



PRESS RELEASE

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Institute of Industrial Technologies and Automation of Italian National Research Council shows at BIMEC 2005 the new technologies designed and developed in the field of Open Control Architectures based on PC hardware and in the field of Microtechnologies

Stand E01G ITIA-CNR – Padiglione 12. BIMEC - Fiera Milano City.

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INSTITUTE OF INDUSTRIAL TECHNOLOGIES AND AUTOMATION
for manufacturing competitiveness and sustainability
Bridging the Gap
from RESEARCH to MARKET

From the development of:

OPEN CONTROL ARCHITECTURES BASED ON PC HARDWARE FOR ROBOTS

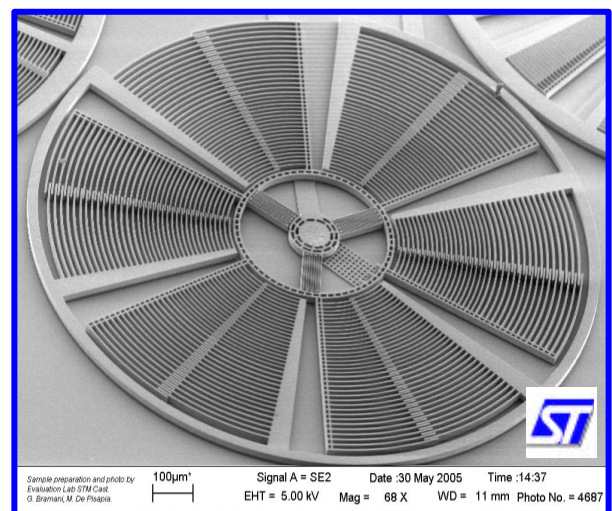
In Automation Industry, the increasing interest in flexible and custom solutions together with the need of cost reduction drives towards the use of PC-based hardware and open-source real-time operating systems (RTOS). In such a scenario, since some years IRAS research group within the ITIA-CNR has designed, implemented and validated an architecture for rapid prototyping of multi-platform control systems (QNX 4.25, Linux RTAI etc.). The platform, based on modularity, reconfigurability and portability, allows the development of control systems that are easily reconfigurable with reference to robots with different kinematic architecture (serial, hybrid, parallel kinematics). A first implementation, based on RTOS QNX 4.25, was shown during the EMO fair in 2003 and applied to the control of a parallel kinematic robot named Morpheum. In BIMEC 2005 fair, as demonstration of the software portability, a new implementation based on the open-source RTOS Linux RTAI is presented concerning the control of the redundant industrial robot PA-10, manufactured by Mitsubishi.



Mitsubishi PA-10

MICROTECHNOLOGIES

The possibility of extend the knowledge on industrial robotics and in particularly on Parallel Kinematic (PK) architecture at micro-level stimulated the foundation of a new research group dedicated to the study of microtechnology. In this context the METIS group was born within ITIA-CNR. Its aims include conception and fabrication of complex micro-devices according to two approaches: the first approach is based on the silicon micro-electronics technology, the second one is based on the employment of a variety of materials which have to be assembled in the second place. Concerning the first approach, deep studies on the dynamic characterization of silicon and on the fabrication of micro-joints have been done. Regarding the second approach, new techniques for assembling micro-components has been studied. Moreover a micro-device with parallel kinematic architecture, with promising applications in optical field, has been conceived and prototyped.



Silicon rotating microstructure

