

Steering Committee meeting

20th April 2010. Banja Luka

WBC-VMnet Project

DIMEG - Centre for Precision Forming and Manufacturing

Silvio Fanini – University of Padova

- 1 full professor
- 1 associate professor
- 4 assistant professors

- 2 post-docs
- 10 PhD students

www.dimeg.unipd.it/tecno





- Brite-Euram **EFFORTS** “Enhanced framework for forging design using reliable three-dimensional simulation” 1997-2000
- Brite-Euram **FAT-LIFE** “Optimisation of the service life of production tools in hot forging, die casting and glass forming by minimising the risks related to thermal fatigue” 1997-2001
- Thematic Network **WAFAM** “Warm forging of advanced metal alloys” 1998-2002
- Growth **IMPRESS** “Improving of Precision in forming by simultaneous modelling of deflections in workpiece-die-press system” 2001-2005
- Craft **RING** “An integrated system to check the dimensions of shaped rings during production phase” 2002-2004
- Eureka-Factory **DECOFOR** “Innovative system for the design and control of a precision forging process with integrated quality assurance” 2002-2006
- Eureka-Factory **RINGING** “Novel environment integrating process design and control for the ring rolling of net shape complex profile products” 2003-2006
- EU Coordinate Action **VIF-CA** “Virtual Intelligence Forging” 2004-2007.
- Craft **OP3MET** “Optical 3D Metrology – Automated in-line metrology for quality assurance in the manufacturing industry” 2006-2008.
- Cornet **LORCOT** “Loaded-Related Design of Coatings for Forming Tools” 2008-2009.
- Leonardo **MAIATZ SIMULFORM** “Transfer of research results on numerical 3D simulation technologies applied on cold forming process to VET and Continuous Learning on metal-mechanics sector” 2009-2010.

Training Topics

Metal Forming (Dr. A. Ghiotti)

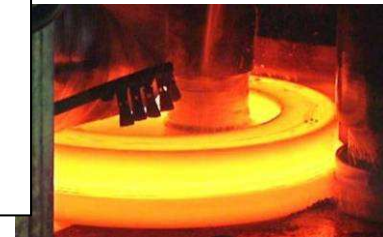
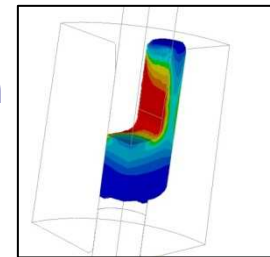
INTEGRATED DESIGN



Material Properties
 Experimental tests under forming condition



Modelling of the Process condition
 Physical and numerical simulation of the forming process condition



Final technological properties

+

Mechanical behavior

Training Topics

Geometrical metrology (Prof. E. Savio)

Coordinate Measuring Machines
(CMM)

Optical Measurements



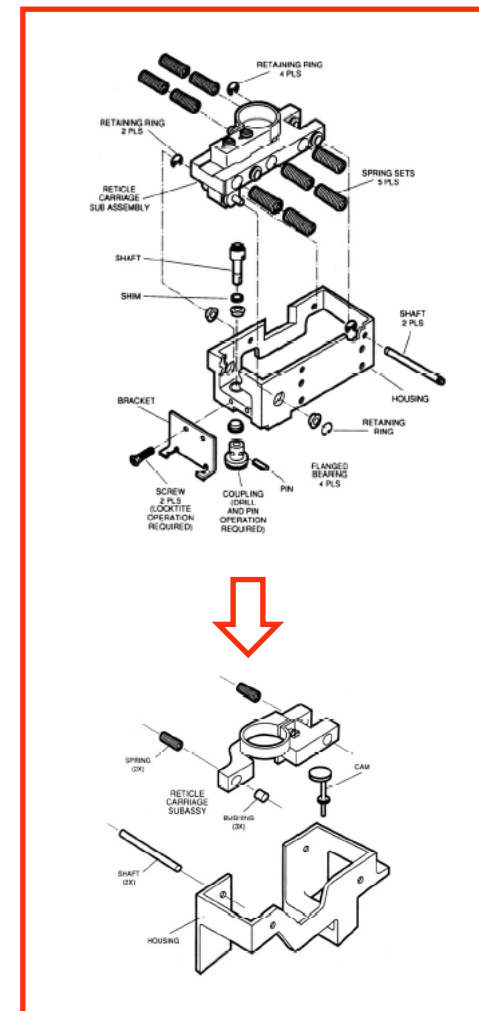
Silvio Fanini

This project has been funded with support from the European Commission

Concurrent Engineering Lab (Dr. G. Lucchetta)

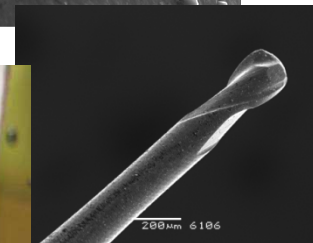
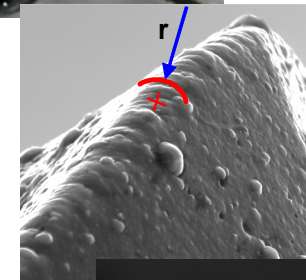
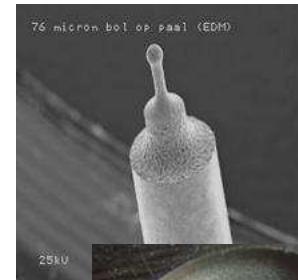
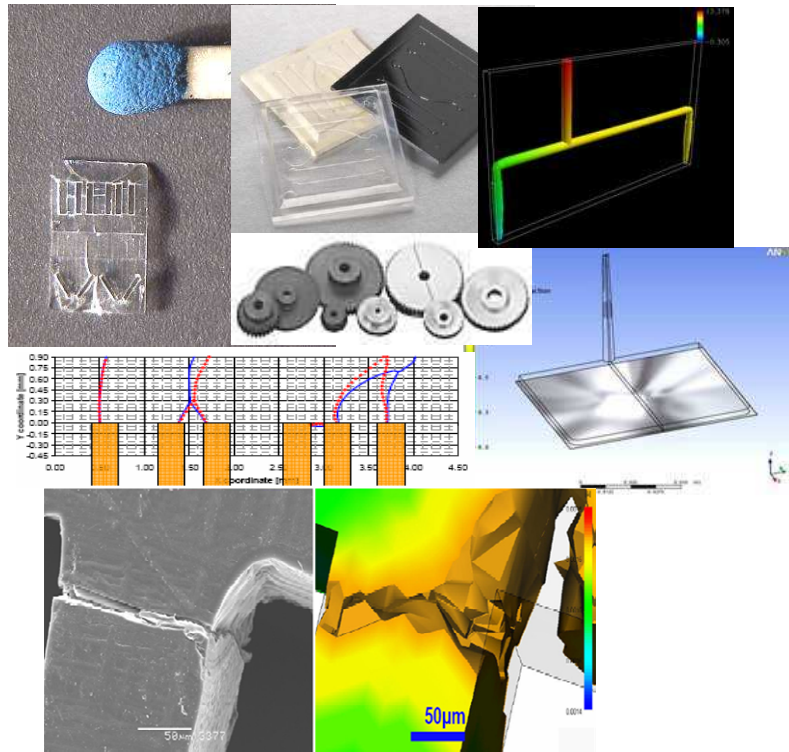
DFMA® - Design For Manufacturing and Assembly software

The screenshot shows the 'Design For Assembly 9.1' software interface. The main window displays a 3D exploded view of a motor assembly. On the left, a tree view lists components: motor base, bushing, motor, motor screw, stand-off, sensor, and set screw. The central panel shows the 'Definition' for the 'motor base' part, including its part number (5678) and repeat count (1). Below this, there are sections for 'Symmetry' (one way, either way, any way), 'Handling difficulties' (nest tangle, severe tangle, flexible, difficult grasp, tweezers, grasp tools, bulky, two hands, two persons), and 'Securing method' (secured later, thread, snap, push/press, rivet, self-stick, crimp, stake). A 'Minimum part criteria' section lists reasons for separation like material, movement, fastener, and connector. A 'Graph' window in the foreground shows a bar chart of 'Total cost per product, \$' for different categories: Labor (~\$3), Tool or fixture (~\$1), Tooling (~\$5), Piece part (~\$45), and Other operation (~\$25).



New Advances in Micro-Manufacturing @Te.Si. Lab (Dr. G. Lucchetta, Dr. G. Bissacco)

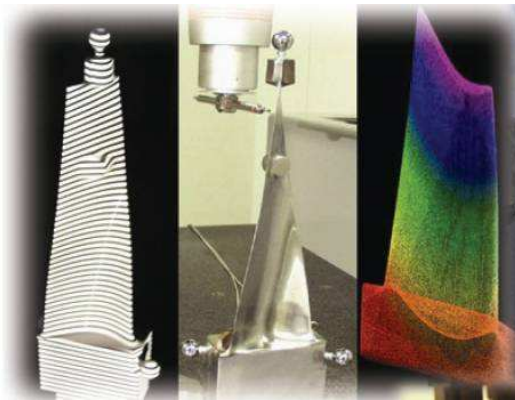
Polymer Processing



Micro Tooling

Training Topics

Rapid Prototyping and Reverse Engineering @Te.Si. Lab (Dr. S. Carmignato)



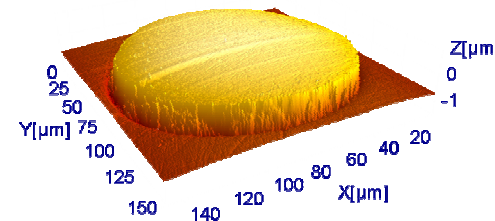
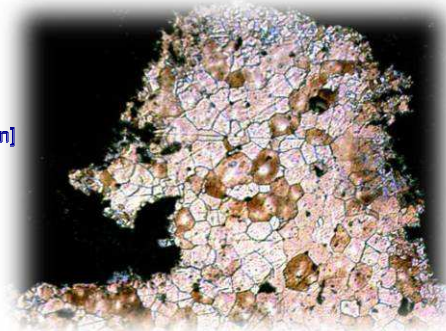
Reverse engineering



Rapid prototyping techniques



Surface Engineering @Te.Si. Lab (Dr. F. Marinello)



Atomic Force Microscope measurements