I*PROMS: Activities at the IMW in 2006

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*Das I*PROMS „Innovative Production Machines and Systems“ Netzwerk ist ein Bestandteil des sechsten Rahmenprogramms für Exzellenznetzwerke der EU. Das Institut für Maschinenwesen (IMW) beteiligt sich stellvertretend für die TU Clausthal an dem europaweit über 30 Einrichtungen teilnehmenden Netzwerk. Dieser Artikel stellt eine kurze Zusammenfassung über die Aktivitäten des IMW im Jahr 2006 dar.*

*I*PROMS “Innovative Production Machines and Systems” network is funded by the European Commission within the sixth framework program for networks of excellence (NoE). The IMW participates as representative for the TU Clausthal in this network, where over 30 institutions take part. This article is a short summary of IMW’s activities in 2006.*

1 Introduction

Manufacturing in the EU is increasingly being challenged by global competition /1/. Experts acknowledge that, for the EU to attain and sustain a leading role in the global market, radical measures are necessary to stimulate restructuring of the European Research Area and closer collaboration in manufacturing research. The general integration of corresponding research activities in one network has the aim of an adjustment and European-wide consolidation of the fragmented activities to build up synergies and to give new impulses.

To focus and enforce the competences of individual partners the network has been divided in four different clusters /2/:

- APM (Advanced Production Machines)
- PAC (Product Automation and Control)
- IDT (Innovative Design Technology)
- POM(Production Organisation and Management)

The Institute of Mechanical Engineering participates in the IDT and the POM cluster.

2 Industrial survey

The competitive environment for manufacturing will be dramatically different in the year 2020 and beyond. Major changes will occur in a number of areas such as economics, education, competition, customers, globalisation, ecological considerations, technology breakthroughs, social conditions and the workforce. For example, future cities could look radically different and all products could be made from recyclable materials.

The objective of this questionnaire was to provide a vision of the future manufacturing enterprise and the challenges it needs to address in order to remain competitive. The information gathered in this survey will be used to define the profound changes that will occur in manufacturing and not the next incremental steps. This is achieved by developing a foresight report and a roadmap intended to help the European Commission planning the research agenda for the 7th Framework Programme and beyond.

With the following questionnaire manufacturer of different areas of operations and dimension have been interviewed to get their view of the factory of the future:

- *Competitive Environment*
*Describe your vision of what the **competitive environment** will be for manufacturing enterprises in the year 2020 and beyond.*

- Enterprise
*Describe your vision of what manufacturing **enterprises** will look like in the year 2020 and beyond.*

- *Challenges*
*For the vision of manufacturing enterprises that you provided for the year 2020 and beyond, what are the **challenges** that must bet met?*

- *Enabling technologies*
*In order to meet these challenges, what are the major **technology** developments that are needed? Technology is defined broadly to include resources, hardware, software, products, processing equipment, work processes, work designs, business processes, etc.*

- *Collaboration*
*In your view, what are the areas of **collaboration** that enterprises should consider in order to improve their competitiveness?*

- *Research Policy*

*What **policy** do you think Governments and research organisations should adopt in order to make research activities more industrially oriented?*

This inquiry has been carried out by the named I*PROMS partners. **Table 1** gives an overview about the kind of asked companies' within the POM cluster.

Because one result of the analysis of the questionnaire was that it is not sensible to examine the companies as one unit. The conclusion of this was to differentiate the companies in four groups.

	S-T	S-V	L-T	L-V	Total
UOW	0	3	1	2	**6**
IAO	2	3	0	1	**6**
TUC	0	1	3	6	**10**
ENIT	2	1	3	1	**7**
CETIM	0	1	0	0	**1**
MEC	2	2	2	4	**10**
Profactor	0	4	2	1	**7**
ISRU	1	4	1	4	**10**
Total	**7**	**19**	**12**	**19**	**57**

Table 1: Overview of made questionnaires

The mentioned abbreviations are standing for:

S-T: Small and traditional; which comprised small and medium enterprises (SME) with a conventional amount of products and production systems.

S-V: Small and visionary; which comprised SME with an advance amount of products or production systems.

L-T: Large and traditional; which comprised large enterprises (LE) with a conventional amount of products and production systems.

L-V: Large and visionary; which comprises LE with an advance amount of products or production systems.

3 Virtual Conference 2006

In this year the IMW took part at I*PROMS virtual conference with different papers in areas of Intelligent Design Systems and Intelligent and Competitive Manufacturing. The conference has been an outstanding success, attracting over 4000 delegates and guests from 71 countries.

It was the second time that a virtual conference took place in the network. This kind of conference is a modern way of publishing scientific results to a numerousness audience. The circumstances of travelling, especially the time and the costs, to participate at normal conferences do not apply.

4 The ENBIS Conference 2006 in Wroclaw

ENBIS 6 took place in Wroclaw, Poland, from 18th till 20th of September 2006 /3/. The abbreviation ENBIS stands for "European Network for Business and Industrial Statistics". It provides a forum for the dynamic exchange of ideas and facilitates networking among statistical practitioners to nurture interactions and professional development of statistical practitioners regionally and internationally.

The IMW took part with a contribution about a case study "How statistics could improve Acoustic Holography in solid Objects" /4/.

5 Summary

The results of the industrial survey are part of the adjustment of I*PROMS research agenda to consider the FP7.

Results of scientific work can be published in an easy and cost-effective way by virtual conferences, but also the presentation of the research activities at conventional conference is a part of network activities.

6 Acknowledgment

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7 References

/1/ European Manufacturing of the Future, Role of research and education for European leadership, Manufacture 2003 conference, Milan, Italy 1.-2. December 2003

/2/ www.iproms.org

/3/ www.enbis.org

/4/ Rolshofen, W.: "How statistics could improve Acoustic Holography in solid objects" Case Study, ENBIS 6, 18.-20. September 2006, Wroclaw, Poland