

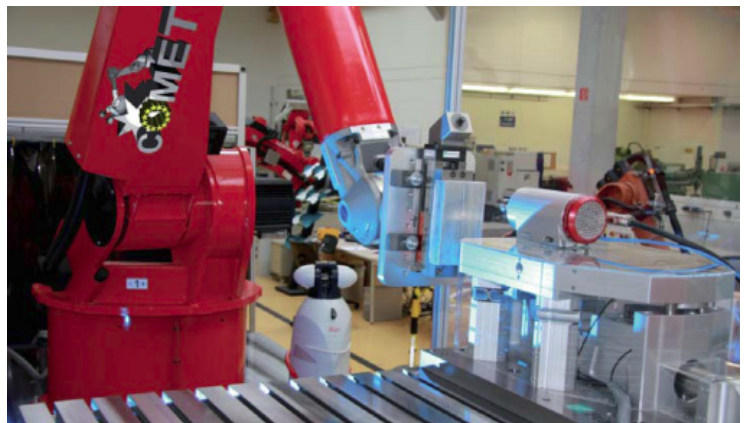
## COMET

### Plug-and-produce components and methods for adaptive control of industrial robots enabling cost effective, high precision manufacturing in factories of the future.

“COMET” is an industrial project, part-financed by the European Union and the European industry. The target of COMET is the optimization of control of movement of industrial robots in high end machining application, through the development of dedicated hardware and software modules, aiming to the creation of a technological platform immediately exploitable by the European industry. The results of COMET are expected to considerably improve the quality and to strengthen the productivity of European industry.

The COMET project, in a relatively short time frame of 2,5 years, aims to contribute to the confrontation of technological problems which the European industry faces, developing innovative machining systems which will be flexible, reliable and predictable, allowing for a roughly 30% reduction of cost, compared to the traditional machining processes.

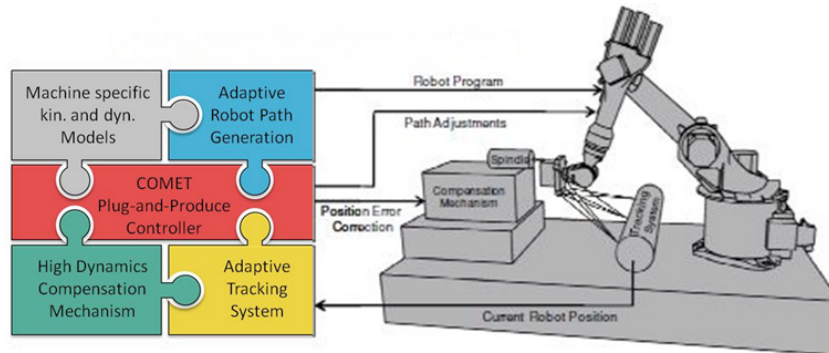
The technology of industrial robots is possible to provide the base for flexible and efficient solutions on machining processes. The lack of precision and repeatability, proneness to the process generated disturbances, in combination with the lack of reliable programming and simulation platform, are the main reasons that render industrial robots unable to compete with ordinary machine tool in metal cutting applications. The COMET project aims in the confrontation of these problems by developing technological solutions that are based on the experience and know-how of the research



and educational institutions which participate in the project. The partners of COMET are: AMRC Manufacturing Ltd, ARTIS GmbH, BTU Cottbus, Delcam plc, DemoCenter - Sipe, Fraunhofer IPA, Gizelis Robotics, Lund University, N. Bazigos S. A., Nikon Metrology, Nisaform s. r.o., SIR SpA, TEKS, LMS - University of Patras.

The achievement of COMET project objectives is based on the following four innovations:

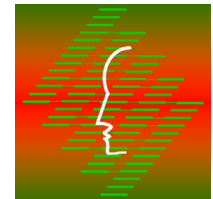
- A methodology for the development of kinematics and dynamic models for the description of behavior of industrial robots
- Development of a programming and simulation platform which will provide all the needed tools for NC code generation for tool movement control
- Development of an advanced tracking system of robot arm, aiming to validate and compensate for path deviation in real time.
- Development of an innovative system for dynamic compensation (High Dynamic Compensation Mechanism), aiming at the achievement of accuracy level beyond 50  $\mu$ m.



All the above are more to contribute in the improvement of accuracy robots, aiming to decrease by 50% the required time for installation and preparation and to allow the precise programming and simulation and at the same time compensating in real time for deviations from the desired toolpath.

The Laboratory for Manufacturing Systems & Automation (LMS) of the University Patras, directed by Professor G. Chryssolouris, participates in the COMET project as partner in charge of dissemination activities of the project, while simultaneously has an active role in the R&D activities of the project. Between these is the development of models aiming at the study of rigidity of industrial robots, planning of experimental machining tasks and the research for innovative methods for reduction of the communication latency between industrial robots and auxiliary equipment and software. More information in regard to the Laboratory for Manufacturing Systems & Automation (LMS) is available in website: <http://lms.mech.upatras.gr/>

The Laboratory for Manufacturing Systems & Automation (LMS) of the University Patras has been for many years active in a wide spectrum of R&D projects, financed both by the European Union and by European industries. Particular emphasis has been given to the collaboration with the European industry and a big number of companies of high technology. The personnel of Laboratory for Manufacturing Systems & Automation is occupied in three main research sectors: Innovative Manufacturing Processes, Advanced Human-Centered Design Techniques including Virtual Reality and Production Systems Planning



For more information about COMET project, please visit the project's website at: [www.comet-project.eu](http://www.comet-project.eu) where you can follow the project developments through useful articles, newsletters, photographs and videos.