## Keynote papers

- **Intelligent control of power generation states**
  Natalia N. Bakhtadze, Vladimir V. Kulba, Igor B. Yadykin, Vladimir A. Lototsky, Evgeny M. Maximov

## Modeling and Simulation for Manufacturing

- **Agent Environment for Supply Chain Modelling and Management**
  Edward Nawarecki, Jarosław Kożlak

- **Agent Approach to Transportation Modelling and Optimization**
  Jarosław Kożlak

- **The Modelling and Simulation Method in Computer Aided Cooperation**
  Józef Matuszek, Aleksander Moczala

- **Specificity of Bottlenecks in Conditions of Unit and Small-Batch Production**
  Józef Matuszek, Janusz Mleczko

## Knowledge Driven Production Planning

- **Knowledge Based and CLP-Driven Approach to Multi Product Small-Size Production Flow**
  Irena Bach, Grzegorz Bocewicz, Wojciech Muszyński, Zbigniew Banaszak

- **Discovery of Knowledge in Electrical Power Systems**
  Bartosz Jędrzejec, Edward Nawarecki

- **Ontology-Based Knowledge Sharing in Flexible Supply Networks**
  Alexander Smirnov, Tatiana Levashova, Nikolay Shilov

- **Benchmarking of ERP Systems Implementation: Case Study**
  Sławomir Kłos, Justyna Patalas

- **Capturing Product Development Knowledge with Task Patterns: Approach and Economic Effects**
  Kurt Sandkuhl

- **Neural Networks as Classification Models in Intelligent CAPP Systems**
  Izabela Rajek

- **Decision Control System for HSM**
  Antonio Jr Vallejo, Ruben Morales-Menendez

## Digital Factory

- **An Automatic Method to Identify Human Alternative Movements: Application to the Ingress Movement**
  Mohand Ouidir Ait El Menceur, Philippe Pudlo, J-F. Debril, Philippe Gorce, François-Xavier Lepouyre

- **Virtual Manufacturing in Research & Industry**
  Andrej Stefaník, Milan Gregor, Radovan Furmann, Peter Skorík

- **3D Laser Scanning in Digitization of Current Production Systems**
  Milan Gregor, Fredinand Budzel, Andrej Štefánik, Dariusz Plinta

- **Improving Digital Interaction for Operator-Driven Process-Plant Operation**
  Dragos Dobre, Gérard Morel, Jean-François Pépin, Eddy Baji

- **RFID-IMSIIM Methodology for the Management of a Real Factory Simulation Connected with a Physical Platform**
  Julio C. Encinas, Javier de las Morenas, Andrés García, José Manuel Pastor
Mathematical Models of Manufacturing Systems Optimization

Simulated Annealing with Adaptive Neighborhood Applied to the Placement over Containers with Fixed Dimensions ................................................................. 106
Thiago de Castro Martins, Marcos de Sales Guerra Tsuzuki

Application of Uncertain Variables to Production Planning in a Class of Manufacturing Systems ................................................................. 112
Dariusz Gąsior, Jerzy Józefczyk

Scheduling of Unit-time Jobs with Distinct Due Windows on Parallel Processors ................................................................. 118
Adam Janiak, Rafał Januszkiwicz

CNC Machine Scheduling Problems with the Tool Aging ................................................................. 122
Adam Janiak, Władysław Janiak, Radosław Rudek, Agnieszka Wielgus

Stiffness Analysis Of Multi-Chain Parallel Robotic Systems ................................................................. 127
Anatol Pashkevich, Damien Chablat, Philippe Wenger

Intelligent Monitoring

Intelligent Robotic Multisensorial System to Build Metallic Structures ................................................................. 133
Juan Antonio Corrales, Gabriel Garcia, Pablo Gil, Jorge Pomares, Santiago Puente, Fernando Torres

Intelligent Monitoring of an Industrial Robot ................................................................. 139
Khaled Fawaz, Rochdi Merzouki, Belkacem Ould-Bouamama

Manufacturing Implementation of Advanced AI Methods

Deadlock Freeness for Controlled Marked Graph ................................................................. 145
Sioud Hatem, Zied Achour, Sava Alexandre, Nidhal Rezg

A Genetic Algorithm for Replenishment in Two-Level Assembly Systems ................................................................. 151
Faicel Hnaien, Xavier Delorme, Alexandre Dolgui

Inversion of Fuzzy Neural Networks for The Reduction of Noise in The Control Loop ................................................................. 157
Mirko Nentwig, Paolo Mercorelli

Milling Strategy Prediction with SOM Neural Network ................................................................. 163
Simon Klancnik, Joze Balic, F. Cus

Control Systems and Their Interfaces

Basics of Modelling IEC 61499 Function Blocks with Integer-Valued Data Types ................................................................. 169
Ioanna Ivanova-Vasileva, Christian Gerber, Hans-Michael Hanisch

A Data Processing Model of IEC 61499 Function Blocks with Integer-Valued Data Types ................................................................. 175
Christian Gerber, Ioanna Ivanova-Vasileva, Hans-Michael Hanisch

Designing Structure of Operations of Technological Process of Machining Shafts in CIM Considering the Technological Inheritance ................................................................. 181
Witold Halas, Victor Taranenko, Antoni Swit, Georgij Taranenko

A Model of a Quality Control for an Integrated Manufacturing Systems ................................................................. 187
Przemysław Korytkowski, Oleg Zaikin, Agnieszka Olejnik-Krugły
Performance Evaluation Models for Manufacturing Systems

Towards a Holistic Approach for Intelligent Manufacturing Systems Synthesis
Aurelian Mihai Stanescu, Dimitris Karagiannis, Mihnea Moișescu, Ioan Sacala, Valentin Manoiu

Multi-Objective Optimization of Dependability Attributes Using an Asynchronous Heterogeneous Hierarchical Parallel Genetic Algorithm
Zeng Wenhua, Yiannis Papadopoulos, David Parker

A Multi-Objective Approach for Transfer Line Optimization
Lina Makdessian, Farouk Yalaoui, Alexandre Dolgui

Advanced Maintenance Engineering, Services and Technology

Early Detection of Bearing Damage by Means of Decision Trees
Bovic Kilundu, Christophe Letot, Pierre Dehombreux, Xavier Chiementin

Contribution for an Optimal Choice of Business and Maintenance Plans, Based of an Adaptive Failure Law
Jérémie Schutz, Nidhal Rezg, Jean-Baptiste Leger

Maintenance Strategy Development within SME's: The Development of an Integrated Approach
David Baglee, Robert Trimble, John MacIntyre

Maintenance Strategy Selection: A Comparison Between Fuzzy Logic and Analytic Hierarchy Process
Stefano Ierace, Sergio Cavalieri

New Maintenance Opportunities in Legacy Plants
Mario Tucci, Mario Rapaccini, Filippo De Carlo, Orlando Borgia

Review, Classification and Comparative Analysis of Maintenance Management Models
Mónica López Campos, Adolfo Crespo Márquez

Overview on Opportunistic Maintenance
Édouard Thomas, Éric Levra, Benoît Iung

Evaluating the Role of Maintenance Maturity in the Adoption of New ICT in the Process Industry
Luca Fumagalli, Danilo Elefante, Marco Macchi, Benoît Iung

Challenges in the Development of an e-Maintenance System
Adam Adgar, Aitor Arnaiz, Erkki Jantunen

A Road-Map to the Implementation of Advanced ICTs in Maintenance Organization
Danilo Elefante, Luca Fumagalli, Marco Garetti, Eric Levrat

Modular Modeling of Maintenance Activities for Multi-Sites Structure
Ahmad Alali Alhouaij, Zineb Simeu-Abazi

Reconfigurable Manufacturing Systems and Transformable Factory

Increasing Flexibility and Availability of Manufacturing Systems – Dynamic Reconfiguration of Automation Software at Runtime on Sensor Faults
Andreas Wannagat, Birgit Vogel-Heuser

Specification of a Device Interface for Service-Oriented Automation Control Components
Jose Barbosa, J. Marco Mendes, Paulo Leitão

OWL Ontology to Support Evolvable Assembly Systems
Luis Ribeiro, Jose Barata, Mauro Onori, Antonio Amado

Machine-Part Grouping and Cluster Analysis
Jan W. Owsinski

Integrated approach for design of machining systems
Alexandre Dolgui, Nikolai Guschinsky, Genrikh Levin