

REVIEW OF THE INTERNATIONAL CONFERENCE ON ADVANCED MANUFACTURING ENGINEERING AND TECHNOLOGY - NEWTECH 2013

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ABSTRACT

The paper presents a review of the scientific events associated with the 3rd edition of the International Conference on Advanced Manufacturing Engineering and Technologies - NEWTECH 2013, organized in Stockholm, by the Department of Production Engineering from KTH Royal Institute of Technology, Sweden, 27-30 October 2013. The Conference aim is to provide a forum for researchers and industrials working in all aspects of theories, methodologies, applications and case studies related to advanced manufacturing and technology, quality and operation management.

Keywords: metal cutting, metal forming, advanced manufacturing, cutting stability, machine tool design, NEWTECH

1. INTRODUCTION

The International Conference NEWTECH 2009 served as a forum on the latest advances in manufacturing processes and integrated systems with emphasis on economic growth and prosperity.

The first edition of the International Conference NEWTECH was organized and hosted by the Department of Manufacturing Engineering from Dunarea de Jos University of Galati, Romania, in 23-25 September 2009. The conference followed the former 8th National Conference organized by the Department during the years and it was the first ever event at this scale.

80 specialists from 10 countries took part to the Conference. 4 plenary lectures and 50 papers were presented during the conference.

The following topics were addressed by the participants: Reconfigurable manufacturing, Modeling and numerical simulation in metal forming and cutting processes, Technologies for composites and nanostructures materials, High speed machining, Nonconventional technologies including those for plastic deformation, Concurrent engineering, Manufacturing process optimization, Quality management.

The second edition of the International Conference NEWTECH was organized and hosted by the Institute of Manufacturing Technology, Brno

University of Technology, Czech Republic, in 13-15 September 2011.

112 participants from 12 countries took part in the conference. The conference covered the eight scientific topics, from advanced material processing to virtual manufacturing and simulation. A special focus was given to Ecodesign of machine tools and green energy management.

The third edition of the International Conference NEWTECH was organized and hosted by the Department of Production Engineering from KTH Royal Institute of Technology, Stockholm, Sweden, in 27-30 October 2013.

Held at Radisson Blu Waterfront Hotel, the Conference attracted over 100 participants from 20 countries including researches, experts and industry representatives worldwide.

A Welcoming Reception, Opening Session, 2 Keynote Speeches, 3 Lectures, Conference Dinner, Papers Presentation on 10 themes, and two industrial visits to Scannia and Siemens, were the main events of this important scientific meeting.

2. WELCOMING RECEPTION

The Welcoming Reception took place at the City Hall (Stadshuset), hosted by the City of Stockholm. For most of participants, it was a good opportunity to meet the Officials of the City Stockholm and to visit the Golden Hall and the Blue

Hall, where the Nobel Prize took place on December 10 every year. The Council Chamber, where Stockholm’s City Council meets every third Monday was also visited.



The Romanian’s at the NEWTECH 2013 Conference, from right to left:
Prof. V. Paunoiu, Prof. M. Nicolescu -Chairmen of the Conference, Lecturers
C. Rusu and L. Mistodie.

3. OPENING SESSION

The third edition of NEWTECH was opened by prof. M. Nicolescu, Department of Production Engineering, KTH Royal Institute of Technology, Sweden, Chairman of this event.

Prof. M. Nicolescu, in his opening address, referred to the significance of this event, to the importance of the cooperation in science and technology and to the themes of the Conference. He said: “NEWTECH is at the dawn of creating a new tradition. After Galati 2009 and Brno 2011, Stockholm is prepared to bring together Academy and Industry in the essential debate on the role of Manufacturing in the Environmental and Societal agenda, where care of Nature should pave the way for the next generation processes and systems.”



Prof. V. Paunoiu and Prof. M. Nicolescu at the Opening Session

Prof. V. Paunoiu, Department of Manufacturing Engineering, Dunarea de Jos University of Galati, Co-Chair and the first organizer of the Conference, presents a short history of the event and the perspective of the NEWTECH conference. He highlights the role of Prof. Nicolescu and Prof. Piska in progress of the conference over time.

Prof. M. Piska, Institute of Manufacturing Technology, Brno University of Technology, Co-Chair and the second organizer, presents the importance of the NEWTECH Conference for the future developments of the manufacturing.



Prof. M. Piska at the Opening Session

Dr. Andreas Archenti and Dr. Antonio Mafei, Department of Production Engineering, KTH Royal Institute of Technology, Sweden, Editors, finally referred that the Conference attracted players from academia, business and industry in idea to make new contacts, to strength existing relationships, and to share the latest knowledge in the field of manufacturing.



Dr. Antonio Mafei and Dr. Andreas Archenti, Editors, and Dr. Lorenzo Daghini, from left to right

4. KEYNOTE SPEECHES. LECTURES

The first keynote was delivered by Mr. Lars-Henrik Jörnving, Vice President and Responsible for

Global Industrial Development to Scania. His speech was about "Transport Systems of Tomorrow. Prerequisites For Development and Manufacturing of Heavy Vehicles in Sweden"



New 2013 Scania Truck

Prof. Paul Shore, McKeown Chair of Ultra Precision Technologies at Cranfield, UK, and former President of the European Society of Precision Engineering and Nanotechnology referred to in his speech to "Precision Manufacturing: Current Status and Future Developments".

The first lecture was about "Gripping Technology" and was presented by Dr. Gualtiero Fantoni Acquired, His is Assistant Professor at the Department of Mechanical, Nuclear and Production Engineering of The University of Pisa.

Rene Meyer, Prof. at the École Polytechnique de Montréal discussed in his lecture about "Five-axis Machine Tool Error Modeling and Calibration".

Prof. Torsten Kjellberg, Senior researcher and Scientific advisor to IVF, addressed the problem of "Factory Planning Modeling".

5. CONFERENCE DINNER

The conference dinner was held at Royal Swedish Academy of Engineering Sciences (IVA).



Conference Dinner

During the dinner, it was announced the next NEWTECH Conference, which will be organize in

Poland in 2015, by prof. Jerzy Jedrzejewski - Wroclaw University of Technology, prof. Wit Grzesik - Opole University of Technology, and prof. Krzysztof Jemielniak - Warsaw University of Technology, Poland.

6. PAPERS PRESENTATION

10 papers covered the first Theme: Metal Cutting. The machinability of difficult materials, different strategies for improving the cutting operations, optimization of turning operation, simulation by FEM and surface generation where the main topics of the papers.

Theme 2: Cutting Stability was treated in 10 papers. The papers presented the subjects of in-process control of spindle speed, dynamics of tool structure, stability in turning, identification of chatter during grinding, dynamic instability in surface grinding, stability prediction.



Lecturer C. Rusu at her presentation

Theme 3: Machine Tool Design, by the contents of the 10 papers, covered the problems of thermal error compensation, development of modular machine tool structural monitoring systems, maintenance, improving the dynamic stiffness of the machine tool structure using new materials, using FEM for study the parameters of an anti-vibration turning tool.

The Forming Theme included 9 papers. The papers treated about new forming technologies, FEM modelling, numerical optimization and new strategies for offline dimensional control in sheet metal forming.

Assembly and Automation Technology Theme, within its 5 papers, covered mainly the aspects of remanufacturing, the energy consumption minimisation, supply chain collaboration.

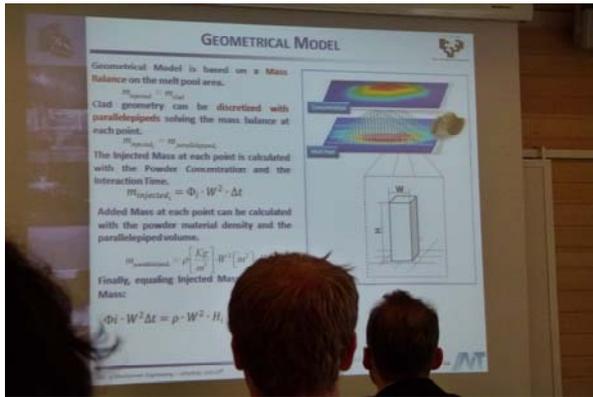
Theme 6 was about Material Science, Additive Manufacturing and Welding. The 5 papers presented the problems of laser cladding by process simulation, fused deposition modeling, submerged multi-arc welding, friction stir welding, nanoimprint lithography.

The 7th Theme was Operation Management. The 5 papers discussed the problems of scheduling using genetic algorithm, manufacturing resources, cost function to optimise machine tool schedules,

sustainable transport.

Theme 8: Inspection and Quality Assurance, with its 5 papers, highlighted the subjects about surface integrity in grinding by noise analysis, new technologies for joint implants, non-destructive testing methods for grindings surface analysis, acousting testing of compacted graphite iron.

Theme 9 was an Industry Oriented Session. The 7 papers focused on tolerance chain design, identification of stiffness and damping in nonlinear machining system, laser assisted milling, internal turning using damped boring bars, hollistic modelling of HSC.



Imagine from the Material Science,
Additive Manufacturing and Welding
Theme

The 3 papers of the Theme 10: New Research Endeavors, treated the advanced materials for hard turning, wear and renewal of cutting tool properties, reverse engineering.

6. CONCLUSIONS

The third edition of the International Conference NEWTECH, organized and hosted by the Department of Production Engineering from KTH Royal Institute of Technology, Stockholm, Sweden, in 27-30 October 2013, was entirely a real succes.

The conference highlightged the scientific interest for increasing the productivity and quality in fabrication of complex parts with tighter tolerances and high surface accuracy. This leads to improvements in static, dynamic and thermal stability of machine tools as well as in cutting the energy and natural resources consumption. On the other hand it is necessary to understand and to develop new manufacturing strategies close to market.

Understanding the behaviour of the new materials, improving the design techniques, development the automation and operation management will contribute to the creation of a hollistic view toward the fabrication, which will assure solutions to the critical processes and components.

ACKNOWLEDGEMENTS

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