

ELECTROMAGNETICA



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MOULDS FACTORY

- **INJECTION MOULDS**

- **PLASTICS**
- **ELASTOMER**

- **COMPLEX TOOLS**

- **STAMPING, BENDING, PUNCHING, DRAWING, HOT/COLD SHAPING, PRINTING**

CONTENTS

- ✓ **Experience**
- ✓ **Activity field**
- ✓ **Foreign market**
- ✓ **Organization chart**
- ✓ **Human resources**
- ✓ **Moulds materials**
- ✓ **Technologies**
- ✓ **Quality Management System**

**Over 50 years
OF EXPERIENCE IN
MOULD MAKING**

ANNUAL PRODUCTION

**over 140 moulds for plastic injection and
complex tools for stamping, bending,
punching, drawing**

- 1. CAD system design**
- 2. Data transfer through computer network**
- 3. Execution of 3D programs for CNC by means of CAM software**
- 4. Automatic transfer of CNC programs by network to the numerical control**
- 5. Mould and tool monitoring along the manufacturing process by means of computer network**
- 6. High skilled and specialized personnel**

MOULDS

- **PLASTIC INJECTION MOULDING**

- *overall dimensions of assembled mould*

 - 1,500× 1,000× 1,000 mm*

- *maximal dimensions of one mould component*

 - 1,500× 1,000× 600 mm*

- *maximal weight of one mould component*

 - 5t*

- *maximal dimensions of injected part*

 - 800× 600× 500 mm*

- *maximal weight of injected part by own machines*

 - 3.6 kg*



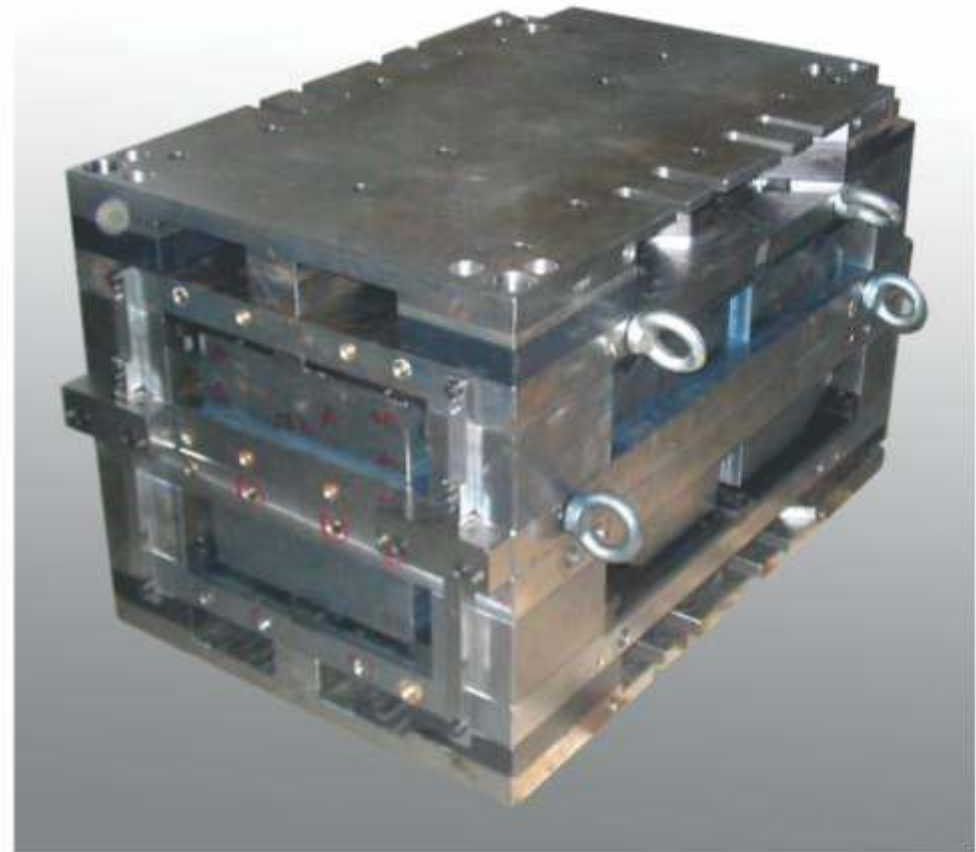
MOULDS

- **PLASTIC INJECTION MOULDING**
 - SINGLE MATERIAL INJECTION MOULDING
 - MULTI-MATERIAL INJECTION MOULDING: CO-INJECTION MOULDING, THREE MATERIAL MOULDING, OVER-MOULDING



MOULDS

- ELASTOMER INJECTION



**Rubber gasket for
car glasses**

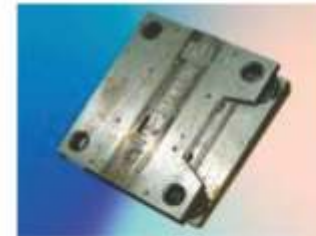


**Glass inserted in the
thermoplastic rubber
gasket (SANTOPRENE)**



COMPLEX TOOLS

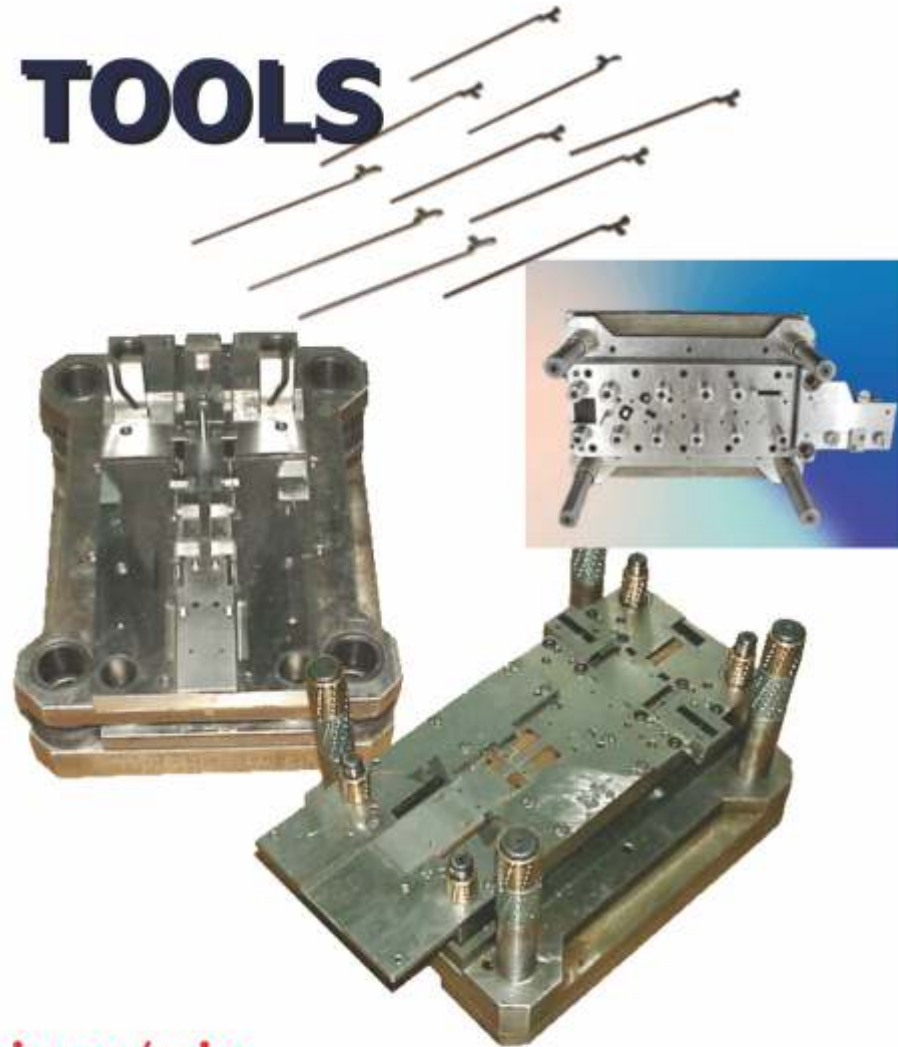
- stamping
- bending
- punching
- die forming
- drawing-out
- hot/cold shaping
- printing



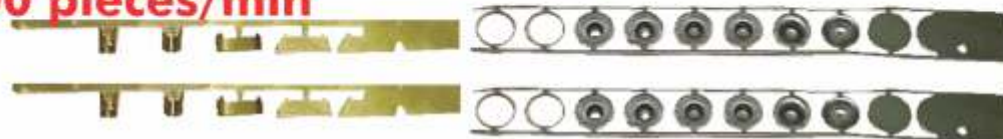
- the rate up to 200 pieces/min

COMPLEX TOOLS

- stamping
- bending
- punching
- die forming
- drawing-out
- hot/cold shaping
- printing



- the rate up to 200 pieces/min



- **TESTERS**
- **GAUGES**
- **CONTROL DEVICES**

- **complex geometrical shapes**
- **dimensions < 400 mm**



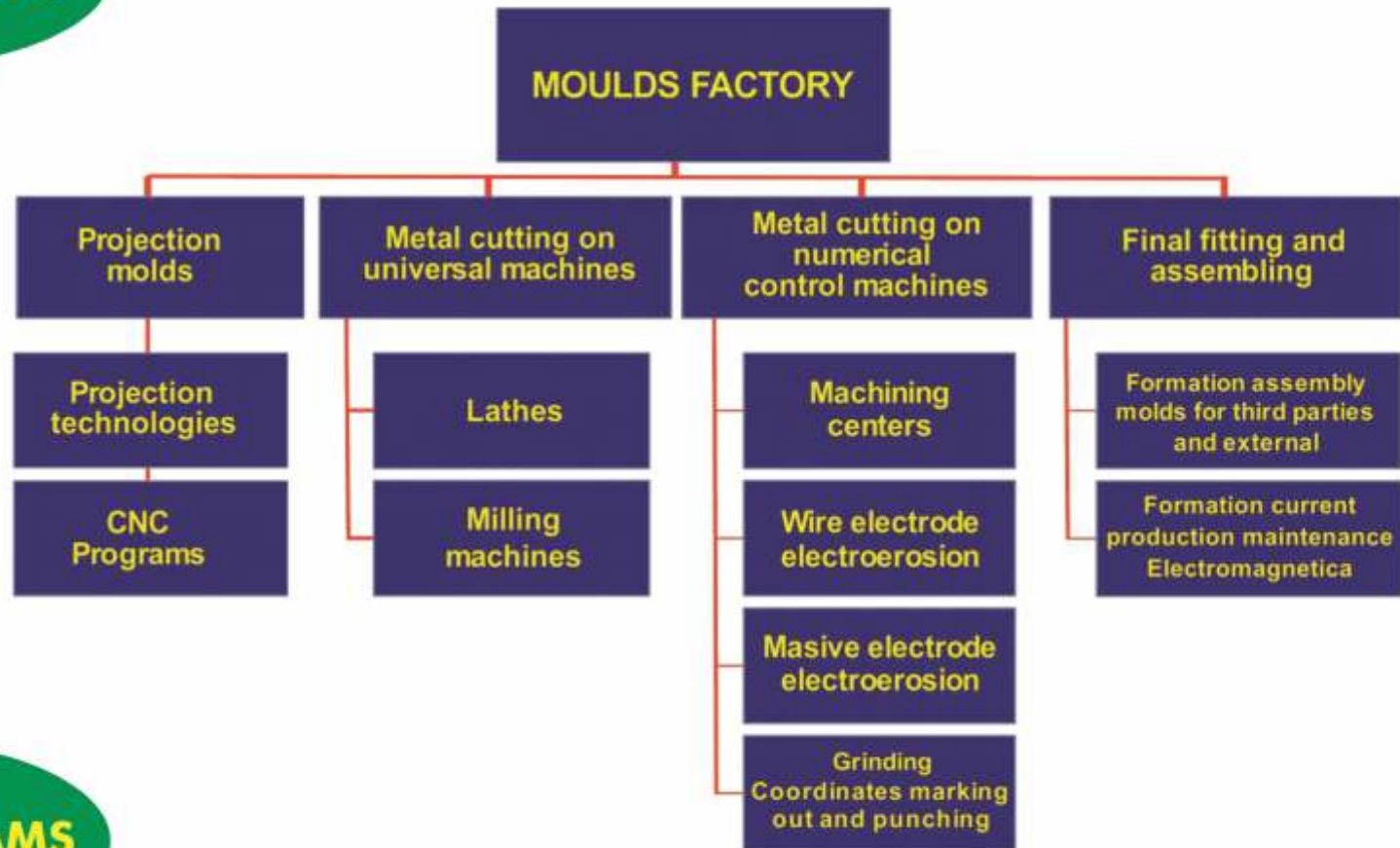


FOREIGN MARKET

- **France**
- **United Kingdom**
- **Germany**
- **Italy**
- **The Netherlands**
- **Austria**
- **Switzerland**

FACTORY ORGANIZATION CHART

4 WORKSHOPS



10 WORK TEAMS

NUMBER OF EMPLOYEES 59

- *Design and technologies* **12**
- *Manufacturing* **47**












MATERIALS USED FOR THE MANUFACTURE OF MOULDS

- **MATERIALS FOR INJECTION AND PRESSURE CASTING MOULDS**
 - high and medium-alloyed steel with: Cr, Mo, V, W, Ni, Si etc
For example: 1.2311, 1.2312, 1.2343, 1.2344, 1.3343, 1.3344, W85, etc
- **MATERIALS FOR COMPLEX TOOLS**
 - high-alloyed steel with: Cr, V, Mo, W etc
For example: 1.2080, 1.2379, C120, high-speed steel

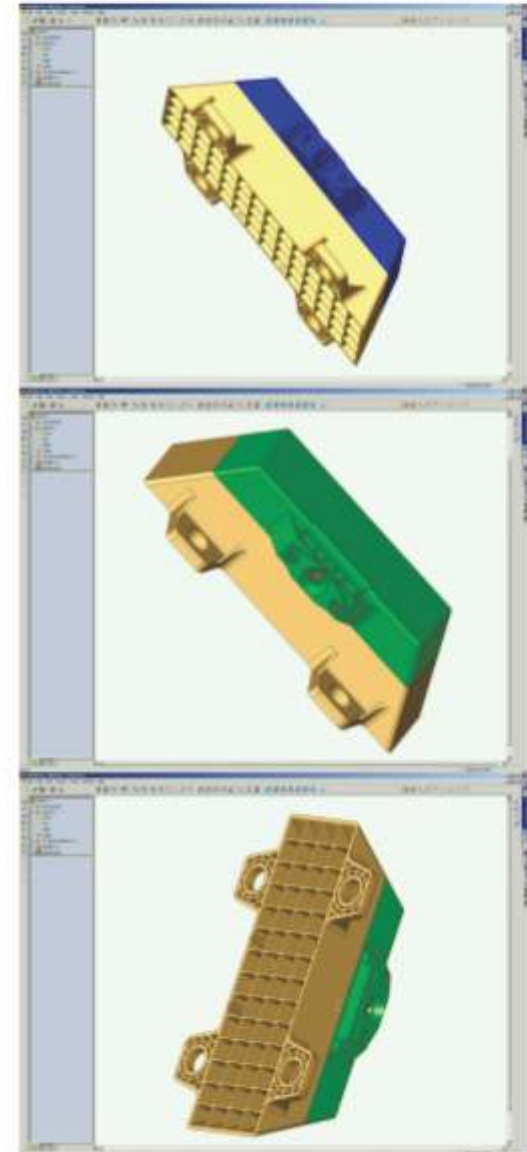
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TECHNOLOGIES

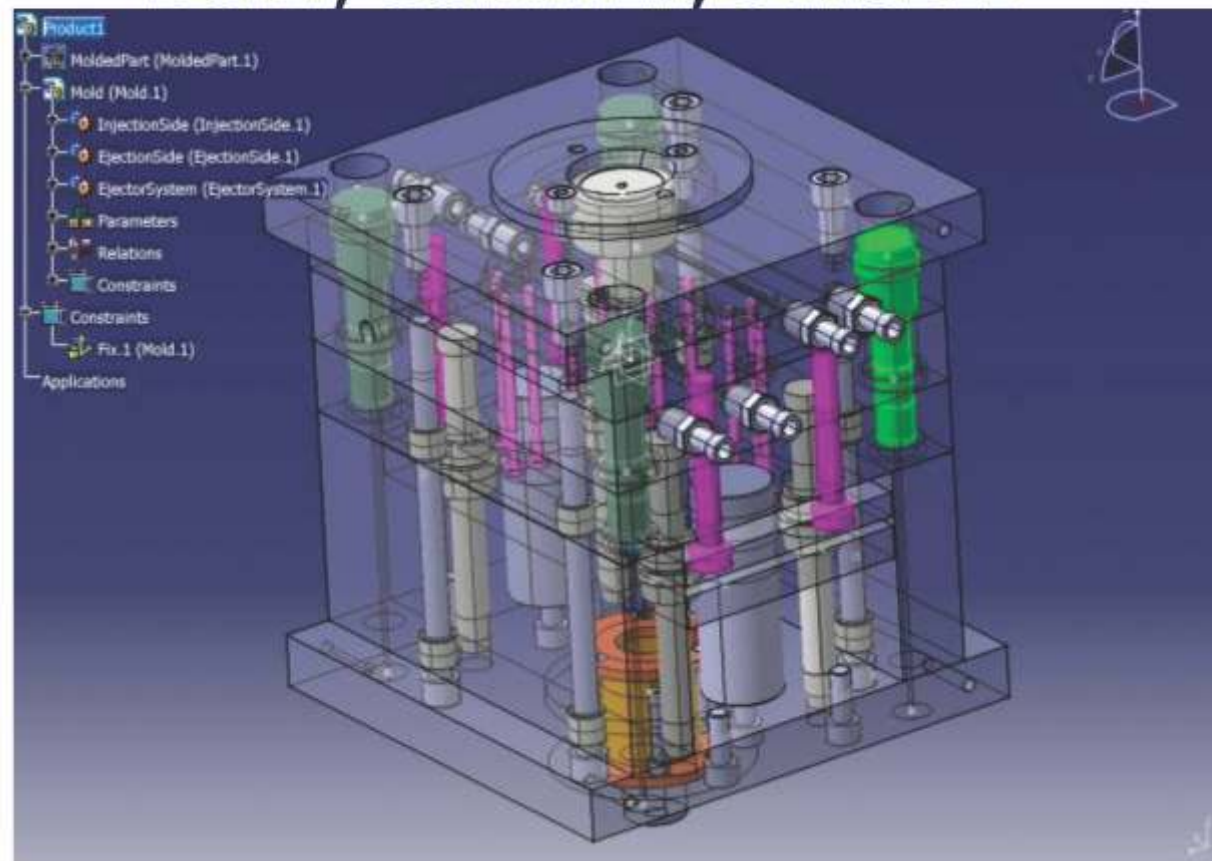
- **CAD-CAM DESIGN**
- **MOULD MANUFACTURING**

- **IBM Graphic stations**
 -  **CATIA V5R20**
- **PC for using CAD-CAM software**
 -  **SOLIDWORKS 2012**
 -  *SPLITWORKS*
 -  *MOULDWORKS*
 -  *ELECTRODWORKS*
 -  **DELICAM**
 -  *POWERSHARE*
 -  *POWERSHAPE*
 -  *3 POWER MILL*
 -  *3+2 POWER MILL*
 -  *PS - ELECTRODE*

- **Assembly design**
- **Transposition of files in format**
 - 📁 **3 D for machining on CNC**
 - 📁 **2 D for standard operations**

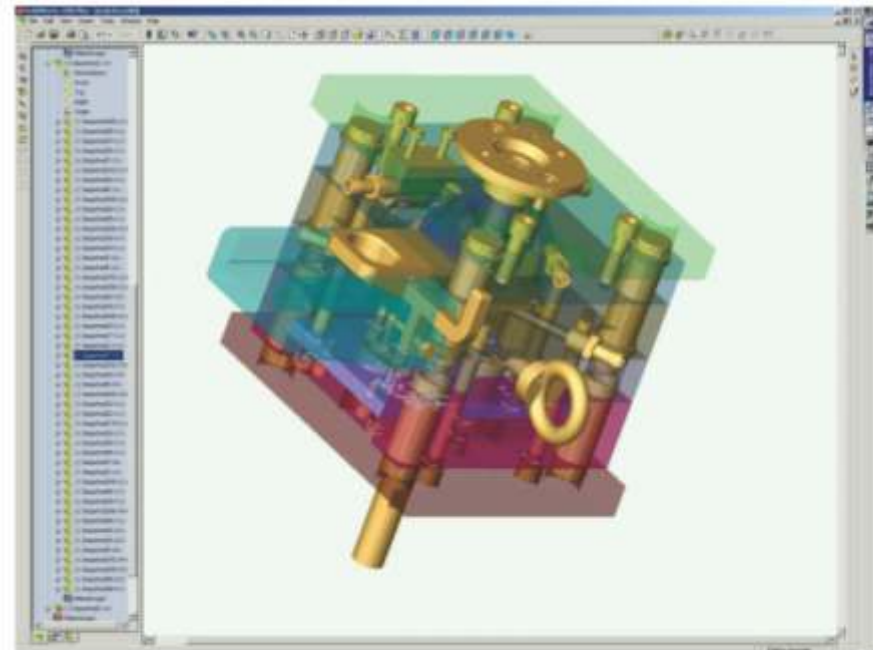
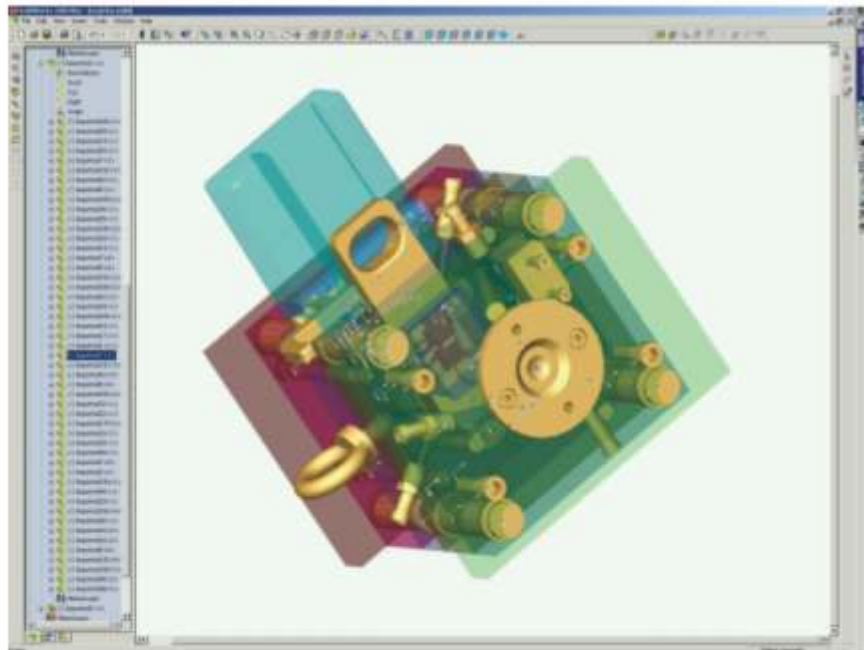


Mould design is achieved by means of dedicated software using standard catalogues of high world level: DME-EOC, HASCO, RABOURDIN, PEDROTTI, STRACK, FUTABA, MEUSBURGER, PCS, NATIONAL, MISUMI, CUMSA, FIBRO, DURA, GUNTHER, STAUBLI



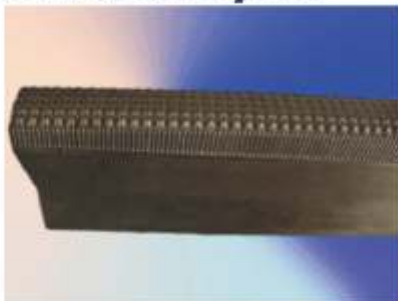
The machining is accomplished by numerical control equipment with specialized software:

- ✓ **DELCAM**
- ⇒ **3 POWER MILL**
- ⇒ **3+2 POWER MILL**



MAZAK Nexus 510C - II

- programming with graphic stations and PCs
- software DELCAM
- numerical control MAZATROL MATRIX
- performs cutting operations of complex geometry
- works with titanate high-speed steel or hard-cutting alloy tools
- maximal weight of the part to be processed 1000 Kg
- dimensions of the work table 1,050 x 510 x 510 mm
- tool rotation speed 60 - 12,000 rot / min
- feed rate on the 3 axes 3 -36,000 mm / min
- 30 tool-hole magazine
- manufacture year 2008



Mould punch
for car brake
lamp



Al case

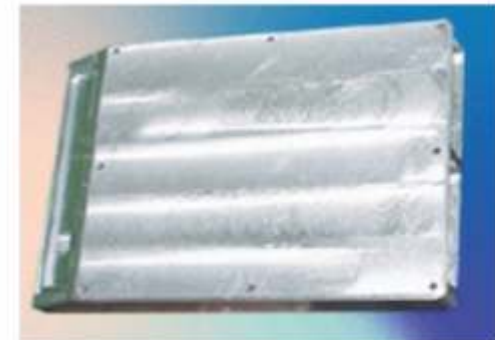
4 AXIS MACHINING CENTER

ARROW 500

- programming with PCs
- DELCAM software
- ACRAMATIC 2100 high capacity numerical control
- performs complex geometry cutting operations
- works with titanate high-speed steel or hard-cutting alloy tools
- maximal weight of the part to be processed 500 Kg
- work table dimensions 600 x 510 x 560 mm
- tool rotation speed 60 - 10,000 rot / min
- feed rate on the 4 axes 3 -15,000 mm / min
- 21 tool-hole magazine
- manufacture year 2001



Al housings



5 AXIS MACHINING CENTER

FIDIA DIGIT 218

- programming by means of PC
- DELCAM software
- Fidia M 30 numerical control
- performs complex geometry cutting operations
- works with titanate high-speed steel or hard-cutting alloy tools
- maximal weight of the part to be worked
- work table dimensions
- tool rotation speed
- feed rate on the 5 axes
- 15 tool-hole magazine
- C axis rotation from
- B axis rotation from
- manufacture year

10,000 Kg

2,000 x 1,000 x 800 mm

28,000 rot / min max.

20,000 mm / min

+360° ÷ -360°

+110° ÷ -110°

1996



MOULD MANUFACTURING

4 AXIS MACHINING CENTER

C.B. FERRARI S82

- programming by means of PC
- DELCAM software
- Selca 3045 P numerical control
- performs complex geometrical cutting operations
- works with titanate high-speed steel or hard - cutting alloy tools

- maximal weight of the part to be worked 5,000 Kg
- work table dimensions 2,000 x 820 x 1.000 mm
- standard tool rotation speed 2,500 rot / min
- tool rotation speed with electro-broach 20,000 rot / min
- C axis rotation from + 90° ÷ - 90°
- manufacture year 1996



MOULD MANUFACTURING

3 AXIS MACHINING CENTER

C.B. FERRARI A17

- programming by means of PC
- DELCAM software
- SELCA numerical control
- performs complex geometrical cutting operations
- works with titanate high-speed steel or hard-cutting alloy tools
- maximal weight of the part to be worked **1,000 Kg**
- work table dimensions **1,050 x 560 x 400 mm**
- tool rotation speed **2,500 rot / min**
- manufacture year **1993**



MOULD MANUFACTURING

3 AXIS MACHINING CENTER

C.B. FERRARI A17

- programming by means of PC
- DELCAM software
- SELCA numerical control
- performs complex geometrical cutting operations
- works with titanate high-speed steel or hard-cutting alloy tools



- maximal weight of the part to be worked **1,000 Kg**
- work table dimensions **1,050 x 560 x 400 mm**
- tool rotation speed **4,000 rot / min**
- feed rate on the 3 axes **3,000 mm / min**
- manufacture year **1991**

GRAPHITE PROCESSING CENTER IN 3-axis HWT AZK D-442

- programming by means of PC
- software DELCAM
- numerical control COMETS
- graphite milling works with complex geometry
- work with diamond tools
- maximal weight of the part to be worked 30 Kg
- work table dimensions 400 x 200 x 200
- rotation speed 0 – 27000 rot/min
- 3-axis feed rate max. 6000 mm/min
- manufacture year: 2011



ELECTROEROSION MACHINE WITH WIRE ELECTRODE *ROBOFIL 310*

- brass wire electrode : ϕ 0.10 . . . 0.30 mm
- by program control the following can be cut
 - AA profiles of any geometrical configuration;
 - AA any electricity conductive materials
- stroke
 - AA $x = 400$ mm, $y = 250$ mm, $z = 400$ mm, $u = 400$ mm,
 $v = 250$ mm
- accuracy
- cone shape cutting option
- maximal dimensions of the part to be worked
- 5 axes profiles (positioned as 4 + 1)
- maximal height of part
- manufacture year

0.5 μ m

0° ÷ 15°

500 x 300 mm

400 mm

1997



Complex tools for
stamping,
bending, notching,
blanking, drawing



ELECTROEROSION MACHINE WITH MASSIVE ELECTRODE *ONA NX3*

- copper or graphite massive electrode
- erosion machining range by program control
 - ^{AA} 3D profiles
 - stroke:
 $x = 400 \text{ mm}, y = 300 \text{ mm}, z = 300 \text{ mm}, c = 360^\circ$
- accuracy: $1 \mu\text{m}$
- generator power: 100 A
- electrode weight : max. 50 Kg
- manufacture year: 2009



ELECTROEROSION MACHINE WITH WIRE ELECTRODE *ONA AF60*

- programming by means of PC
- software DELCAM
- numerical control COMETS
- graphite milling works with complex geometry
- work with diamond tools
- maximal weight of the part to be worked **30 Kg**
- work table dimensions **400 x 200 x 200**
- rotation speed **0 – 27000 rot/min**
- 3-axis feed rate **max. 6000 mm/min**
- manufacture year: **2011**



ELECTROEROSION MACHINE WITH MASSIVE ELECTRODE *ROBOFORM 30*

- copper or graphite massive electrode
- erosion machining range by program control
 - AA 3D profiles
 - AA stroke
 - AA $x = 350 \text{ mm}$, $y = 250 \text{ mm}$, $z = 340 \text{ mm}$, $c = 360^\circ$
- accuracy $1 \mu\text{m}$
- generator power 32 A
- maximal electrode weight 30 Kg
- manufacture year 1999



Plates of plastic injection mould



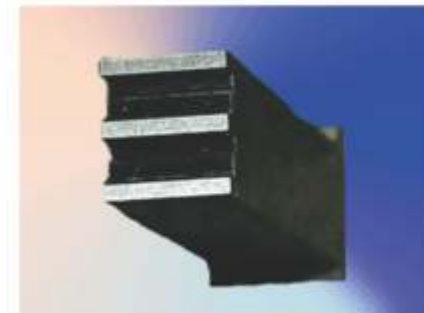
NC PROFILE GRINDING MACHINES

- high accuracy 0.003 mm
- dimensions of the parts to be worked 250 x 125 x 100 mm
- grinding wheel dimensions
 - AA width: 4 mm max
 - AA maximal diameter 150 mm
- grinding range
 - AA active parts of tool
 - AA T.T. parts of high hardness
- the processed surface is magnified and displayed on a screen by means of a light spot
- year of manufacture 1989



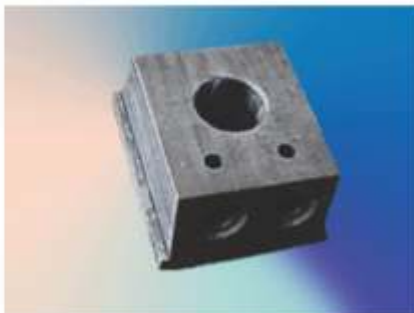
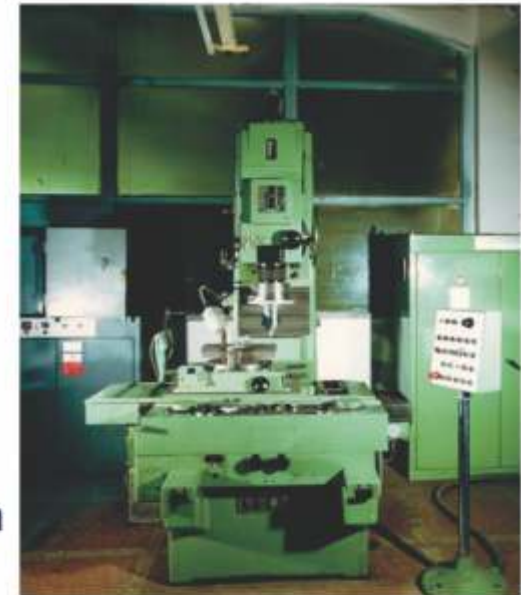
Steel pellets

62 HRC punch



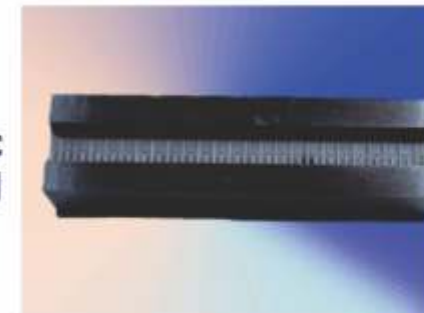
JIG GRINDING, LAYING-OUT AND BORING MACHINES

- accuracy 0.01 mm
- processing diameter 0.5 . . . 250 mm
- processing depth 90 mm max.
- hardness of parts to be processed 60 . . . 65 HRC
- grinding with diamond tools
- tool rotation speed
 - electric 6,000 . . . 80,000 rot/min
 - pneumatic 250,000 rot/min
- manufacture year 1992



Mould with sloped hole

Pellet for plastic injection mould



MILLING MACHINES WITH DIGITAL DISPLAY OF COORDINATES

- accuracy 0.01 mm
- maximal dimensions of the parts to be processed 600 x 400 x 400 mm
- speed of rotation 40 . . . 6,300 rot/min
- automatic feed 8 . . . 400 mm/min
- 1direction processing option
- processing options:
 - AA cylindrical surfaces
 - AA gears
- year of manufacture 1988



Part of the mould
for railway
inductors



Mould
support plate

DRILLING MACHINE WITH TUBULAR ELECTRODE *DRILL DB 703*

- tubular electrodes from Cu and Al
with diameter 0,5mm – 2mm
- stroke
x=300mm, y=200mm, z=200mm
- maximal weight of piece 30Kg
- accuracy 0,01mm
- manufacture year 2010



ELECTROMAGNETICA

QUALITY MANAGEMENT SYSTEM



ELECTROMAGNETICA has implemented the:

- ***Quality Management System according to ISO 9001:2015 standard***
- ***Environmental Management System according to EN ISO 14001:2015 standard.***
These Quality Systems are certified by AEROQ and apply in the field of « Design, development, production, marketing and service for: products intended for electricity distribution and measurement; electric power supply equipment; automotive relays and subassemblies; equipment and elements for automation; plastic injection moulds and cold formation tools; connecting equipment and elements meant for telecommunication network; telecommunication terminals and equipment; fine winding; metallic shelters and structures; electricity supply; mounting, commissioning, technical assistance and service for own products.»
- ***Other organizations that certified the Quality Management System:***
- AEROQ – OHSAS 18001:2008