



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

From the development of:

COMPONENTS

Realization of High Speed Spindle for machining. At the BIMU2004 will be on display the Electrospindle developed by ITIA-CNR in collaboration with GAMFIOR. The main characteristics of this product are:

- Max Power: 100kw
- Max Velocity: 100.000rpm
- Torque: 9,5Nm



Hydrostatic Spindle Prototype for High Speed and High Power

MACHINES

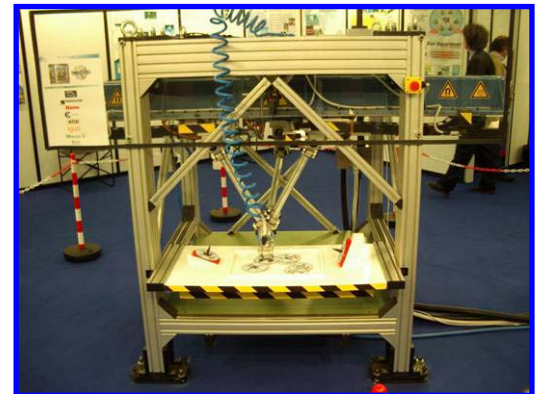
Conceivment and realization of Parallel Kinematic Machines (PKM) for assembly, pick and place and milling operations for different industrial sectors.

In 2003, ITIA-CNR launched the Morpheum project for the development of an innovative system: machine + PC based control system + viewing system.

Morpheum, highly reconfigurable and modular, has a working space of 600x400x400 mms. Top speed is 3 m/s and the maximum linear acceleration is equal to 40 m/s^2.

Morpheum is a part of the ITIA-CNR activities concerning PKMs (Parallel Kinematic Machines) launched in 1995 with the planning and development of the first prototype called Acrobat. These activities were followed up with the development of Dragon Fly^2 and the PKM 3x used as prototypes by firms in the Zanussi group. In 2000 ITIA designed and produced Dragon Fly used in the Vigevano workshop for the roughing and cementing of shoe upper bottom.

At the 2002 BIMU, the ITIA-CNR presented Celerius: the first Italian 5-axis PKM for milling.



Morpheum

SYSTEMS

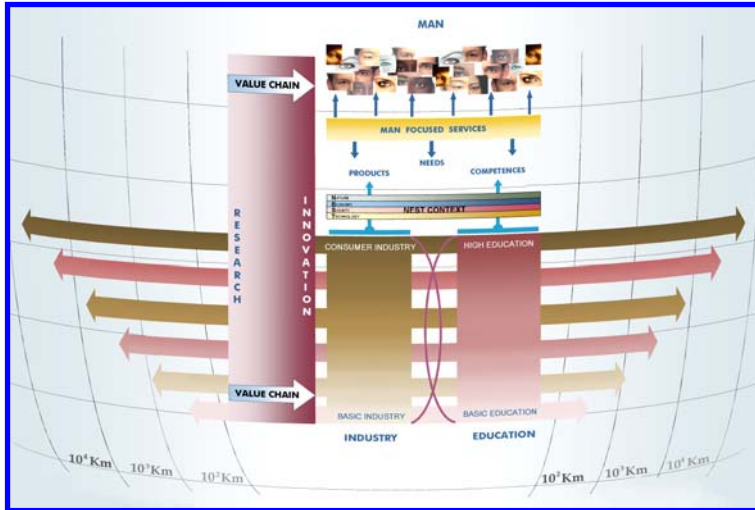
Conceivment and realization of a pilot plant system for footwear production.



Pilot System for Footwear Production ITIA-CNR Lab for Design & Mass Customization, Vigevano



...to market transfer:



ITIA-CNR's research and activities are aimed at setting up a **National Industrial Research System**, especially for **machine tool mechanics**, which will provide the country with the *Manufacturing High-Tech* needed to ensure the competitiveness and sustainability of Italian products on the world market.

ITIA-CNR's industrial research activities cover industrial sectors that play an important role in the Nation's economy (Mechatronics, Design, Home Appliances, Components, New High-Tech Products) and study the whole life cycle of the products and processes in order to contribute to the competitive, credible growth of the manufacturing sector.

The research company Sintesi (main partners: ITIA-CNR, Prima Industrie, SCM Group, Aetna Group, Gamfior, Plastal, Masmec), in partnership with Comau, aims at transferring the knowledge coming out from industrial research activities to the national industrial context.



ITIA-CNR, the National Research Council's Institute for Industrial Technologies and Automation, plays a major role in the National and International Research system.

Through its industrial research activities, the institute works on the development of new machinery and systems and studies new organizational models with the use of emerging technologies.

Thanks to its activities, ITIA-CNR is able to promote important programmes for the training of specialists like, for example, the third **Master's in Industrial Research** course which began this year.

ITIA-CNR is a **Network Institute** comprising sections and labs spread all over the country:

- **Milano Headquarters:** carries out research and development activities concerning manufacturing equipment and the enterprise of the future.
- **Roma Section:** oriented towards the study of supply chain management models and logistics.
- **Bari Section:** dedicated to industrial development activities concerning new manufacturing equipment related, in particular, to assembly and Service Manufacturing.
- **Vigevano Lab:** houses a pilot automated and integrated system for the design and production of footwear.
- **Trento Lab:** dedicated to the development of new methodologies and tools for the design and simulation of mechanical systems and micro-systems.
- **Caserta Lab:** houses a pilot integrated system for the design and production of wooden panels.

For further information and documentation (also in electronic format) related to ITIA-CNR activities, please send an e-mail to r.bosani@itia.cnr.it or call at +39 02 2369 9973.