
Closing and Award Ceremony

**Dr. Zsolt János VIHAROS**

Senior research fellow, Institute for Computer Science and Control of the Hungarian Academy of Sciences
President of the Hungarian Member Organisation of IMEKO
Scientific secretary, IMEKO TC10 on Technical Diagnostics
Towards cyber-physical production systems (CPPS)

• New phase of interacting parallel developments
  – Manufacturing science
  – Computer science, ICT
  – CNC, CAD, CAPP, PLM, MRP, ERP, BI, CRM, MES, SCM, MOM, EQMS, TQM, BPM, PSS, ...

• Key features
  – Smart
  – Real and virtual coupled
  – Connected

• Industrie 4.0, Industrial Internet, The Robot Revolution, Connected Smart Factory, Ipar 4.0
TC10 - Technical Diagnostics - Objectives

Objectives of IMEKO TC10 are to facilitate the exchange of scientific and technical information on diagnostic methods, instrumentation and systems by organizing symposia, discussion meetings and encouraging the publication of technical papers. Also, the co-operation between scientists and engineers in different subject areas in solving various technical and biomedical diagnostic problems is supported.

Keywords:
- Electrical and mechanical systems,
- Non-destructive, non-invasive testing using innovative sensor and signal processing concepts;
- Signal and model based techniques;
- Fuzzy- or AI techniques, if no modeling is possible;
- Automatic decisions, supervised by human experts;
- Unified diagnostic methods and components of diagnostic systems;
- Safe and reliable operation of complex systems.
Institute for Computer Science and Control
The organizer Institute

• Established in 1964
• EU Centre of Excellence in IT, Computer Science and Control
• Basic and applied research
• Contract-based R&D&I activity mainly on complex systems, turnkey realizations
• Transferring up-to-date results to industry and universities

• Basic research
  – Computer science
  – Systems- and control theory
  – Engineering and business intelligence
  – Machine perception and human-computer interaction

• Applied research and innovation
  – Vehicles and transportation systems
  – Production informatics and logistics
  – Energy and sustainable development
  – Security and surveillance
  – Networking systems and services, distributed computing
The overarching goal of the project is to establish the Centre of Excellence in Production Informatics and Control (EPIC CoE) as a leading, internationally acknowledged and sustainable focus point in its field representing excellence in research, development and innovation related to Cyber-Physical Production (CPP).
iKOMP

Problem description
- Highly industrialized region on the west part of Hungary with limited R&D capacity: Research and development programs related to strengthening the strategic future-oriented industries manufacturing technologies and products of regional competences carried out in comprehensive collaboration

Solution: Industry-driven R&D subprojects

Main Partners
- OPEL Hungary (coord.),
- SZTAKI (Sci. Coord.), Széchenyi István University, University of West Hungary +FhA
- Delphi, jQor (Jabil), Europtec, Pylon-94, 3B Hungaria

Goals
- Basic research on
  - artificial and business intelligence
  - material technology solutions
  - construction solutions
- Technological competences for
  - machining segment
  - electro-technical segment
  - process-technologies
  - design-technologies
- R&D outputs with high added-value for the regional production industry
  - vehicle (electro-technical) segment
  - machining tools and equipment
  - production support solutions
OPEL Szentgotthárd Ltd.

• Founded in 1990, **350,000 m2 total site area**
• **2,300 employees on site**
• Total **investment of 1.4 billion euros**

• Profile
  – engine production
  – production of **engine components**
  – production of **automatic transmissions**
  – transmission remanufacturing
  – spindle repair

• **Flex engine plant**
  – one of the most modern and flexible engine plants in the world
  – production of **3 new engine families**: MGE, MDE, SGE
WE ARE RELIABLE

Special Machining
2 800 m²
(2008-2014)

Plastic
2 400 m²
(2004)

Tooling
2 800 m²
(1999)
Dear Partners,

We are pleased to announce a short update about the 25-year-old Congress Ltd. event organizing company.

We thank you for your cooperation and being part of our success.

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Our company, the Congress Event Organizing Ltd., strives to arrange every one of its events with utmost consideration of the client's requirements, while implementing unique solutions. We pay special attention to the business concepts of our clients, and relieve them of all the burdens of organizing such an event by handling all the possible technical details.

The Congress Event Organizing Company was established in Hungary as a private limited company in 1999. Its founding members had already been working together and had been organizing major international events for years, therefore gaining valuable expertise in this line of work.

The initial three-member company has gradually expanded into a medium-sized company. However, should the nature of the event require it, we are also able to call in a temporary team of tested and reliable colleagues with highly skilled language abilities.

We firmly believe in providing the best quality services, that is why all of our staff members possess several years of professional experience.

Professional membership:

- Federation of Hungarian Event Organizers and Suppliers (MARESZ)

Professional appreciation:

Our managing director Ms. Judit Stárkő-Varmas received the award of the Federation of the Hungarian Event Organiser’s "The Event Organiser of the year 2003" and MARESZ Award in 2012.

Quality Management:

- ISO 9001:2008 certified

Support: Congress Ltd. Event Organising Company

Company
Support: Gusztáv Hencsey (MTA SZTAKI)
Venue

The workshop will be held in Danubius Hotel Gellért Budapest. "Art-nouveau extravagance – the world’s most famous spa"

- Noble hotel situated on the Danube riverbank, at the foot of Gellért Hill.
- Impressive Art-Nouveau building with large, light corridors and lots of character.
- Shares its building with the famous Gellért Spa, one of the city’s most beautiful thermal bath.
- 10 minutes’ walk from Great Market Hall and the downtown shopping area.
- Reach the city centre in the fastest way possible! The new Metro 4 station is just a few steps away from the hotel.
- Excellent business facilities, superb food in the brasserie and a charming coffee shop serving traditional pastries.
Invited Keynote Lecturers

János Csanádi
Unit manager, machining
OPEL Székesfehérvár Ltd., Hungary
Presentation title: Production control by Business Intelligence tools, dashboarding in manufacturing

János Csanádi was born in 1954 in Hungary. He graduated in heavy current electricity and studied engineering of digital systems. He joined an engine plant of OPEL General Motors at Székesfehérvár, Hungary in 1981. He fulfilled several positions during his 25 years old employment, mainly at manufacturing and maintenance. Currently he is responsible for all machining lines at Székesfehérvár as unit manager.

Lodovico Menozzi
Business Development Manager Europe – Condition Monitoring
National Instruments, Italy
Presentation title: Engineering the Industrial Internet of Things for Predictive Maintenance

Lodovico has a Master’s degree in Physics. He has been working for National Instruments for 17 years and he is currently covering the position of European Business Development Manager for Condition Monitoring Systems. In the 10 years prior to his current role, he worked in the field as a District Sales Manager and Field Application Engineer. In these roles he worked with customers, partners and research institutes operating in different industries like power generation, oil&gas and heavy machinery to develop on-line monitoring and advanced diagnostics applications.

Scientific Keynote Lecturers

Prof. Robert Schmitt
Director Lab. for Machine Tools and Production Engineering, Director of IPI RWTH Aachen University, Fraunhofer Institute for Production Technology IPT, Germany
Presentation title: Reference Systems for a Free Float Assembly Setup

Prof. Dr.-Ing. Robert H. Schmitt, born in 1961, completed his studies of Electrical Engineering with the specialisation on Communications Engineering at the Technical University of Aachen and became research associate at the Chair for Metrology and Quality Management. His work there focused on production-related Metrology and Communications Engineering in an automated environment.

In 1997 Professor Schmitt moved on to MAN Nutzfahrzeuge AG (commercial vehicles) in Munich where he took on leading positions in the fields of Quality and Production. In 2004 he assumed responsibility for the commercial vehicle production in Steyr, Austria.

On July 1st, 2004 he was appointed as professor at the Technical University of Aachen. As head of the Chair for Metrology and Quality Management at the Laboratory for Machine he serves as a member of the Board of Directors at the Laboratory for Machine Tools and Production Engineering (WZL) and the Fraunhofer Institute for Production Technology IPT.

Prof. Diego Galáy
Professor of Condition Monitoring, Division of Operation and Maintenance Engineering
Lund University of Technology, Sweden
Presentation title: Diagnostic and Virtual commissioning of manufacturing assets: A hybrid approach to condition monitoring

Prof. Diego Galáy holds a M.Sc. in Telecommunications and a PhD degree in Design and Manufacturing from the University of Sarajevo. He has been professor in several universities, including the University of Sarajevo or the European University of Madrid, researcher in the Department of Design and Manufacturing Engineering in the University of Sarajevo, researcher also in I2A Institute for Engineering research in Aragon, director of academic innovation and subsequently provost, chancellor. He has authored more than two hundred journal and conference papers, books and technical reports in the field of maintenance, working also as member of editorial boards, scientific committees and chairing international journals and conferences. In industry, he has been technological director and CEO manager of international companies, and actively participated in national and international committees for standardisation and R&D in the topics of reliability and maintenance.

Currently, he is Professor of Condition Monitoring in the Division of Operation and Maintenance Engineering at LTU, Lund University of Technology, where he is coordinating several EU-FP7 projects related to different maintenance aspects and was also involved in the SRIF UTC centre located in Lundes focused in SMART bearing. He is also actively involved in national projects with the Swedish industry and also funded by Swedish national agencies like VINNOVA.

In the international arena, he has been visiting Professor in the Polytechnic of Brasilia (Portugal), University of Valencia and NIU (USA), currently University of Sunderland (UK) and University of Maryland (USA). He is also guest professor in the Pontificia Universidad Catolica de Chile.
Four Chairman: Thank you!

• **Prof. Marcantonio Catelani**, Department of Information Engineering, University of Florence, Florence, Italy

• **Dr. Lorenzo Ciani**, Department of Information Engineering, University of Florence, Florence, Italy

• **Prof. Yukio Hiranaka**, Yamagata University, Graduate School of Science and Engineering, Yamagata, Japan

• **Prof. Piotr Bilski**, Institute of Radioelectronics and Multimedia Technology, Warsaw University of Technology, Warsaw, Poland
**Contributors**

30 papers, 5 posters, 4 keynote presenters

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### JUNE 5th 2017

<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
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<tbody>
<tr>
<td>16:00</td>
<td>Registration</td>
</tr>
<tr>
<td>16:00 - 19:00</td>
<td>Welcome cocktail, Hotel Gellet, Workshop venue</td>
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### JUNE 6th 2017

<table>
<thead>
<tr>
<th>Time</th>
<th>Session</th>
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<tbody>
<tr>
<td>08:30 - 09:30</td>
<td>Opening Ceremony: Zsolt János Viharos, Workshop Chair, Research Laboratory on Engineering &amp; Management Intelligence, Institute for Computer Science and Control, Hungarian Academy of Sciences</td>
</tr>
<tr>
<td>09:30 - 10:30</td>
<td>Invited lecture: scientific, Prof. Robert Schlab: Lab for Machine Tools and Production Engineering, RWTH Aachen University, Germany: &quot;Reference Systems for a Free Float Assembly Setup&quot;</td>
</tr>
<tr>
<td>10:30 - 11:00</td>
<td>Coffee Break</td>
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<tr>
<td>11:00 - 13:00</td>
<td>Oral Session, chairman: Mancaettacci Defeo, Department of Information Engineering, University of Florence, Florence, Italy</td>
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<tr>
<td>13:00 - 14:00</td>
<td>Lunch</td>
</tr>
<tr>
<td>14:00 - 15:00</td>
<td>Invited lecture: industrial: Ludovico Menazzi, Business Development Manager Europe - Condition Monitoring, National Instruments, Italy: &quot;Engineering The Industrial Internet of Things for Predictive Maintenance&quot;</td>
</tr>
<tr>
<td>15:00 - 15:30</td>
<td>Coffee Break &amp; Poster Session</td>
</tr>
<tr>
<td>15:30 - 16:30</td>
<td>Oral Session, chairman: Lorenzo Giani and Matteo Verzi, Department of Information Engineering, University of Florence, Florence, Italy</td>
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<tr>
<td>16:30 - 18:00</td>
<td>Poster Session, Poster Award, Exhibition Hall</td>
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<tr>
<td>18:00 - 20:00</td>
<td>Welcome cocktail, Hotel Gellet, Workshop venue</td>
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### JUNE 7th 2017

<table>
<thead>
<tr>
<th>Time</th>
<th>Session</th>
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<tbody>
<tr>
<td>09:00 - 10:00</td>
<td>Invited lecture: scientific, Dinu Gheorghițe, Division of Operations and Maintenance Engineering, Linköping University, Sweden: &quot;Diagnosis and Virtual commissioning of manufacturing assets: A hybrid approach to condition monitoring&quot;</td>
</tr>
<tr>
<td>10:00 - 10:30</td>
<td>Coffee Break</td>
</tr>
<tr>
<td>10:30 - 12:00</td>
<td>Oral Session, chairman: Kjell-Hans Schrage, Värnamo University, Graduate School of Science and Engineering, FOMP, Göteborg, Sweden</td>
</tr>
<tr>
<td>12:00 - 13:00</td>
<td>Lunch</td>
</tr>
<tr>
<td>14:00 - 15:00</td>
<td>Invited lecture: industrial: Jörg Gabel, Division of Operations and Maintenance Engineering, Linköping University, Sweden: &quot;Diagnosis and Virtual commissioning of manufacturing assets: A hybrid approach to condition monitoring&quot;</td>
</tr>
<tr>
<td>15:00 - 15:30</td>
<td>Coffee Break &amp; Poster Session</td>
</tr>
<tr>
<td>15:30 - 17:00</td>
<td>Oral Session, chairman: Lorenzo Giani and Matteo Verzi, Department of Information Engineering, University of Florence, Florence, Italy</td>
</tr>
<tr>
<td>17:00 - 18:00</td>
<td>Poster Session, Poster Award, Exhibition Hall</td>
</tr>
<tr>
<td>18:00 - 20:00</td>
<td>Welcome cocktail, Hotel Gellet, Workshop venue</td>
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**Vehicles**
- Classical diagnostics
- Models
- Applications
Participants’ countries (9)
Thanks to the Presenters, Contributors!
Workshop Dinner 19:00-22:00

- Walking through the bridge
- **Tram 2**: until the end station (direction Jászai Mari Tér)
- Walking to the dock 1
Workshop dinner
Thank to IMEKO TC10 Organisation and PC Members!

IMEKO TC10 Workshop on Technical Diagnostics in Cyber-Physical Era

INVITATION
The International Measurement Confederation IMEKO Technical Committee 10 on Technical Diagnostics kindly invites you to attend the 15th IMEKO TC10 Workshop on Technical Diagnostics “Technical Diagnostics in Cyber-Physical Era” to be held in Budapest, Hungary, on June 6-7, 2017. The Workshop is a forum for advancing knowledge and exchange ideas on methods, principles, instruments and tools, standards and industrial applications on Technical Diagnostics as well as their diffusion across the scientific community. Participants have an excellent opportunity to meet top specialists from industry and academia all over the world and to enhance their international co-operation. The programme will feature industry leading keynote speakers and selected presentations.

SPECIAL ISSUE
The presented papers at IMEKO TC10 are eligible for submission to the Measurement and Control IMEKO Special Issue. All submitted papers will undergo a regular peer review process. The manuscripts must be significantly technically extended beyond the proceedings papers.

SCIENTIFIC TOPICS
- Technical diagnostics in the cyber-physical era and in industry 4.0 environment.
- Basic principles and development trends in technical diagnostics.
- Innovative sensors, data acquisition systems and signal processing.
- Condition monitoring and maintenance of industrial processes, plants and complex systems.
- Diagnostics for maintainability, safety, risk assessments and management.
- Safety critical systems.
- System state modeling, change detection.
- Detection and prognosis of failures and damages.
- Artificial intelligence techniques and machine learning for diagnostics.
- Decision support and IT solutions for diagnostics.
- Industrial applications of monitoring and supervision systems, especially in transportation, mechanical, marine, automotive, biomedicine, IT and in the improvement of quality of life and environment.
- Industrial standards.

General Chairs
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Marcantonio Catalani
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International Programme Committee Chairs
Piotr Biski (Poland),
Lorenzo Ciani (Italy)

International Programme Committee Members
Jozsef Beimeschrit (Hungary),
Oleg Bushnev (Russia),
Wojciech Cholewa (Poland),
Loredana Cristaldi (Italy),
Eduard Egusquiza (Spain),
Giulio D’Emilia (Italy),
Marco Faletti (Italy),
Diego Galar (Sweden),
Cheraz Hassen (Hungary),
Yuki Hironaka (Japan),
Gábor Iach (Hungary),
Jurents Tasulevits (Lithuania),
Csaba Jahmatk (Hungary),
Massimo Lazzarini (Italy),
Helene Gerinhes Ramos (Portugal),
Artur Lopes Ribiero (Portugal),
Laurynna Saudynyte (Lithuania),
Alexandros Soumelidis (Hungary),
Ephraim Suhit (USA)

WORKSHOP AWARDS
An award will be given for the Best Scientific Paper & Presentation of the Workshop.

To encourage the attendance of young researchers, an award will be given for the Best Paper Authored and Presented by a Researcher Younger than 35 Years of Age.

ISBN: 978-92-990075-5-6

Workshop awards

• An award will be given for the **Best Scientific Paper & Presentation of the Workshop**.

• To encourage the attendance of young researchers, an award will be given for the **Best Paper Authored and Presented by a Researcher Younger than 35 Years in Age**.

• To highlight the importance of the poster sessions, an award will be given for the **Best Poster Presented by PhD Students**.

• To highlight the importance of the poster sessions, an award will be given for the **Best Poster Presented by Master Students**.

• To highlight the importance of the live demonstration session, an award will be given for the **Best Live Demonstration** presented on the Workshop.
Certificate of Award for a Best Scientific Paper & Presentation

In recognition of professional excellence, the paper titled

Advanced Condition Monitoring of Pelton Turbines

presented at the
IMEKO TC10 Workshop on Technical Diagnostics in Cyber-Physical Era,
held in Budapest, Hungary, June 5-6, 2017

The author(s) of this paper,

Monica Egusquiza, Carme Valero, Alex Presas, David Valentín, Matías Bossio, Eduard Egusquiza

are hereby congratulated and recognised for the excellent research work reported in the paper and presentation.

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Zsolt János Vihara, General Chair
International Measurement Confederation

Certificate of Award
for a Best Paper Authored and Presented by a Researcher Younger than 35 Years in Age

In recognition of professional excellence, the paper titled

ANN-based IFD in Motorcycle Rear Suspension

presented at the
IMEKO TC10 Workshop on Technical Diagnostics in Cyber-Physical Era,
held in Budapest, Hungary, June 5-6, 2017

The author(s) of this paper,

Domenico Capriglione, Marco Carrata, Paolo Sommella, Antonio Pietrosanto

are hereby congratulated and recognised for the excellent research work reported in the paper and in the presentation.

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Zsolt János Viharos, General Chair
International Measurement Confederation

Certificate of Award
for a Best Paper Authored and Presented by a Researcher Younger than 35 Years in Age

In recognition of professional excellence, the paper titled

HIL test based non-intrusive diagnostics of cyber-physical systems

presented at the
IMEKO TC10 Workshop on Technical Diagnostics in Cyber-Physical Era,
held in Budapest, Hungary, June 5-6, 2017

The author(s) of this paper,
Balázs Scherer

are hereby congratulated and recognised for the excellent research work reported in the paper and in the presentation.

______________________________________________
Zsolt János Vihanos, General Chair
IMEKO World Congress / TC10 Congress
Belfast, United Kingdom, on 3 - 7 September 2018.

Keynote Speakers

Professor William D. Phillips
- Winner of 1997 Nobel Prize in Physics, shared with Steven Chu and Claude Cohen-Tannoudji for their work on laser cooling, a technique to slow the movement of gaseous atoms in order to better study them
- Joined the National Institute of Standards and Technology in 1978, where he has worked since
- Fellow of the Joint Quantum Institute
- Professor of Physics at the University of Maryland

Professor Klaus von Klitzing
- Winner of 1985 Nobel Prize in Physics for discovery of the integer quantum Hall Effect
- Became Professor at the Technical University of Munich in 1980
- Has been Director at the Max Planck Institute for Solid State Research in Stuttgart since 1985
- His research focuses on the properties of low-dimensional electronic systems, typically in low temperatures and in high magnetic fields
Thank you for your participation!

Contact:
Dr. Zsolt Borkó József
Research Fellow, Institute for Computer Science and Control of the Hungarian Academy of Sciences
Presenter of the Hungarian National Organization of BSEID Scientific Advisory Board.
Email: zborko@cs.elte.hu
Thank you for your participation!

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