Preface to the Proceedings of the CIRP CMMO 2013

Available online at www.sciencedirect.com

SciVerse ScienceDirect

Procedia CIRP 8 (2013) 1 – 2

www.elsevier.com/locate/procedia

Preface

Europe is living the worst economic and financial crisis of its unified history, and Italy is certainly among the countries that suffer. It is now widely recognised that at least for some European countries, we can define this crisis as a depression, since it combines a long lasting and deep recession with unemployment, deflation and sovereign debt crisis.

The manufacturing sector is probably the one that suffers more, with its production being down in Italy by 25 % from the peak of the beginning of 2008, and by almost 40% in some specific areas. During the last six years, more than 70.000 manufacturing enterprises have ceased the activities and the pace of closures is increasing. However, manufacturing has always been one of the strongest elements of the country, and it still contributes to a significant share of the GNP, therefore its crisis has a major effect on the whole industrial and economic system. The importance of manufacturing, though, goes beyond the mere statistics. Every economist now recognises the importance of manufacturing as the engine of economic growth. The manufacturing sector derives the increase in productivity, which is the basis for the generation of wealth of the entire economic system, directly and indirectly. Directly, since the level and variation of the manufacturing productivity are normally higher than in other sectors. Indirectly, being manufacturing a source of knowledge and innovation, because the manufacturing companies carry out most of the research activities, and since the mere act of making things, proposes improvements and advanced solutions to the manufacturing processes, and therefore, the manufactured products.

This generated knowledge is not confined to the manufacturing sector, but it is shared within the whole economic system in two ways. The first one is due to the relationship among companies: the industries require that their suppliers be innovative and provide more efficient solutions, in terms of costs and of quality. The second one is due to the technological advances directly incorporated in the manufactured goods that are used in the other sectors as production tools. In this way, innovation and productivity increase propagate into the other economic sectors. For these reasons, too often neglected in the past, the governments of the economically advanced countries, starting from United States, are trying to give new impulse to the manufacturing sector, and to bring back home, where it is possible, part of the productions delocalised to take advantage from the lower labour and environmental costs.

The world's leading professional community of 600 academic and industrial members in the manufacturing sector, gathered in the International Academy for Production Engineering (CIRP, standing for College Interinational pour la Recherche en Productique) has always been aware of the importance of the advances in knowledge and know-how to promote growth and development worldwide, and has fostered significant cutting-edge research activities to boost the economic factor.

From these considerations came the idea of holding the 14th CIRP Conference on Modeling of Machining Operations in Torino, a city with a long-lasting manufacturing tradition, heavily hit by the crisis, but alive and strong in her will to redefine the paradigms of a new economic recovery through innovation in manufacturing. The 14th CIRP CMMO is one of a long series of Conferences that has the aim to gather experts from academia and industry to share their experiences with their new, highly relevant and timely results, to stimulate discussion and to foster the knowledge in the field.

Modeling has become a major requirement in designing manufactured products and developing manufacturing processes. The development of reliable and accurate models can therefore be seen as a useful contribution of the academic world to the companies in facing the current economic and financial challenges. The possibility to forecast the process outputs with acceptable accuracy and

Selection and peer-review under responsibility of The International Scientific Committee of the "14th CIRP Conference on Modeling of Machining Operations" in the person of the Conference Chair Prof. Luca Settineri
doi:10.1016/j.procir.2013.06.055

within reasonable time gives to the manufacturers a great advantage in an increasingly competitive world. Further, the manufacturing industry is continuously challenged by increasingly strict environmental regulations that require greater efforts to optimise the processes in terms of environmental, economic and societal sustainability. All these constraints push researchers and engineers to develop and test predictive tools for comprehensive optimization of the processes.

We have received about 150 abstracts, and the Scientific Committee has selected, at the end of the revision process, more than 100 papers for presentation at the conference. The selected papers reflect the latest trends in modeling of machining, with emphasis on analytical, numerical, experimental and statistical techniques. The variety of approached problems is wide, focusing on process output and control variables such as workpiece and machining conditions, dynamic behaviour of the machine-workpiece-tool system, tool-wear features, on many different workpiece materials, and in many different machining operations. The proposed methods and solutions are innovative, and they do testify the advanced quality level of the research activity carried out in our community.

A special thank goes to all authors of papers, members of the Scientific Committee for their effort in keeping the quality level of the Conference high, and to the Co-chairman Prof. I.S. Jawahir, for his support and advice in organising the conference and in composing this conference proceedings.

Professor Luca Settineri