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APPLIED RESEARCH PROGRAM OF MECHANICAL ENGINEERING AUTOMATION

Štefan VALČUHA, Branislav FIDLER, Peter PODMAJERSKÝ, Daniel SOMORA

Department of Manufacturing systems, Faculty of Mechanical Engineering, Slovak University of Technology in Bratislava, Slovakia
stefan.valcuha@stuba.sk, branislav.fidler@stuba.sk, peter.podmajersky@stuba.sk, daniel.somora@stuba.sk

1. INTRODUCTION

On the present, the inter-enterprise cooperation through all product lifecycle stages is becoming cardinal importance. In consequence of globalization and technological progress the industrial cooperation and integration are essential, especially for small and medium sized enterprises (SME) to keep their own position and progress continuity. Costumer requires new products of high quality according to exact specifications and delivered right on time. Sometimes smaller companies using traditional methods of industrial control are unable to satisfy these exacting requirements. Moreover they must face to competitive pressures of great and even multinational companies. Concepts of virtual organisation (VO) and product lifecycle management (PLM) bring new opportunities in this sense. Some Slovak enterprises, within the incorporation into European structures, begin to accept changes leading to the virtual cooperation. On the part of university there is possible to enter into intense collaboration in the form of research, applied research, education and training. Various institutions all over the world are engaged in these tasks including many important European universities. Applied research in Slovakia still does not meet all needs of the industrial establishment. Research team at Department of Manufacturing Engineering, STU in Bratislava seeks to build Laboratory of PLM and Innovation. By doing so the technological and personal conditions will be reached, comparable to foreign workplaces, that is necessary requirement for continuous advance in engineering automation. The paper presents activities of the laboratory and achieved results with emphasis on collaboration between academic and industry community.

2. LABORATORY OF PLM AND INNOVATION

In the past 10 ÷ 15 years many research and developmental projects were solved in the field of virtual cooperation. This effort have brought wide-ranging academic and empiric knowledge that was particularly supported in European Union by the programs ESPRIT, IST, INCO, IMS also in USA and other countries. Professional teams created a theoretical concept with the pursuit of start-up the first practical application of VO. However the results reached until now are not coordinated. Poor level of definitions, formal theories, modelling methodologies and suitable reference models belong to evident deficits. This naturally reflects in an absence of the appropriate supporting ICT.
In next steps there is necessary to summarize and organize all existing information and create the base of knowledge of the industrial integration. The research team headed by professor Štefan Valčuha actively deals with problems in this area. The Laboratory of PLM and Innovation established for engineering industry belongs to concrete outputs of current activities. Installed hardware and software equipment supports work in CAx/PLM environment (CATIA V5, SmarTeam, AutoCAD, Mechanical Desktop, Sysklass, MS office,