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AComIn: Advanced Computing for Innovation

**FP7 Capacity Programme
Research Potential of Convergence Regions**

EVENT ORGANISATION REPORT

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Summary: Report for organisation of the **Technology Transfer Seminar on Advanced Computing for Innovation - Industrial Applications**, 14-15 May 2015, Hotel Bankya Palace, Bankya, Bulgaria

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Duration: 42 months



Report about an AComin Organised/Supported Event

Name and type of the event: **Technology Transfer Seminar on Advanced Computing for Innovation - Industrial Applications**

http://www.iict.bas.bg/acomin/news/14-15-May-2015_TTSeminar.pdf

Place, dates: Hotel Bankya Palace, Bankya, Bulgaria, 14-15 May 2015

Programming and Organisation committees:

PROGRAMME COMMITTEE

Acad. Vassil Sgurev (BG) – Chair

Acad. Mincho Hadjiski (BG) – Co-Chair

Acad. Ivan Popchev (BG)

Prof. Dimitar Karastoyanov (BG)

Assoc. Prof. Lyubka Doukovska (BG)

Assoc. Prof. Kiril Alexiev (BG)

Assoc. Prof. Vera Angelova (BG)

ORGANISING COMMITTEE

Assoc. Prof. Lyubka Doukovska (BG) – Chair

Assist. Prof. Irina Radeva (BG)

Assist. Prof. Yancho Todorov (BG)

Participants /number, types/:

From IICT – 13

Bulgarian participants outside IICT – 53

Foreign participants – 2

Invited participants – 6

Short description:

The Technology Transfer Seminar on Advanced Computing for Innovation - Industrial Applications was organized as associated event to the 23rd International Symposium on Control of Power Plants, Industrial and Ecological Systems.

The Technology Transfer Seminar held, allowed us for presenting original results from AComIn project granted research cases. It also let us get in contact with colleagues working in the sphere of power generation, mining and processing industry as well as such from the technical universities in the country. The other accent of our presentation was to expose the possibility of collaboration in using the equipment purchased under the AComIn project grants, aiming an extension of the unique IICT equipment user's society. The separate research teams presented the achieved results in two included in the scientific program sessions.

As a result of the conversions held, new specific opportunities for future collaboration with colleagues from the University of Forestry in Sofia (<http://www.ltu.bg/a/nav/university>) were considered. We got in contact and established connection and plans for future collaboration with business partners like Honeywell Bulgaria (<http://honeywell.com/worldwide/Pages/bulgaria-bg.aspx>) and Trapen Ltd. (<http://www.trapen.com>).

Honeywell is a Fortune 100 company. As part of the company's global structure, in the recent years the Bulgarian branch develops also as a System Integration Center producing system solutions for the other European branches. Each of the business directions of the Bulgarian industry (Process solutions, Home and Building Automation, HVAC, Gas and water supply installations, Sensors and Control) has a high degree of independence making use of all benefits Honeywell is an international company. Honeywell Bulgaria has successfully developed and commissioned system solutions for the biggest national companies as: Maritsa East 2 TPP, Lukoil Bulgaria, TPP Bobov Dol, Neochim, Agropolychim, Deven, Solvay Sodi and etc.

The Trapen Ltd. is small innovative company established in 1991 year from the former research coworkers of the Central scientific institute for complex automation (CNICA) - Sofia. The company performs scientific research, experimental and manufacturing activities in the field of technological processes and automation: dosage and mixing of raw materials, wet and dry grinding of materials and ores, measuring and control of filling level, density and viscosity, measuring, diagnostics and control of vibration processes, measuring and control of linear axis displacements In 2001 the system MILLCONT of the Trapen Company was awarded with silver medal and certificate at the International Exhibition IENA 2001 in Nürnberg (Germany) and with bronze medal and certificate at the 50th International Fair EUREKA 2001 in Brussels. The firm is awarded with honorary diploma for INOVATIVE FIRM OF THE YEAR 2005. The Trapen Company works in association with some technical universities as well as with engineering firms at reconstruction and modernization of cement plants.

Scientific Programme of the whole event:

14 May 2015

12.30-14.00 **Registration**

14.00-14.10 **Opening Session: V.Sgurev**

14.10-14.40 **Plenary Lecture** Low-cost automation – Opportunities and Prospects
M.Hadjiski

14.40-16.00 **Session A1. Modeling and Management of Power Objects and Systems**
Chair: **K.Boshnakov**

Model-Based Control of the Wood Thermal Treatment Process

M.Hadjiski, N.Deliysky

Analysis of Parameters of Thermoelectric Generators for Geothermal Water Sources

I.Bozev, F.Filipov

Modeling of the Energy Consumption for Unilaterally Heating of Wood Details Before Their Bending

N.Deliysky

Information System for Achieving Energy Savings

A.Buchvarov

16.00-16.40 **Session A2. Companies' Presentations**

Chair: **T.Penzov**

System for Control, Management, Protection and Inflammatory Gas-Fuel Oil System of Power Unit 7 of Thermal Plant "Maritsa Iztok 2"

S.Petrov – Honeywell

The e^+ Principle – A New Generation of Industrial Air-Conditioning Systems (Rittal – The System)

Y.Panayotov – Rittal

16.40-17.00 **Coffee-Break**

17.00-18.00 **Session A3. Automation of Technological Processes**

Chair: **E.Nikolov**

Sensors and Systems for Measuring of Indirect Parameters at Technological Process Automation

D.Marinov, T.Penzov

Modeling and Optimization of Processes of Anaerobic Digestion of Organic Wastes with Production of Hydrogen and Methane

I.Simeonov, D.Denchev, V.Hubenov, E.Chorukova

Improvement of the Environmental Features and Reduction of the Energy Costs of the Bus Transport through the Use of Electric Traction Engines

Galin Bankov, Ivan Milenov

17.00-18.00 **Session TT1. Technology Transfer Seminar on Advanced Computing for Innovation-Industrial Applications**

Chair: **D.Karastoyanov**

Mapping of Acoustic Noise and Microwave Radiation

Volodymyr Kudriashov

Acoustic Fields Reconstruction

Yuriy Chyrka

Research of Moving and Interaction between Spheroidal Tetrahedrons in Ball Mills

Nikolay Stoymenov

High-Speed Briquetting of Metal Waste using Rocket Engine

Stanislav Gyoshev

Inspection and Observation using Infrared Thermal Camera by Service Mobile Robots

Denis Chikurtev

18.00-19.00 **Discussion:** The Place of Automation in Modern Innovation Process

Chair: **I.Shishkov**

19:30 **Symposium Dinner**

15 May 2015

9.00-10.40 **Session B1. Theoretical Problems of Management and Optimization of Industrial Objects and Systems**

Chair: **M.Hadjiski**

Analysis of Filtration Features of Repetitive Management Systems – Parts I, II

N.Nikolova, E.Nikolov

Software Tool for Design of Explicit Model-Predictive Controllers Based on Orthogonal Partition of the Parameter Space

A.Gruncharova

Avoiding Local Optimums in Distributed Population-Based Heuristic Algorithms

T.Balabanov

Statistical Models Optimization Based on Differential Evolution and Monte Carlo – Evaluated Cost Function

T.Balabanov, I.Zankinsky, B.Shumanov

10.40-11.00 **Coffee-Break**

11.00-12.40 **Session B2. Information Technologies to Improve Energy Efficiency**

Chair: **I.Bachkova**

Measures to Improve the Efficiency of Energy Management Systems

P.Kessova, I.Bachkova

Ontology-Based Approach to Decision-Making in Manufacturing Operation Management Systems

D.Gocheva, D.Georgiev, I.Bachkova

Energy-Efficient Control System of Conveyor Belt at Broadband Grinding Machine
J.Belev, I.Bachkova, G.Popov

Monitoring and Management of Urban Road Traffic
V.Ivanov, P.Stoyanov

Automatic Control of Switching the Power Supply in Microgrid
V.Stoyanov

11.00-12.40 **Session TT2. Technology Transfer Seminar on Advanced Computing for Innovation-Industrial Applications**

Chair: **L.Doukovska**

Determination of Particle Size Distribution and Analysis of a Natural Food Supplement with Prophylactic Action

Iliana Nacheva, Maria Doneva, Yancho Todorov

Determination of Particle Size Distribution and Analysis of a Healthy Functional Food

Svetla Dyankova, Petya Metodieva, Margarita Terzyiska

Industrial Transport Optimization through Multigraphs

Stanislav Drangajov, Vassil Sgurev

Inference Control System for the Flame Position in the Combustion Chamber of a Power Plant System

Stefan Koynov, Mincho Hadjiski

Robust Stability Analysis of Perturbed Single Area Power System Model

Svetoslav Savov, Ivan Popchev

12.40 **Closing Session**

AComIn-related papers presented at the event and published after peer review:

The selected best papers will be proposed for publication in relevant renowned research journals.

Assessment of the added-value of the event to the AComIn dissemination objectives:

The support, provided by AComIn to the **Technology Transfer Seminar**, enabled:

- To cover the expenses and accommodation of the speakers who presented their novel results in the area of advanced control and optimization.
- All participants were informed about AComIn, its objectives and the state-of-the-art of its development and achieved results. The foreign participants were shown the research potential of IICT-BAS, as fostered by the execution of the AComIn project, thus contributing to the positive public image of the Institute.

Changes in the financial planning of the AComIn support spending (if any):

None.

Reason for the changes during the actual event implementation:

(change of programme, last minute change of invited speakers, etc.)

None.

Event organiser:

18.05.2015

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Assoc. Prof. Lyubka Doukovska