface water in region with intensive agriculture processes

Bertová, S.:The study of environmental aspects on the gas pumping station of DPT Inc., in Komarno

Líška, F.:Analysis as a Risk Factor in Production Unit

Ovečková, L.:The analysis of risk factor in AWECO APPLIANCES Slovakia, k.s.

Kajanová, Z.:Application fire-technical characteristic in practice

Nečasová, I.:Ecotoxicity of some cleaning preparations

Manek, M.:The environment aspekts of the new hydraulic power plants construction on the river flow Orava

Kucháriková, E.:Ecolabelling type II and type III

Srnková, M.:Environmental reporting

Seifert, P.:Identification of working hazard as toll of distribution of personal protective equipments in PSA Peugeot

Weisel, P.:Konception of sustanaible transport in selected region

Pobudová, Z.:Monitoring of waste's dump effect on environment

Jurčík, P.:Monitoring of solar systems characteristics

Lukáčová, S.: Implementation of Integrated Management System in ZF Sachs Slovakia, a.s., Trnava

Heiszler, R.: The opportunities of liquidation the waste materials with progressive methods in the company Smurfit Kappa Štúrovo, Inc

Málek, V.:Brownfields redevelopment Tokár, J.:Ice coating removal from high - voltage lines

Strážayová, J.:Removal heavy metals from sewerage waters methods of phytoremediation

Varga, Š.:Condmnation of quality of drinking water in two geographically distant localities

Abrihan, T.: Review of quality of the surface water in region with intensive agriculture processes

Drozd, M.:Fire hazard judgement in store Očenáš, M.: Requirements on storage of dangerous chemical substances from position of theirs tolerance

Marhefková, L.: Flame retardants and their effect on environment

Maljarčík, S.:Management of the risks in selected workplace ŽOS Trnava, a.s. Luptáková, N.: Hazard control in food industry

Karabínová, H.:Risk management in selected operation PLASTIKA, a.s. Nitra

Juhášová, V.: Management of hazardous determinants in JAVYS, a.s. Jaslovské Bohunice

Đurík, M.: Natural purification capacity

Filická, S.:Monitoring of chosen cutting fluid ecotoxicity

Bizubová, L.:Organic pollutant's stabilization in soils and bottom sediments by materials with high sorption surface

Pavlisová, D.:Study of ecotoxicity of selected organic pollutants

Bertová, S.:The study of environmental aspects on the gas pumping station of DPT Inc., in Komarno

Haviarová, V.: Biodegradability Possibilities Study the Selected Compounds of metalworking Fluids

Dugovičová, B.:Study of quality indicators of surface water and bottom sediments in chosen area

Mrva, P.: Activities of informations management

Hamran, J.:Artificial noise in registration geomagnetic fields

Šemeláková, D.:Effect of ozonization on qualities of cutting fluids

Szabóová, D.:Influence of anorganic salts at nonflame propagation of sedimented dust

Boros, J.:Impacts of the agriculture on the environment

Štefánik, M.:Thermic effect strain to flammability performance dust particle

Puterová, Z.:Influence of organic pollutant properties to catch by soils and bottom sediments

Císarová, Z.: Effect of outside factors on efficiency of mechanical-biological sewage treatment plant in COMAX-TT, a.s., Trnava

Ernek, P.:The exploitation of head space gas chromatography in observation of elimination process of volatile compounds

Sloboda, P.:Exploitation of renewable power sources in industry

Pefovská, M.:Exploitation of wastes from production and processing of metals in removal of chromium

Kovárová, S.:Exploitation of ozone in removal of coloured waste waters

Pažma, M.: Introduction of Integration management in Spartan a.s. Organization

VISITS OF STAFF MEMBERS TO FOREIGN INSTITUTION

Austria

Ivana Tureková, Assoc. Professor, PhD.

Australia

Stanislav Hostin, Assoc. Professor, PhD.

Czech Republic

Technical University of Ostrava - Renáta Šantavá, MSc. ;
Ivana Tureková, Assoc. Professor, PhD.

MEMBERSHIPS IN INTERNATIONAL PROFESSIONAL ORGANISATIONS

Czech Republic

Firework and Safety engineering association
TU Ostrava - Karol Balog, Professor, PhD.

International Institute of Welding -

Karol Balog, Professor, PhD.

MEMBERSHIPS IN SLOVAK PROFESSIONAL ORGANISATIONS

Slovak Academy of Science / Slovak
biology Society - Miroslav Rusko, MSc.
SNAS- Slovak National Accreditation Service -
Karol Balog, Professor, PhD

Slovak Standards Institute - Karol Balog, Professor, PhD. ;
Miroslav Rusko, MSc.

Slovak Academy of Science /Slovak chemical Society -
Ing. Richard Kuracina, PhD.

Slovak Academy of Science /Slovak ecology Society -
Miroslav Rusko, MSc.

ARPOS - Karol Balog, Professor, PhD.

MOST IMPORTANT SCIENTIFIC PUBLICATIONS

Monographs

Soldán, Maroš: Dangerous properties of phenol and its
derivatives, monitoring and removal from environmental. - 1.
vyd. - Trnava : AlumniPress, 2007. - 71 p. ISBN 978-80-
8096-023-0

Tureková, Ivana: High-temperature degradation of wood
based materials and determination of selected fire-technical
characteristics. - 1. vyd. - Trnava : AlumniPress, 2007. -
123 p. ISBN 978-80-8096-024-7

Scientific articles

Rusko, Miroslav - Krečmerová, Tatiana: Environmental
reports as important element of proenvironmentally oriented
politics. In: Sustainability Accounting and Reporting at
Micro-Economic and Macro-Economic Levels :
Proceedings from International Scientific Conference.
Brno, May 28-30, 2007. - Pardubice : University of
Pardubice, 2007.

- ISBN 978-80-7194-971-8. - pp. 115-120

Rusko, Miroslav - Krečmerová, Tatiana: Environmentálne
správy ako významný prvok proenvironmentálne orientovanej
politiky. In: Účtovníctví a reporting udržitelného rozvoje na
mikroekonomické a makroekonomické úrovni : Sborník
z mezinárodní vědecké konference. Brno, 28.-30. května
2007. - Pardubice : Univerzita Pardubice, 2007.

- ISBN 978-80-7194-970-1. - pp. 134-140

Šantavá, Renáta - Balog, Karol - Slabá, Ivana: Work health
services. In: Safety and health protection at work.
International Conference 2007. Ostrava, 12.-13.6.2007. -
Ostrava : Sdružení požárního a bezpečnostního inženýrství,
2007. - ISBN 978-80-7385-004-3. - pp. 272-277

Šimorová, Tatiana: The chosen methods of determination of
ignition temperature of the wood dusts. In: New Trends in
Research of Energetic Materials : Proceedings. Part I, II /
nadát. Seminar. 10th. NTREM '07. Pardubice, Czech
Republic, April 25-27, 2007. - Pardubice : Univerzita
Pardubice, 2007.

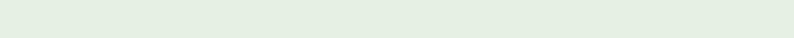
- ISBN 978-80-7194-949-7. - pp. 985-994

Tureková, Ivana - Slabá, Ivana - Duchoň, Martin: Dust risk
evaluation in work environment. In: Safety and health protection
at work. International Conference 2007. Ostrava, 12.-
13.6.2007. - Ostrava : Sdružení požárního a bezpečnostního
inženýrství, 2007.

- ISBN 978-80-7385-004-3. - pp. 321-327

Tureková, Ivana - Balog, Karol - Očenáš, Marián: Mutual
compatibility of dangerous chemical substances. In: Požární
ochrana 2007 : Sborník přednášek. XVI. ročník mezinárodní
konference. Ostrava, VŠB-TU 12.-13. září 2007. -
Ostrava : Vysoká škola báňská - Technická univerzita
v Ostravě, 2007.

- ISBN 978-80-7385-009-8. - pp. 653-664



INSTITUTE OF APPLIED INFORMATICS,
AUTOMATION AND MATHEMATICS



INSTITUTE OF APPLIED INFORMATICS, AUTOMATION AND MATHEMATICS

Director Peter Schreiber, Assoc. Professor, PhD.

e-mail: peter.schreiber@stuba.sk

tel: ++421918646039

Address

Hajdóczyho 1, 917 24 Trnava, Slovak Republic

tel.: ++421918646021,

tel/fax: ++421/33/5447736

http address:

http://www.mtf.stuba.sk/generate_page.php?page_id=2839



Institute Departments

Department of Mathematics

Department of Applied Informatics and
Industrial Automation

Staff

- Professors: 3
- Assoc. Professors: 9
- Senior Lecturers: 26
- Research Fellows: 2
- PhD Students: 13

Study programmes

- 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
- computer graphics – geometry problems
- 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

CENTRES OF EXCELLENCE



Siemens laboratory for process Control – in evaluation process

INTERNATIONAL PROJECTS

11230100073 (01.09.2005-31.07.2008)

Pavol Tanuška, Assoc. Professor, PhD.

Adaptive pedagogical education for managing of innovative technologies

* The partial goals of the project: - To increase resourcefulness of the teachers, their flexibility and adaptability; - to offer complex education with certificate in the field of innovative technologies in individual modules. Practical training in implementing the developed professional skills in practice will be an integral part of all types of training; - to support the interest of teachers in further education and to prepare a knowledge database for them. The implementation of theoretical and practical education takes place in the academic premises of the STU, thus enabling the courses participants' consultations and access to the latest information. The modulus system of education will enable further specialisation and professional development.



11230220340 (01.04.2006-31.03.2008)

Pavol Tanuška, Assoc. Professor, PhD.

Qualification and employee adaptability increase via welding courses and computer command

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

NATIONAL PROJECTS

LPP-0202-06 (01.10.2006-31.10.2009)

Oliver Moravčík, Professor, PhD.

Science closer to students Project of science and technology popularization is oriented to students of secondary schools with the aim to increase their interest of new knowledge in the field of science, research and development and to improve the education quality. The main aim of the project is support education and scientific-research work through the motivation tools for students and improving quality of education. KEGA 3/3111/5 (01.01.2005-31.12.2007)

Oliver Moravčík, Professor, PhD.

Creating virtual robotized laboratory for teaching support of subject „Robots and manipulators“ in new accredited educational program

* Learning process at the technical university requires gathering of certain practical skills, which fill up theoretical knowledge and simplify to comprehend the learning problems. Classroom accessories is not adequate to fulfil real requirements. For example learning of industrial robot programming. There is a possibility to solve the problem of learning on financially unavailable accessories by creating of simplified virtual robot model which will be by its interface identical with the real industrial robot and will act the same way. Its algorithms will copy the behaviour of the real industrial robot and will offer comparable outputs. Programming of this simulator can be fully changed by programming of the real industrial robot or robotized workplace.



KEGA 3/3131/05 (01.01.2005-31.12.2007)

Pavol Tanuška, Assoc. Professor, PhD.

Virtual laboratory of industrial programmable regulators for controlling of continuous technological processes. Project is focused on virtual laboratory with industrial regulators for technological processes controlling. The virtual version of two types of industrial regulators is carried out. The industrial regulators are long-term used for teaching in the field of testing the software of industrial regulator (further only IR),

configuration of basic types of regulation circuits and elaboration of analogical values including processing of alarms. Testing devices and connectible technological processes are virtual, too. The direct support of subjects such as Basics of automation, Design of industrial circuits and Optimation of regulation parameters, Design of control systems on the processing level and others represent another field of usage of project results utilisation. Already processed documentation covers basic study materials like tutorial, set of tasks for testing the syllabus, detailed methodical manuals for teachers and system documentation.

KEGA 3/4110/06 (01.01.2006-31.12.2008)

Maximilán Strémy, MSc.

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

* One of the goal of this project is to design and implement 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 3/4153/06 (01.01.2006-31.12.2008)

Mária Mišútová, Assoc. Professor, 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 1/2055/05 (01.01.2005-31.12.2007)

German Michalčonok, Assoc. Professor, PhD.

Digital phase control systems of high accuracy electric drives and their imitation through computer simulation means.

* One class of control systems of the very high movement accuracy exists in the electrical drive technology. This class includes drives of optical objects, movie and magnetic tape transports, centrifugal machines.. The main principle of the drives control is a phase principle. The base of this principle is that the deviation of control is a phase difference

between the frequency signal of the desired movement and the frequency signal from the movement sensor.

VEGA 1/2056/05 (01.01.2005-31.12.2007)

Dušan Mudrončík, Professor, PhD.

New algorithms of power system control in primary and secondary control

* The control of power systems includes a wide area of problems, which involve steady state modes of power system and dynamic process control as well. The main goal of the power system control is to provide electrical energy supply with satisfactory quality indicators in various operating conditions.

VEGA 1/3008/06 (01.01.2006-31.12.2008)

Marcel Abas, 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 embeddings of graphs in surfaces and main objects of our study will be Cayley maps and regular maps. We believe that using theory of Cayley maps on surfaces with boundary recently developed, we will be able to solve problems up to now unsolvable.

GRADUATE THESES

Bachelor Theses

Čiernava, Mário: Calibration colors of computer monitor.

Šimončič, Marek: Adaptive regulation, advantage and exploitation of this method

Sándor, Mátyás: Analysis influence transport delay in straight binding of enclosed regulating circuit for astatic system by means of Matlab

Szabó, Ondrej: The analysis of the effect of dead time on the system of astatism by means of Matlab

Čekan, Peter: Application of a new method to state the tolerance of coefficients of transmission of dynamic system for the optimal flow of response.

Šlosár, Martin: Use of new method by the parameter tolerances determination of system elements and the regulator for stability area

Illit, Ľuboš: The application of optical technologies in Metropolitan area networks

Sileš, Matej: C# Database application for police staff

Vrlák, Jakub: Database of client for company JURA audit s.r.o.

Dulačka, Zdenko: Database of Commercial Services Company engaged in Sales of Service Systems for Product Protection

Géci, Jaroslav:Database application for PDA	Oravec, Róbert:Phase-frequency detector models in Malab-Simulink
Foltín, Ľubomír:Database application in world web (spare parts Service Bay)	Vlkovič, Pavo:The monitoring of objects by using computer network and the internet Nádaždy, Pavol:Monitoring, visualization and control of energy consumption
Blažek, Ľubomír: Databased-information system with the focus on customers requirements	Pavlíková, Patrícia:Multimedial presentation of village Terchová with environment interactive
Plichta, Tomáš:Documentation of system operator workplace SW of FEI heating	Roh, Michal:Multimedia presentation with possibility of editing data
Čurgali, Boris:Data mining and its practical use in industrial area	Ambra, Joze:The design and partial implementation of IS for registration of computer configurations
Blinka, Peter:Data mining and its practical use in industrial area	Komjáthy, Mário:Design and implementation of furniture e-shop
Kosmál, Juraj:Knowledge Discovery in Databases and its usage in Industry	Hlatký, Juraj:Projection and implementation of web interface for a commercial company
Miháliková Ščevíková, Blažena:Electronic signature and his utilization Konečný, Ján:Order file for Manufactory Corporation	Keňo, Adrián:Proposal and implementation portal of used car
Chytil, František:Evidence of special tools and equipment for the company Letecké opravovne Trenčín, a.s.	Boháček, Marek:Design and implementation of the web - portal for a travel agency.
Temiak, Jozef:Information system of hotel Határ, Ivo: Information system for registering and monitoring RMA's	Čapkovič, Miroslav: Blueprint and implementation of a portal, which is pointed on selling and renting of realities.
Matuška, Michal:Information system for evidence of sales and service of chemical analysis units	Ambruš, Martin:Proposal for and Implementation of a Website Focusing on the Sale of Computers
Mihočka, Adam:Information system for football events	Trlicová, Zdenka:The design and presentation of the foreign trade results
Michálik, Tomáš:Information system of maintenance	Čeppanová, Zuzana:Design and execution of the information system service station
Buchbauer, Jaroslav:Integration of CAD systems in product (dispenser) creating process automation	Ondrovič, Vojtech: Multimedia Scripts Proposal and Realization
Košuth, Pavol:Integrated e-learning - New form of education	Vittek, Marek: Protection Project and realisation connect and security two nets on big way
Lukáč, Martin:Interactive multimedia application - History of computing technique	Škulavík, Tomáš:Projection and realization of ethernet cable testing equipment
Miháliček, Andrej:Interactive multimedia application - Vlnova optics	Hrušovský, Stanislav: Proposal and creation of a multimedia application for interactive teaching MS Visual C#
Matúšek, Andrej:Internet interface for shop	Meluš, Martin:Proposal and security of local computer network
Kičin, Michal:Interpretation of graphic interface, work with textures, modeling objects and vizualization of scenes in program 3D Studio MAX	Roth, Róbert:Automatic regulation proposal for Hydroelectric Power plants
Fojtik, Róbert:Information system for commerce cycle of energy supplying companies	Kotleba, Marián:Evidence and elimination of thermography defects
Pinkas, Tomáš:PC configuration builder for sellers	
Mráz, Juraj:Multimedia application of chosen modules to education GSU	

Badúra, Dalibor: Proposal of web site design by Flash technology

Vančo, Peter: Activities of informations management

Sliepka, Peter: Design of the evidentiary system for trading company

Rebro, Tomáš: Design of information system for evidence employ arrival

Bučák, Slavomír: Draft of Information system for library

Bagin, Miroslav: Proposal of the information system of book register and borrowings in UML notation

Krajčovič, Martin: The proposal information system for monitoring staff and vehicle in rescue team with using PHP and MySQL

Nogell, Jozef: Design of information system for construction company monitoring orders and activities

Mikulášek, Rastislav: IS design for forwarding agency need

Ráčík, Daniel: Design of IS warehousing, ordering and management of raw materials in food industry

Adamec, Stanislav: Information system for the administration phone calls

Vydra, Juraj: Design of IS for building company at notation UML

Lukovics, Szilárd: Design of 8255 integrated circuit communication with PC

Lacko, Roman: Project of LAN network with electronic mail and internet access

Lacko, Roman: Project of LAN network with electronic mail and internet access

Ševčín, Igor: Design of mobile robots Mišík, Pavol: Backbone network proposal for SAS with the application firewall for servers

Ondruga, Martin: Propose and create wireless local area network and its security

Novák, Peter: Design, implementation and possible protection for computer networks

Zeman, Lukáš: The presentation of management of the model of the process of production using programmer machine with the Web interface

Liščik, Norbert: Design and implementation of a network for company

Valent, Vojtech: Suggestion for keeping property safe by DSC systems

Švec, Martin: Project of database structure by the operative planning production

Lietava, Michal: The Proposal of Subsystem information security

Bulejková, Lucia: A design of system of quality control processes within manufacturing corporation.

Trnovský, Peter: System suggestion for evidence of render teachers

Klimko, Miloš: The proposal of the system for pharmacy in UML notation

Nepšinský, Ján: The proposal of a system for a building company in notation UML

Slávik, Marián: Control of the intelligent house by Simatic devices

Horváth, Ladislav: Layout of worksheet and his connection with company's database of standard times

Tóth, Gabriel: Subsidiary HW for teaching programming PLC

Malý, Peter: Compare authorial tools for creation of the web and firm presentation

Ježík, Ľuboš: Comparison, proposal and implementation of computer networks

Žabka, Ján: Comparison performance operating system on base Linux and Windows

Petruš, Jozef: Application of the frequency criterium for reviewing course of controlled process

Zifčák, Jaroslav: Programming CNC lathen

Kovács, Imrich: Prototyping by Means of 3D Printing

Záň, Michal: Reservation system for college hostel in PHP, MySQL

Káčer, Tomáš: Intelligent house is control through Internet using parallel port

Hamerník, Peter: Control of the intelligent house by Simatic devices

Ondriš, Róbert: Controlling of step motor with program language Assembler

Magula, Tomáš: Direction of encase compactor by PLC system

Žalúdek, Peter:Solution for Wireless network Wi-Fi for growing community

Kšňan, Martin:Solution of creating strategic PC game

Baráth, Juraj:The solution of chosen modules of internet trade in PHP and MySQL

Lančarič, Peter:Malicious codes and protection against them

Varačka, Ľubomír:Watching of selected operation equipment and evaluation for tribotechnique purposes

Forgáč, Juraj:Methods of testing specific ations during life cycle of software development

Kajtár, Patrik:System for support teaching with possibility to generate assignments

Turňa, Marek:System for store with component for computers in notation UML

Ridzoň, Ján:The system for a Company Occupied with the Sale and Storage of Bulbs

Božík, Peter:Technical car fleet management for services of operational leasing

Toldyová, Andrea:Software testing

Potúček, Pavol: Testing of efficiency systems running in web medium

Ľupták, Vladimír:Transformation of analogue audio record magnetic tape to digital format

Škamla, Michal: Transformation of analogue audio record from gramophone record into the format CD Audio

Kováč, Milan:Transformation of analog photography into digital format

Duchovný, Ľubomír:Transformation VHS video recording by DVD video format.

Ešše, Viktor:The creation inically application in the platform Flash

Richter, Jozef: Making of model of robot with kinematics in 3D Studio MAX program

Sukup, Juraj:Design and implementation of application to interactive learning Windows, Word and Excel

Seitler, Peter:Creation of 3D scene and animation of mechanism in 3D studio max

Šupola, Ľubomír: Visualization of fotografic object in Macromedia Flash

Šefčík, Peter:Vizualization of selected object with system Solidworks

Porubský, Peter: Visualisation of the 3D objects by means of Macromedia Flash

Žitňanský, Marek:Creation of software for period analysis of astronomical data in OS Linux

Sedláček, Ľuboš: Creation of the software for assignment of continuous time of production of assembling group

Lietavec, Ondrej:Exploitation software „ORIGIN“ to evaluation experimental measurement

Adámek, Pavol:Wireless networks, security and Wireless networks future

Šebesta, Lukáš: 3D model mechanism with kinematics and his visualization in VRML

Masters Theses

Klačanský, J.:Dispatching heating control of FEI STU

Likavec, M.:Internet shop - system for administration

Kecskés, R.:Generating of written tests

Vlček, P.:Algorithm effectivity evaluation of simulation optimization in witness

Zámbo, J.:Interactive system for visualization of raster graphics

Hagara, I.:The complex data synchronisation against competitive systems

Minarovič, V.:Communication interface for virtual automation systems

Kozák, P.:Localization with using GSM

Šagúl, Ľ.:Module electronic student's grade book for internet applications

Horváth, T.:Registration and exams booking modulus for ISPV

Drobný, T.:Possibility of application neural net in testing process

Fritz, B.:Multimedial application with GPS support

Majcher, B.:Tool for making helping files

Herceg, J.:Design and implementation of interface for bussines company

Šebela, T.Concept and implementation of virtual PLC's core

Prekop, P.:Design and Implementation of camera's system for monitoring classrooms

Chovanec, D.:Design and realization of data warehouse utilized by Oracle Warehouse Builder tool

Kotešovec, P.:Information system design and realisation by CASE system Rational Rose

Klementovič, D.: Module „Traveller's orders“ proposition and realization for information system of company AITEN

Németh, T.:Designing application for planning and controlling of production support application

Ležák, M.:Proposal of informative system of evidence offers in the environment of www

Balažovič, T.:Activities of informations management

Barták, M.:Information system of testing process

Surovec, J.:The project of information system for warehouse store in the UML notation working with web setting

Dobiš, J.:Activities of informations management

Gergely, J.:Design information system in UML notation

Zifčák, R.:Design of informatic system in UML notation worked in WEB environment

Zaťko, D.:Design of information system in UML notation, worked in WEB

Seko, J.:Proposed design of a portal for support of the teaching subject CIM

Bartovič, E.: Propose of web portal support of learning subject Manufacturing systems control

Lunter, M.:Design and Control of an Cylindric Robot in a Virtual Environment

Libošvár, B.:Control design of logistic flow of choosen component with the support information system SAP for Visteon Dubnica

Daniš, P.: Design and Control of an Spherical Robot in a Virtual Environment

Michalik, F.:Interface design and implementation of interface control of virtual PLC

Ke Vický, M.:Design a storage of knowledge receive from heteroegeous environment

Ostrihoň, P.:Presentation quality assurance of the process evolution software system

Ilavský, M.:Optimalization of the SQL queries in the SRBD Oracle

Binder, R.:Program module for valuation and publication of educational results of subject for ISPV

Dudáš, M.:Simulator control circuits with controller Honeywell

Satina, J.:Simulator control circuits with controller KRGN 90

Jurínová, J.:Software presentation of regulator KRGN 90

Baucová, L. Processing of Holographic Interferogram

Widerman, T.:Synchronization of technologic stages by help of simulation

Lubušký, R.:Content management system (CMS) in PHP and MySQL environment

Daliman, T.:Shielded and unshielded wire

Lenický, A.:Creation of virtual objects of management for purposes of education in virtual laboratory

Kačinec, J.:Utilization of several data mining methods in knowledge discovery in large databases

Bukovčan, R.:Use of new technologies in the development of Help files (including Web environment)

Mikula, M.:Design of information System through the Use of Case Tool

Jonek, P.:Software development with modelling CASE tool support

Bednár, J.:The development of strategic simulator on the web

Beránek, M.:Security of computer network for ZVS Holding a.s

Paulíček, R.:Improving manufacturing processes by using simulation

FOREIGN VISITORS TO THE INSTITUTE

China
University Pohang : Chan Mo Park

Germany
Forschungszentrum Dresden-Rossendorf :
Dr.H.c.. Dr. Peter Joehnk; Dr. Wolfgang Matz

Belarus
Physical-Technical Institute Minsk : Dr. Artur Pokrovsky

VISITS OF STAFF MEMBERS TO FOREIGN INSTITUTIONS

Belgium

KAHO Gent - Oliver Moravčík, Professor, PhD.; Peter Schreiber, Assoc. Professor, PhD.; Pavol Tanuška, Assoc. Professor, PhD., Pavol Važan, Assoc. Professor, PhD.

Germany

TU Ilmenau - Oliver Moravčík, Professor, PhD.

FH Nordhausen - Oliver Moravčík, Professor, PhD.

TU Berlin - Oliver Moravčík, Professor, PhD.

Hochschule Anhalt Koethen -

Peter Schreiber, Assoc. Professor, PhD.

IFW Dresden - Oliver Moravčík, Professor, PhD.

FZD Rossendorf - Oliver Moravčík, Professor, PhD.

TU Chemnitz - Oliver Moravčík, Professor, PhD.

The Ministry of Economy, Dresden -

Oliver Moravčík, Professor, PhD.

Czech Republic

University of Hradec Králové -

Oliver Moravčík, Professor, PhD.

University of Velké Karlovice -

Oliver Moravčík, Professor, PhD.

Brno - Gaudeamus -

Oliver Moravčík, Professor, PhD.

Poland

TU Poznań - Oliver Moravčík, Professor, PhD.

Hungary

University of Applied Sciences Kecskemeth -

Oliver Moravčík, Professor, PhD.

Croatia

University Zagreb -

Oliver Moravčík, Professor, PhD. ;

Peter Schreiber, Assoc. Professor, PhD.;

Pavol Tanuška, Assoc. Professor, PhD.,

Pavol Važan, Assoc. Professor, PhD.

Ukraine

Donetsk National Technical University -

Peter Schreiber, Assoc. Professor, PhD.;

Pavol Tanuška, Assoc. Professor, PhD.,

Pavol Važan, Assoc. Professor, PhD.;

German Michalčonok, Assoc. Professor, PhD.

MEMBERSHIPS IN INTERNATIONAL PROFESSIONAL ORGANISATIONS

International union of machine builders

Peter Schreiber, Assoc. Professor, PhD.;

Pavol Tanuška, Assoc. Professor, PhD.,

Pavol Važan, Assoc. Professor, PhD.;

German Michalčonok, Assoc. Professor, PhD.

MEMBERSHIPS IN SLOVAK PROFESSIONAL ORGANISATIONS

Association of Slovak Scientific and Technological Societies

(Informatik Association for Education) -

Mária Mišútová, Assoc. Professor, PhD.

MOST IMPORTANT SCIENTIFIC PUBLICATIONS

Monographs

Tanuška, Pavol: The Testing Methodology in Data Warehouse Validation Process. Trnava : AlumniPress, 2007. - 72 p.

Važan, Pavol: Discrete-even simulation in production systems control. Trnava : AlumniPress, 2007. - 92 p.

- ISBN 978-80-8096-022-3

Scientific articles

Moravčík, Oliver - Schreiber, Peter - Tanuška, Pavol: LRKO Monitoring Information System. In: Proceedings of the 18th International Conference on Information and Intelligent Systems : September, 12-14, 2007 Varaždin, Croatia. - : University of Zagreb, 2007.

- ISBN 978-953-6071-30-2. - pp. 3-6

Schreiber, Peter - Tanuška, Pavol: Detection of the shortest robot trajectory by genetic algorithms. In DAAAM International Scientific Book 2007. - ISSN 1726-9687.

Važan, Pavol - Moravčík, Oliver. The proposal of procedure of lot size determination in production system. In DAAAM International Scientific Book 2007. - ISSN 1726-9687.

Schreiber, Peter - Tanuška, Pavol: The robot systems movement optimization by genetic algorithms. In: Annals of DAAAM and Proceedings of DAAAM Symposium. - ISSN 1726-9679. - Vol. 18, No. 1. Annals of DAAAM for 2007 & Proceedings of the 18th International DAAAM Symposium „Intelligent Manufacturing & Automation: Focus on Creativity, Responsibility, and Ethics of Engineers“ : Croatia, Zadar 24-27th October 2007 (2007). - Viedeň : DAAAM International Vienna, 2007, pp. 677-678

Važan, Pavol - Moravčík, Oliver: The alternative procedure of lot size determination in flexible manufacturing

systems.In: Annals of DAAAM and Proceedings of DAAAM Symposium. - ISSN 1726-9679. - Vol. 18, No. 1. Annals of DAAAM for 2007 & Proceedings of the 18th International DAAAM Symposium „Intelligent Manufacturing & Automation: Focus on Creativity, Responsibility, and Ethics of Engineers“ : Croatia, Zadar 24-27th October 2007 (2007). - Viedeň : DAAAM International Vienna, 2007, pp. 805-806

Moravčík Oliver - Schreiber Peter - Tanuška Pavol: The dose rate monitoring system.In: Scientific Bulletin. - ISSN 1224-3264. - Vol. XXI / nadát. International Multidisciplinary Conference. 7th. Baia Mare, Romania, May 17-18, 2007 (2007). - Baia Mare : North University of Baia Mare, 2007, pp. 481-486

Moravčík Oliver - Miština Juraj: The most recent needs in engineering communication training at technical universities. In: Problemy inženerno - pedagogičeskogo obrazovanija No 17. Problems of engineering pedagogic education Volume 17. - Charkov : Ukraïnskaja inženerno-pedagogičnaja akademija, 2007. - pp. 109-119.

Červeňanský Jaroslav: A note on divergence preserving functions. In: Scientific papers MTF STU. - ISSN 1336-1589. - Č. 22, pp. 7-12

Masárová Renáta: Rearrangements of harmonic series.In: Scientific papers MTF STU. - ISSN 1336-1589. - Č. 22 (2007), s. 105-108

Urbaníková Marta: Currency risk and its influence on the economic results of the company.In: Scientific papers MTF STU. - ISSN 1336-1589. - Č. 22 (2007), s. 139-144

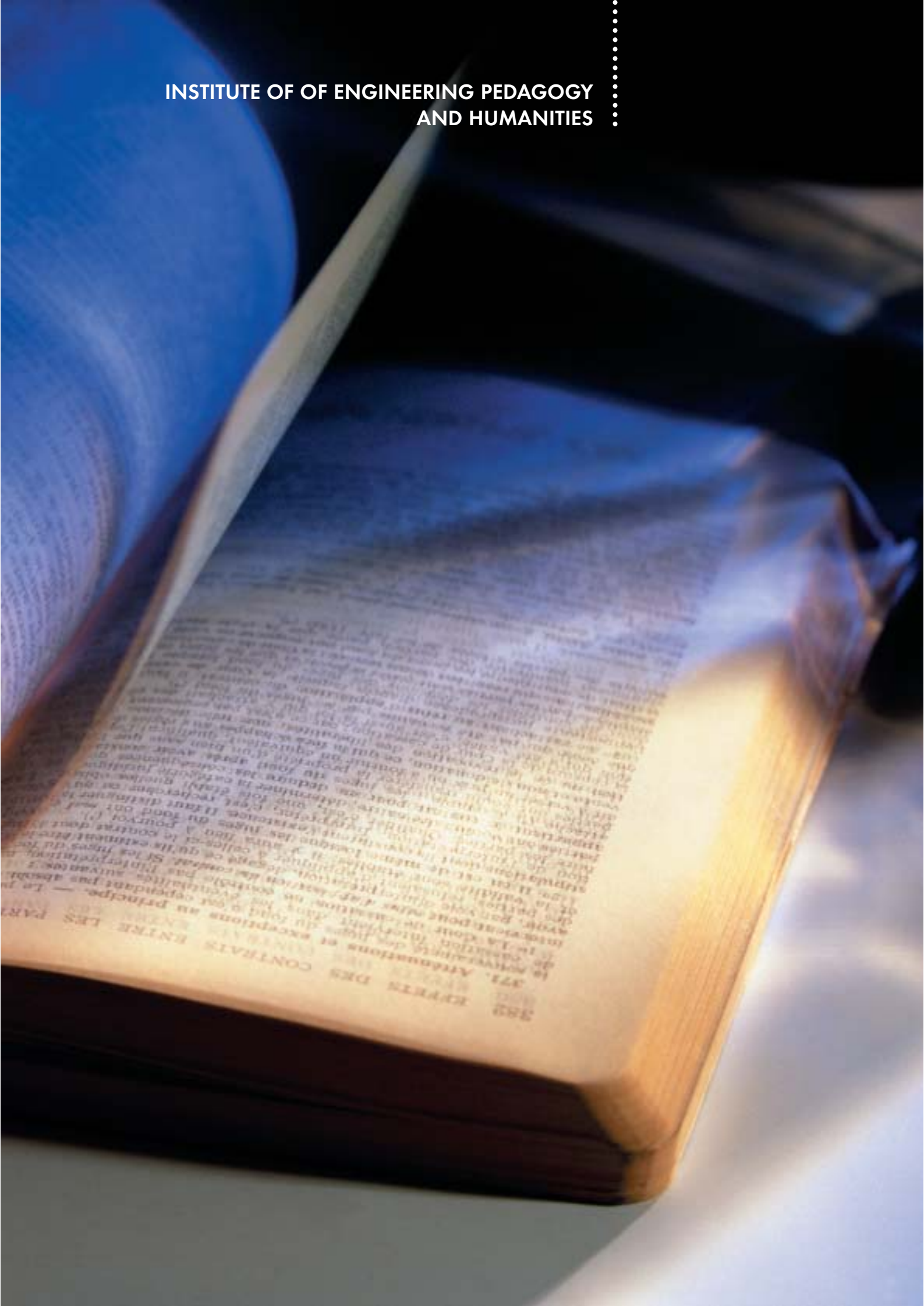
Mišútová Mária: The creation of the learning interactions in Macromedia Flash. In: XX. DIDMATTECH 2007. - Olomouc : Votobia, 2007. - ISBN 80-7220-296-0. - pp. 523-526

Hamplová Lujza - Červeňanská, Zuzana: Analysis of mathematical courses curriculum.In: XX. DIDMATTECH 2007. - Olomouc : Votobia, 2007. - ISBN 80-7220-296-0. - pp.308-311

Hamplová Lujza: Opinions of Slovak and foreign authors for discrete mathematics in secondary schools.In: XX. DIDMATTECH 2007. - Olomouc : Votobia, 2007. - ISBN 80-7220-296-0. - pp.302-307 Kubliha, Marián - Trubenová, Jaroslava: Numerical methods in solution of approximation by least squares method.In: XX. DIDMATTECH 2007. - Olomouc : Votobia, 2007. - ISBN 80-7220-296-0. - pp.339-343

Urbaníková Marta: The use of financial derivatives in risk management.In: XX. DIDMATTECH 2007. - Olomouc : Votobia, 2007. - ISBN 80-7220-296-0. - pp.239-242

INSTITUTE OF OF ENGINEERING PEDAGOGY
AND HUMANITIES



INSTITUTE OF OF ENGINEERING PEDAGOGY AND HUMANITIES

Director Roman Hrmo, Assoc. Professor, PhD.
e-mail: roman.hrmo@stuba.sk
tel: ++421918646045

Address

Paulinska 16, 917 24 Trnava, Slovak Republic
tel.: ++421918646027
++421/33/5511032
fax: ++421/33/5511758
http address:
http://www.mtf.stuba.sk/generate_page.php?page_id=2840



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

EXCELLENT ACTIVITY



International Conference SCHOLA



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INTERNATIONAL PROJECTS

29079-IC-1-2005-1-DK-ERASMUS-MOD (01/10/2005 – 31/10/2007)

Juraj Miština, MA.

The Cultured Engineering

* The aim of the project is to develop and promote a Euromodule for engineering curricula of bachelor degree. The module is to be accredited 6 ECTS points and will be designed as an obligatory part of the curricula of engineering study programmes.



NATIONAL PROJECTS

KEGA 3/3114/05 (01/01/2005-31/12/2007)

Silvester Sawicki, PhD.

Using E-learning method in selected subjects within bachelor degree programme of Personnel Policy in Industrial Plant.

* The project focuses on the process of research, development and implementation of a new form of education in the study programme of Personnel Policy in Industrial Plants. The main goal of the project is to develop a learning computer programme for on-line Internet distance education.

VEGA 1/2533/05 (01/01/2005-31/12/2007)

Ľubica Vašková, PhD.

The Key Competencies of Students in Technical Study Branches within National and European Context

* Identification of key competencies of graduates of technical universities and secondary schools on the basis of comparison analysis of national and foreign sources dealing with key competencies, as well as on the basis of national and foreign employers' requirements, as presented by Job agencies and diagnostics of the selected key competencies of students of technical study branches at secondary technical schools and faculties of the Slovak University of Technology.

VEGA 1/2531/05 (01/01/2005-31/12/2007)

Dušan Driensky, Professor, PhD.

Engineering Pedagogy - its Dominant Determinants and Functions after the Integration of Slovakia into the European Union

* Dealing with the necessity of pedagogical education of engineers, the project will be elaborated interdisciplinary, on the basis of analysis of the relations between technical sciences and humanities.

VEGA 1/2532/05 (01/01/2005-31/12/2007)

Marián Merica, Assoc. Professor, PhD.

Modelling the Adaptive Mechanisms in Selected Sports

* The project focuses on the basic modelling of adaptive processes in chosen sports: baseball, swimming, softball and tennis. Sport training is a continual adaptive process, which is generated predominantly by the number of enzymes and organic proteins, with biosynthesis as a result. When

we recognize these adaptive processes and regularities, and when we closely monitor the problem, we can expect the improvement of sport performance.



VEGA 1/3640/06 (01/01/2006-31/12/2008)

Silvester Sawicki, PhD.

Psychological, pedagogical and psycho-spiritual methods of diagnosing psycho-spiritual crisis

* Our project is focused on differential diagnosis of psycho-spiritual crisis, (not regarded as a mental disease) and possibilities of psychological, educational, social and spiritual impact on it. This phenomenon emerges in the phase of spiritual maturation and transformation of personality. It is manifested by temporary mental and social disorders with symptoms of mental disease. Stanislav Grof defines it as episodes of extraordinary experiences, including changes in mind, perception, emotional and psycho-somatic functions, which disturbs the boundaries of self. 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 presents, we still do not have relevant diagnostic methods and techniques to distinguish it from a mental disease. Most psychologists and psychiatrists do not differentiate psycho-spiritual crisis from psychotic diseases, mainly schizophrenia, because of prejudices regarding spiritual experiences.

VEGA 1/4547/07 (01/01/2007-31/12/2009)

Libor Bernáth, PhD.

Mikuláš Drábik – a prophet, mystic and chiliast

* The main concern of the project focuses on the personality of a clergyman Mikulas Drabik (+1671) and analysis of his writings. As a clergyman he collaborated with Johan Amos Comenius (up to 1628) in Lednica. The project reconstructs his complete curriculum, which has not been done so far. On the basis of Drabik's biography, the project intends to explain historical period of religious exile. On the other hand, there is an attempt to analyse his writings, particularly Lux ex tenebris and Mikulase Drabika Zjevení (1617-1671), the heritage of Rottal in Moravian Regional Archives, Brno.

MEMBERSHIPS IN INTERNATIONAL PROFESSIONAL ORGANISATIONS

Internationale Gesellschaft für Ingenierpädagogik - IGIP - Dušan Driensky, Professor, PhD. ; Roman Hrmo, Assoc. Professor, PhD.; Katarína Tináková, PhD.; Katarína Krelková, PhD.

MEMBERSHIPS IN SLOVAK PROFESSIONAL ORGANISATIONS

National consortium for the European network of reference and expertise in vocational education and training, Slovakia-CEDEFOP - Roman Hrmo, Assoc. Professor, PhD.; Silvester Sawicki, PhD. ; Katarína Krelková, PhD.

CASAJC-Czech and Slovak Association of Foreign Language University Teachers -

Juraj Miština, MSc.; Emília Mironovová, MSc.Dr. ; Gabriela Waleková, MSc.; Dagmar Rusková, MSc.Dr.; Dušan Fedič, MSc.; Dagmar Čagánová, PhD.

Association for History of science and technology -

Roman Hrmo, Assoc. Professor, PhD.; Katarína Tináková, PhD.; Dušan Driensky, Professor, PhD.

Information Society for Education -

Roman Hrmo, Assoc. Professor, PhD. ; Katarína Tináková, PhD.; Katarína Krelková, PhD.; Jan Kostelník, Assoc. Professor, PhD.; Ľubica Vašková, PhD. ; Dušan Driensky, Professor, PhD.; Eva Tóblová, MSc.

Association of Russian Teachers in Slovakia -

Dagmar Rusková, MSc.Dr.

Slovak Pedagogy Society at SAV -

Roman Hrmo, Assoc. Professor, PhD.; Viliam Končal, Assoc. Professor, PhD.; Ľubomír Holkovič, PhD.; Jan Kostelník, Assoc. Professor, PhD.; Katarína Tináková, PhD.

SUNG-Association of German teachers in Slovakia -

Anna Reháková, MSc.Dr.; Dušan Fedič, MSc.

Association of Process-oriented Psychotherapy

-Silvester Sawicki, PhD.

Association of School Psychologists

- Silvester Sawicki, PhD.

VISITS OF STAFF MEMBERS TO FOREIGN INSTITUTIONS

Czech Republic

ČVUT Prague - Silvester Sawicki, PhD. ; Ján Kostelník, Assoc. Professor, PhD.; Milan Kips, Professor, PhD.

University v Hradec Králové -
Roman Hrmo, Assoc. Professor, PhD

VUT Brno - doc. Ing. Roman Hrmo, PhD.

Moravian Regional Archives, Moravian Regional
Library- Brno - Libor Bernát, PhD.

ČZU Prague -Roman Hrmo,Assoc. Professor, PhD.

National Museum Library, Prague - Libor Bernát, PhD.

SPAS Praha - Silvester Sawicki, PhD.Jihočeská univerzita,
České Budějovice - Silvester Sawicki, PhD

Austria
Bundespaedagogische Akademie Graz -
Roman Hrmo, Assoc. Professor, PhD.

Hungary
University of Miskolc -
Roman Hrmo,Assoc. Professor, PhD.

Germany
Inštitút pre európsku históriu - Libor Bernát, PhD.

Denmark
University of Aarhus Herning - Juraj Miština, MSc.

MOST IMPORTANT SCIENTIFIC PUBLICATIONS

Monographs

Odlerová, Eva: Eco-philosophy in history of philosophy. -
Bratislava : STU v Bratislave, 2007. - 122 p.
- ISBN 978-80-227-2619-1

Rybárik, Jozef - Duda, Emil - Kopšová, Olga - Huszár,
Štefan - Brinzová, Marta - Odlerová, Eva - Paukov,
Marián - Špirko, Dušan - Turan, Dušan:
Humanisation and environment. -
Bratislava : STU v Bratislave, 2007. - 164 p.
- ISBN 978-80-227-2591-0

Driensky, Dušan: Engineering Pedagogy. - Bratislava : STU
v Bratislave, 2007. - 185 p. - ISBN 978-80-8096-040-7

Scientific articles

Driensky Dušan - Hrmo Roman - Miština Juraj: Engineering
pedagogy as a part of education at the Slovak University of
Technology.In: Scientific Bulletin. - ISSN 1224-3264. -
International Multidisciplinary Conference. 7th. Baia Mare,
Romania, May 17-18, 2007 (2007). - Baia Mare : North
University of Baia Mare, 2007, pp. 207-212

Hrmo Roman: The engineering pedagogy concept at the
Slovak University of Technology. In: Problems of engine-
ering pedagogic education Vol. 17. - Charkov : Ukrajskaja
inženerno-pedagogičnaja akademija, 2007. - pp. 18-25

Turek Ivan - Miština Juraj: Globalization and its Impacts on
Engineering Education.In: Philosophy in Engineering. -
Aarhus : Academica, 2007. - ISBN 978-87-7675-454-9. -
ISBN 87-7675-454-5. - pp. 391-408

Arendášová, Alexandra: The managing of quality in
educational system.In: Materials Science and Technology
[online]. - ISSN 1335-9053 - Roč. 7, č. 1

Bilčík, Alexander - Hrmo, Roman: Groundwork of the quality
of school application in competitive environment.In:
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of teachers of professional technical subjects at secondary
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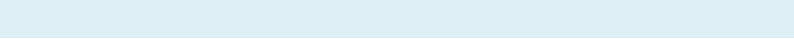
Kostelník, Ján - Bošňáková, Miroslava: Training STU
students in communication and cooperation skills.In:
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E-learning.In: Materials Science and Technology [online].
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technologies usage at schools.In: Materials Science and
Technology [online]. - ISSN 1335-9053 - Roč. 7, č. 1

Tináková, Katarína:.. Communication technologies in educa-
tion.In: Materials Science and Technology [online].
- ISSN 1335-9053. - Roč. 7, č. 2 (2007)

Tináková, Katarína: Current trends in valuation.In: Materials
Science and Technology [online].
- ISSN 1335-9053. - Roč. 7, č. 2 (2007)



DIVISIONS





DIVISION OF ACADEMIC ACTIVITIES

Head of the Department Jana Štefánková, MSc. Eng.
e-mail: jana.stefankova@stuba.sk
tel: ++421918646073

Address

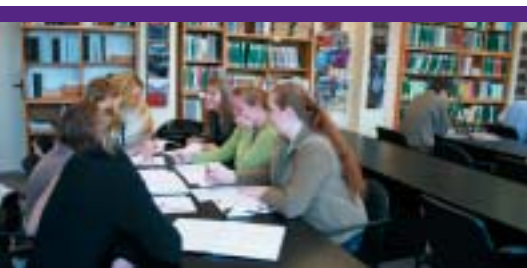
Paulínska 16, 917 24 Trnava, Slovak Republic
tel/++421335511032 fax/ ++421335511758

Departments

- Registrar's Department
- Department of Research and International Relations

Division of Academic Activities is responsible for:

- Filing student life-time and related affairs in all three degrees
- Promoting the study with the aim to attract potential candidates
- Filing research, project and grant activities
- Arranging international relations
- Arranging complex academic and professional development of the staff



DIVISION OF KNOWLEDGE MANAGEMENT

Head of the Department Kvetoslava Rešetová, MSc. Dr.
e-mail: kvetoslava.resetova@stuba.sk
tel: ++421915847111

Address

Bottova 25, 91724 Trnava, Slovak Republic
tel/fax ++421335521007

Departments

- Academic Library
- Publishing House
- Department of Public Relations

Division of Knowledge Management is responsible for:

- Efficient performance of the Academic Library
- Providing research, information, bibliography, co-ordination and advisory services
- Filing and keeping bibliography records of the theses
- Filing and recording publication activities and citations
- Processing and providing access to information funds regarding the Faculty profile, providing librarian and information services to various categories of users
- Administering librarian and information data bases concerning the academic activity of the Faculty, participating in catalogues production
- Serving as a specialised library of Materials Science.
- Running the Faculty publishing office responsible for:
 - The Faculty publishing activity
 - The Faculty PR regarding Alumni

DIVISION OF ECONOMICAL AND ESTATE ACTIVITIES

Head of the Department Dušan Knap, MSc. Eng.
e-mail: dusan.knap@stuba.sk
tel: ++421905930242

Address

Paulínska 16, 917 24 Trnava, Slovak Republic
tel/++421335511032 fax/ ++421335511758

Departments

- Department of Economy
- Department of Operation and Maintenance
- Department of Estate Management

Division of Economic and Estate Activity is responsible for the:

- Economic and administration performance of the Faculty
- Logistic and controlling functions of the Faculty
- Keeping to the Faculty proceedings and regulations
- Preparation and delegation of the tasks of the Faculty plan and budget



DIVISION OF COMMUNICATION AND INFORMATION SYSTEMS

Head of the Department Milan Hančin, MSc. Eng.
e-mail: milan.hancin@stuba.sk
tel: ++421905357624

Address

Paulínska 16, 917 24 Trnava, Slovak Republic
tel/++421335511032 fax/ ++421335511758

Departments

- Department of Information Systems Operation
- Department of System and Technical Services

Division of Communication and Information Systems is responsible for the:

- Performance and administration of the Faculty computer systems
- Consultation services regarding the system and selected application program equipment
- Building, developing, innovating and enhancing the Faculty web and its links to the STU one
- Administration of the Faculty servers and parts of the information system
- Maintenance and purchase of computational technology for the Faculty workplaces





DIVISION OF PERSONNEL AND ORGANISATIONAL ACTIVITIES

Head of the Department Jaroslava Ďurišová, MSc. Eng.
e-mail: jaroslava.durisova@stuba.sk
tel: ++421918646017

Address

Paulínska 16, 917 24 Trnava, Slovak Republic
tel/++421335511032 fax/ ++421335511758

Departments

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

Division of Personnel and Administration is responsible for:

- All administration and service activities regarding the employment and Remuneration of the Faculty employees and their social and health insurance
- Filing payrolls and paying the Faculty staff, running dean's secretariat and the Faculty security system



CENTRE FOR TECHNOLOGIES TRANSFER

Head of the Centre Peter Halada, MSc. Eng.
e-mail: peter.halada@stuba.sk
tel: ++421907283987

Address

Paulínska 16, 917 24 Trnava, Slovak Republic
tel/++421918646057 fax/ ++4213355220265

Centre of Technology Transfer is responsible for the:

- Transfer of the Faculty research results into the entrepreneurial practice
- Market research of the public demands for the specialised entrepreneurial research
- Co-ordination of the educational projects and the Faculty events
- Conferencing service



STUDENT HOSTEL AND CANTEEN

Head of the Department Rudolf Rehak, PhD.
e-mail: rudolf.rehak@stuba.sk
tel: ++421918646017

Address

Bottova 25, 917 24 Trnava, Slovak Republic
tel/++421335511032 fax/ ++421335511758

Departments

- Facility: Student Hostel
- Facility: Student Canteen

Student hostel and canteen are responsible for:

- Providing full-time students with accommodation, catering and other related services
- Providing favourable conditions for the study, social life and leisure-time activities of the students.

NEW FACULTY IMAGE



Application of the new MTF logo
in the faculty`s informative system



PC pool for the students



Reconstructed lecture rooms with the help of gifts from external students and with help of FZD Dresden/Rossendorf



Dr.h.c. gallery , Deans gallery, gallery of professors MTF



Innovated entrance hall of the Faculty



Reliefs of science and technology personalities



PHOTO GALLERY
OF ACTIVITIES IN YEAR 2007





Signing agreement on co-operation of MTF STU with POSTECH (Corea)



Signing agreement on co-operation of MTF STU with University of Zagreb (Croatia)



Dušan Čaplovič, Deputy Prime Minister of the SR government, and Piet Joehnk, Director of FZD Dresden in Trnava



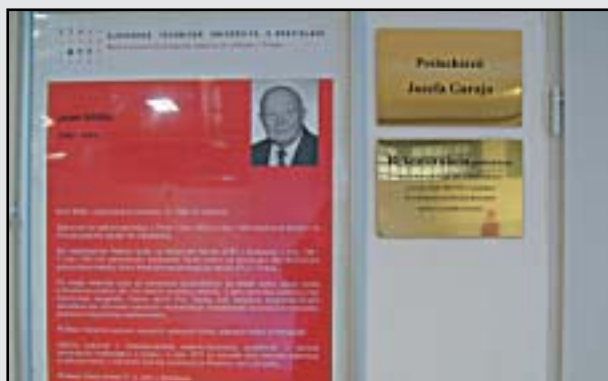
Memorandum on Understanding signed



Academic gala event



Laboratory of TEM - Opening



Revelation of tablets in the lecture rooms on MTF



Awarding in the occasion of 70th anniversary of STU



Opening of the permanent project and research poster exhibition at MTF



MTF STU dean meets professors and associate professors



MTF STU Day, social event



Open day



International doctoral seminar



International Conference SCHOLA 2007



16th Conference of Material Engineering



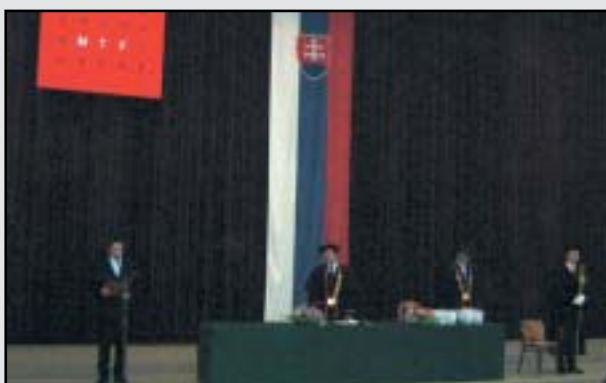
Student Research Conference



MTF presentation at the exhibition Gaudeamus



MTF presentation at the exhibition Academy of Education



Immatriculation



Enrolments of the first-year baccalaureate students



Meeting with Ladislav Ťažký, The Slovak writer



Academic ball of students



Teacher`s Cup



Sports day of MTF STU staff

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