



FRENCH-UKRAINIAN POSTGRADUATE COURSE: DEFENSE OF THE CANDIDATE'S DISSERTATION IN FRANCE



The defense of the dissertation of the Doctor of the University of Versailles (France) on Robotics and Automation took part at the Engineering Laboratory (LISV) of the above mentioned university at the beginning of July.

The defense of the dissertation in France at the prestigious university is the result of long-term research work. In 2006 V. Khomenko graduated from the Master's course of the French Engineering Faculty. Since 2007 he has taken up research and got the prize of the Academy of Science of

Ukraine. After that he entered the postgraduate course.

The young researcher was able to do his dissertation work supervised by Prof. Fetkhi Ben Uezdu, A/Prof. Patrick Enaff (France), and Prof. Vladimir Borisenko (the Department of EDAIL, DonNTU) due to the collaboration of DonNTU and the University of Versailles. This bi-national project had been financed the International Agency of French Culture (AUF) and the program "EGIDE/PHC Dnipro."

The defense of the dissertation in France at the prestigious Versailles University is the result of the long-term research work done both at DonNTU and LISV.

The defense in LISV was broadcast on-line for it to be seen at the laboratory of Special Electric Drives of the EDAIL Department of DonNTU. The audio-video equipment had been presented by the Company МИДИЭЛ-ЭМ (the President – S.V. Grigoryev, the corresponding member of the Academy of Science of Ukraine).

Both parties- the Engineering Laboratory of Versailles and the Department of EDAIL of DonNTU had adjusted the equipment.

Rector of DonNTU Prof. A. Minaev, Vice-Rector on Research Prof. Y. Bashkov, Vice-Rector on International Relations Prof. I. Navka, the academics teaching at the French Engineering Faculty,



postgraduate students, masters and final year students watched the defense in Donetsk. The post-graduate student A. Melnik translated the defense process and the following comments.

The jury members had had the meeting and chosen Thierry Dorn as the president of the jury.

The candidate for the degree confined himself to the presentation term, and presented all parts of his work. All the jury members emphasized his high level of French.

The common opinion of the jury was the following: the work had been completed; the main problems of organization of the motion of the humanoid robots had been solved; the algorithms of control and

compensation of malfunctions in electric and mechanical drives of the humanoid robots had been developed; proposals on further improvement of the control systems interrelated with the humanoid robot electric drives on the basis of a neural network had been given.

The solution of the jury was unanimous: to confer V. Khomenko on the honorary degree of Doctor of the University of Versailles on Computer Engineering, Control Systems and Signal Processing.

WE congratulate V. Khomenko and his supervisor Prof. V. Borisenko with the brilliant defense!

THE SCIENTIFIC AND PEDAGOGIC STUDY-COURSE IN GERMANY

The Head of the Department of EDAlI Prof. O. Tolochko has visited Otto-von-Guericke Magdeburg University (Germany) to have her scientific and pedagogic study-course.

During the visit Prof. Tolochko and Prof. Palis visited the University of Versailles (France) on the invitation of the Vice-President on Research of this University K. Delporte. She participated in the meeting of the Academic Board devoted to the defense of the candidate's dissertation of V.N. Khomenko. She also visited the laboratory of engineering and systems and got acquainted with the achievements in robotics, mechatronics, metrology and automation.

In Germany Prof. Tolochko and Prof. Palis supervised the research done by the postgraduate student D. Bazhutin. They coordinated the plan of joint theoretical developments and experiments on physical models of bridge and pillar cranes. She improved her skills on mathematical modeling of solid elastic deformation with the help of COMSOL Multiphysics.

Prof. Tolochko discussed further collaboration issues with the Head of the Department of Electric Drive Prof. Laidhold and the Head of the Department of Mechatronics Prof. Kasper. She also visited the Research Institute Fraunhofer and learnt about the achievements in electric manufacturing engineering, power engineering, electro-mechanics and logistics. She consulted the students and postgraduate students of the Institute of Electric and Energy Systems (graduates of the German Engineering Faculty) on the research they were doing. The hosts provided her with a study with a computer and office equipment. She was able to use licensed software, laboratory facilities, the library, and electron search systems and the data base.



THE VISIT OF THE FRENCH EXPERT TO DONNTU

The Associate Professor of the University of Cergy Pontoise Patrick Enaff visited DonNTU within the frameworks of the collaboration agreement between the mentioned universities.

The current visit was devoted to practicing of the presentation prepared by V. Khomenko for the forthcoming defense of the dissertation at the University of Versailles on July 5th (see the previous article).

Besides, Dr. Enaff worked with the postgraduate students on the MASTER program.

DonNTU and French partner-universities are interested in continuation of the program MASTER. He met the fourth year students of the groups EDAlI and EDAlIf who had been studying French during one year.

Three students of the group EDAlIf and one of the group EDAlI were selected. The French party put forward tough requirements as to the language. All the participants of the MASTER program should have B2 level of French supported by the corresponding certificate issued by the Alliance Française.

The presentation of the postgraduate student A. Melnik made at the international conference in St. Petersburg (see further on) was the final chord of the joint with the UCP and ETIS laboratory research.



THE CONFERENCE ON INDUSTRIAL MODELLING IN RUSSIA



The Assistant Professor of EDAlI has visited St. Petersburg State University and St. Petersburg National Research University of Information Technologies, Mechanics and Optics.

He participated in the conference held by the International Federation of Automated Control 2013 "Manufacturing Modelling, Management and Control".

The topics of the conference Artificial Intelligence and Machine Learning Approaches and Robotics in Manufacturing are the closest to the research topics of the laboratory of DonNTU (for the breakup group topics see the site of the conference).

The participants got note pads, pens, badges, CD with the proceedings of the conference, a scheme-plan of the buildings and the conference program.

Mr. Melnik improved his technical and business English and French which is one of the positive practical results of attending the conference.

The laboratory “The Group of Information and Processing and Systems” of the University of Cergy Pontoise covered all the expenses.

THE INTERNATIONAL CONFERENCE ON METALLURGICAL PROCESSES AND EQUIPMENT



DonNTU hosted the V International Scientific and Technical Conference “Metallurgical Processes and Equipment” on September 4th. It was traditionally organized within the frameworks of the 10th specialized exhibition of equipment, technologies and products of the mining and metallurgical complex Metallurgy taking place at the exhibition centre “ExpoDonbass” on September 3-6th.

The following departments of DonNTU “Machines and Devices of Chemical Manufacturing”, “Steel Metallurgy”, “Mechanical Equipment of Ferrous Metallurgy Plants”, “Metal Forming”, “Ore-thermal Processes and Low-waste Technologies”, “Physical Material Science”, “Nonferrous Metallurgy and Constructional Materials”, “Electrometallurgy”, the Board of Young Researchers of DonNTU, Association of Mechanics (Donetsk, Ukraine), the exhibition centre “ExpoDonbass” and the scientific, technical and job-related journal “Metallurgical Processes and Equipment” were the organizers of the conference.

The goals of the conference were as follows:

– to unite the core university departments training engineers for metallurgy into a single information space;

– to assist in improving and modernizing of metallurgical plants, raising of the level of automation, productivity, efficiency and safety and quality of metal products;

– to attract the attention of scientists, owners, leaders of metallurgical plants to innovative and science intensive technologies and engineering developments;

– to develop creative activity of postgraduate students and young researchers, to involve them to solving of topical engineering tasks of modern metallurgical plants;

– to create and develop single scientific and educational space in metallurgical sphere, to strengthen contacts among the experts of the branch. More than 150 representatives of 50 universities, research institutions, design organizations and industrial companies of Ukraine and Russia took part at the conference. All interested postgraduate

students, degree seekers, doctoral candidates, scientists, engineers, researchers, leaders of design organizations, metallurgical, by-product coke, and machinery plants had been invited to the conference. The papers of the conference will be published in special issues of the journal (## 3 and 4) in the second half of 2013. The first issue of the journal came out before the conference started and all the registered participants got it free.



According to the recommendation of the Programming Committee the authors of the best presentations

were awarded by the honorary diplomas of the conference and a year's subscription on the journal 2014.

The papers published in the journal are taking part in the 2 International Contest "High Technologies in Metallurgy". The detailed information on the contest can be found on the site of the journal <http://metal.donntu.edu.ua>.

The conference concluded that the goal of the conference had been reached. The Programming Committee headed by the Rector of DonNTU Prof. A. Minaev decided to keep on collaborating with the exhibition centre "ExpoDonbass" and holding the conference "Metallurgical Processes and Equipment" biannually. The next 6th conference will take place in 2015.

THE INTERNATIONAL CONFERENCE ON BLAST-HOLE DRILLING TECHNOLOGY

XII International Scientific and Technical Conference "Modern Blast-hole Drilling Technologies, Their Economic Efficiency and Anthropogenic Safety" was held at Bourgas State University named after Asen Zlatarov (Bulgaria) on September 3-9th. DonNTU was represented by the Associate Professor Y.V. Manzhos and the Senior Lecturer F.N Galiakberova.



The topics of the breakup groups can be found at the site of the conference. The following topics close to the research area of the speciality "Chemical Technology of High-molecular Compounds" should be highlighted:

- New emulsion explosives and efficiency of their usage in mining industry;
- job safety at mines;

Kremenchug National University named after M. Ostrogradski, the Interdepartmental Association Ukrvzryvprom, the Closed Corporation "Interdepartmental Commission on Explosion Engineering (Russia), the State University named after Asen Zlatarov (Bulgaria), Silesian Technical University (Poland), the Mining Academy of Ukraine, the Union of Engineers- blasters of Ukraine, the Institute of Geological and Engineering Mechanics named after M.S. Polyakov of the Academy of Science of Ukraine, the Open Corporation Poltavsky GOK were the organizers of the conference.

The conference was opened by the Rector of Kremenchug National University named after M. Ostrogradski Prof. M.V. Zagirnyak who is an Honoured Science Worker of Ukraine, Doctor of Science, an academician of the International Academy of Informatizing, the Transport Academy of Ukraine, the Academy of Lifting Machines of Ukraine, a full member of the Polish Society of Application of Electromagnetism, the International Institute of Electrical and Electronic Engineers (the USA), the national geographic Society (the USA).

The Rector of Bourgas State University named after Asen Zlatarov Prof. Petko Petkov spoke on the tasks the university faced. The problems related to the high school were discussed by the breakup groups.

Our scientists made their presentations at the Plenary Meeting. Y.V. Manzhos spoke on Explosion Energy of Emulsion Explosives and F. N Galiakberova – on Raising of Blasting Security at Opencast Mines and took part at the work of the breakup group which discussed the modern problems of strip-mining.



It was also arranged to test industrial explosives under the industrial conditions according to the topic of research done at DonNTU.

Our representatives, the Rector and Vice-Rector Prof. Magdalena Mitkova discussed the issues of collaboration of DonNTU and Bourgas State University.

The synopsis of the presentations were published at the proceedings of the conference, and the full texts – at the scientific and engineering journal the “Modern Mining Resource and Energy saving Technologies” which has been issued by Kremenchug National University since 2008.

STUDY-COURSE IN THE USA IN THE FRAMEWORKS OF FULBRIGHT PROGRAM

The Assistant professor of the Department of CE S.Y. Gogolenko has visited the USA on the invitation of the Professor Zhaojun Bai working at the Department of Computer Science of California University in Davis. He had his study-course in the frameworks of the scholarship program of support of young researchers and postgraduate students Fulbright Faculty Development Program (FFDP).



During his study-course³ S.Y Gogolenko got acquainted with modern highly productive resources available at the laboratories of California University and improved his knowledge in parallel programming. The architectures of modern parallel computer systems of the National Lawrence Laboratory in Berkley applied during practical task solving were thoroughly studied. He also improved his knowledge in modern means of the parallel programming and methods of creation of the parallel programs.

The joint with American expert research will help to apply the results in development of efficient parallel algorithms and solving tasks related to the modeling of quantum systems by Monte Carlo method. S.Y Gogolenko visited the places of interest of North California and studied the culture.

S.Y. Gogolenko’s developments and knowledge gained during the visit can be applied to the training process at DonNTU and be useful for preparation of the material of lectures and practical work in different courses including those taught in English and for master and postgraduate students who work at their diploma papers and dissertations of the speciality of Mathematical Modelling and Numerical Methods.

STUDENTS’ STUDY-COURSE IN FRANCE WITHIN THE FRAMEWORKS OF THE TEMPUS PROJECT

The students of Computer Engineering Faculty S.S. Altukhov and V.E. Niftaliev have visited Lion Institute of Applied Science (France). The visit was arranged within the frameworks of the project 530785-TEMPUS-1-2012-1-PL-TEMPUS-JPCR (MastMST).



The aim of the visit was to take a crash course on micro-system computer design, attend lectures and visit laboratories.

There were six lectures (four hours each). Two of them were delivered in Russian (the lecturers being Ukrainians by birth) and four in English (lecturers being French academics). The lectures were introductory. They aimed at getting basic knowledge on micro-system design. Our students got the electronic version of the theoretical material which can be used further on for making up of the curricula of the corresponding disciplines and introductory lectures.

Our students also visited specialized laboratories equipped the latest facilities to research material different properties. They got acquainted with the principles of the equipment operation, trends of the research, spheres of application of the research results and future investigation plans.

The hosts solved all the arising problems very quickly. The arranged accommodation was comfortable. The lectures were delivered in an accessible manner. The lecturers answered all the questions and explained the most difficult aspects of them. The laboratory workers were always ready to answer the questions.

Besides, our students went sightseeing and had an interesting social program.

The final goal of the project TEMPUS-JPCR is to have a new speciality “Master on Micro-system Design” at the partner-universities of Ukraine, including DonNTU.

THE INTERNATIONAL CONFERENCE ON TRANSPORT PROBLEMS

The doctoral candidate of DonNTU V.O. Gutarevich has taken part in the V International Scientific Conference “Transport Problems”. The conference was held in Katowice (Poland) on June 26-28.



The subject areas of the conference were as follows:

- industrial transport;
- preparation, organization and coordination of cargo operation;
- intermodal and multimodal transportation;
- transport automated design computer systems;
- transport technical diagnostics;
- transport safety systems;
- modelling of transport systems and traffic control;
- transport automation;
- transport ecological problems;

- training of transport specialists.

121 representatives of educational and research institutions of Poland, Russia, Romania and Ukraine took part in the conference.

27 presentations were made. The doctoral candidate V.O. Gutarevich made his presentation "Dynamic model of movement of mine suspended monorail" in English. After the presentation he gave detailed answers to the questions followed the presentation. The report will be published in the next issue of the scientific journal «Transport Problems» (ISSN 1896 – 0596) which is included into the scientometric base of the SCOPUS.

The Senior Lecturer of DonNTU V.V. Arinenkov also made his presentation «Experimental researches of metal eliminators cleaning transport streams of bulk cargos». Its material will be published in the journal «Transport Problems» too.

The first day of the conference had been arranged to be held in Katowice, the second – in Kielce. The participants stayed at the hotel “Amelyutka” in the suburbs of Kielce. There are three conference halls equipped with necessary facilities at the hotel.

In their free time the participants went sightseeing around the city.

The detailed information on the conference could be found at www.konferencje.polsl.pl/tp.

THE INTERNATIONAL CONFERENCE ON MINERAL PROCESSING

The student of Mechanical Engineering Faculty M.E. Emchenko has participated in the annual international conference “Environment and Mineral Processing” taking place at the Technical University of Ostrava VSB, at the Mining and Geological Faculty.

The conference Science Committee members were from Czech Republic, Italy, Slovakia, Romania, Poland, China, Columbia, Russia, Turkey, Mexico, Serbia, Chile, Argentina and Croatia.

She made her presentation called “Introducing of Energy Saving Technologies to Ukrainian metallurgical Plants on the Example of the Closed Corporation DonetskSteel”.



The participants visited the castle in Buchlov within the frameworks of social program.

A STUDY-COURSE IN CZECH REPUBLIC



The delegation of DonNTU that consisted of the students of the Mining Engineering Faculty E.V Deich, A.D Mulyukova, M.D. Dudko, N.V. Dolzhikov, Y.I. Berchack, D. Otgonbaatar have visited the Technical University of Ostrava and Czech companies within the frameworks of the agreement between the above mention institution and DonNTU. It was a traditional study-course supervised by the Deputy Director on International Relations and Euro- Integration

of the Mining Institute Prof. O. K. Moroz.

The TU of Ostrava trains 21 thousand students. It enrolls 5500 newcomers, 1040 foreign students being among them, every year. Thus, a faculty has about 25-27 foreign students, each of them being supported by the state (21 thousand crowns per year). The University also has European grants. Total donation made up 210 mln crowns in 2012.

Our students were received by the Rector Prof. I Vondrak, the Dean of the Metallurgical Faculty Prof. Z. Dobrowski, the Dean of the Mining and Geological Faculty Prof. V. Slivka.

Our students were also received at the companies as the collaboration numbers more than 40 years.

They met leaders, engineers and workers of different companies and observed technological processes, their provision and results.

The Director General of the company **Befra** E. Kepler accompanied the students during the excursion around the company.

The company **Befra** deals with the development and assembly of the schemes made of constructional units and prepares boards for such companies as Siemens, Bosh and other German and Dutch enterprises.

Hanzen-Elektrik– is the company that applies modern technologies to develop and construct the production, to install electric equipment for the explosion hazard zones and maintain it. Hanzen-Elektrik earns the second position in Europe among the companies producing safe equipment. The company produces non-explosion proof transforming stations, starters and distributors, non-explosion proof converters, intrinsically safe control systems, vacuum switches. Our group was received by the owner and Director General of the company Mr. Shimecheck.

Our delegation was also received by L. Shtrokh, the Director General and Z. Pilyarzh , the head of the laboratory cycle of the research institute “**VVUU-RADVRNICE**” which deals with labor safety at mines and different industrial and agricultural objects. About 250 tests on noise measurement, vibration, space dustiness, blasting technique are carried here. Besides, they define fire and technical characteristics of dust explosiveness, analyze methane and means of self-defense, and make rope and sports facilities defectoscopying.

OKD – is the mining holding company in Ostrava that consists of 4 mining boards. Our students took part in the seminars held by the Director on manufacturing V. Beranek.

Our students were received by the Sales Manager of the company **SM VAK-VODARNYOSTRAVA** A. Dobesh. The Ostrava Region has 3 centres on water preparation: Vitovka, Novoves (the capacity of each is 2200 l/s) and Vyshnegotor (the capacity is 440 l/s) наших студентов принял коммерческий директор А.Добеш.



The unique character of the water supply systems is that all of them are loop-backed that allows for additional safety in extreme situations. The network of water supply systems is unique for Europe as the

water is not pumped, but to move the water the gravitation (the odds between the height of output and falling of the water). The technology is possible due to the fact that water tunnels go through the unevenness of the surface.

The company Ferrit was founded in 1993 and followed the long-term traditions of Czech and Slovakian mining machine-building. году и своей деятельностью продолжила многолетнюю традицию чешского и словацкого горного машиностроения. At present they have close contacts not only with mines of Czech Republic and Slovakia, but with other foreign countries such as Russia, Ukraine, Kazakhstan, China, Poland, Mexico, Estonia and South America. The company is planning to come to markets of Chile and South Africa. The company has service centres on equipment adjusting all over the world. There exists such a centre in Donetsk (Ukraine). It provides collaboration with the company DTEK and the mining association Krasnodonugol. Our students were received by the co-owner and Director General of the company P. Mogelnik.

Besides, our students visited the auto factory Hyundai, the brewery Radegast, a hydro-cumululating station, metallurgical plant Tshinets, Vitkoviski metallurgical and machine-building complex, the open cast Smertchi, the construction company Vokd.

The students also had a social program. They went sightseeing in Prague and Ostrava, visited the zoo, the car museum Tatra, and the bunker of the Czech fortification in Sudety and Jezierski swamps.

The Newsletter is prepared by the International Office of DonNTU.

Should you have any questions or offers as to the publication material, please address us at: 1st building of Donetsk National Technical University, office 220; tel.: (062) 301 – 08 – 25; (062) 337 – 32 – 66; fax: (062) 304 – 12 – 78; web-site: <http://iic.dgtu.donetsk.ua/>; e-mail: ovs@pop.dgtu.donetsk.ua