



Foundry

FONDERIE MORA GAVARDO PRESENTATION



BUSINESS UNITS | FONDERIE MORA GAVARDO

With its 2 **production facilities** dedicated to the casting of iron and aluminum, Fonderie Mora Gavardo (FMG) is today a **supreme example of great production flexibility and quality excellence.**

Cast Iron Foundry

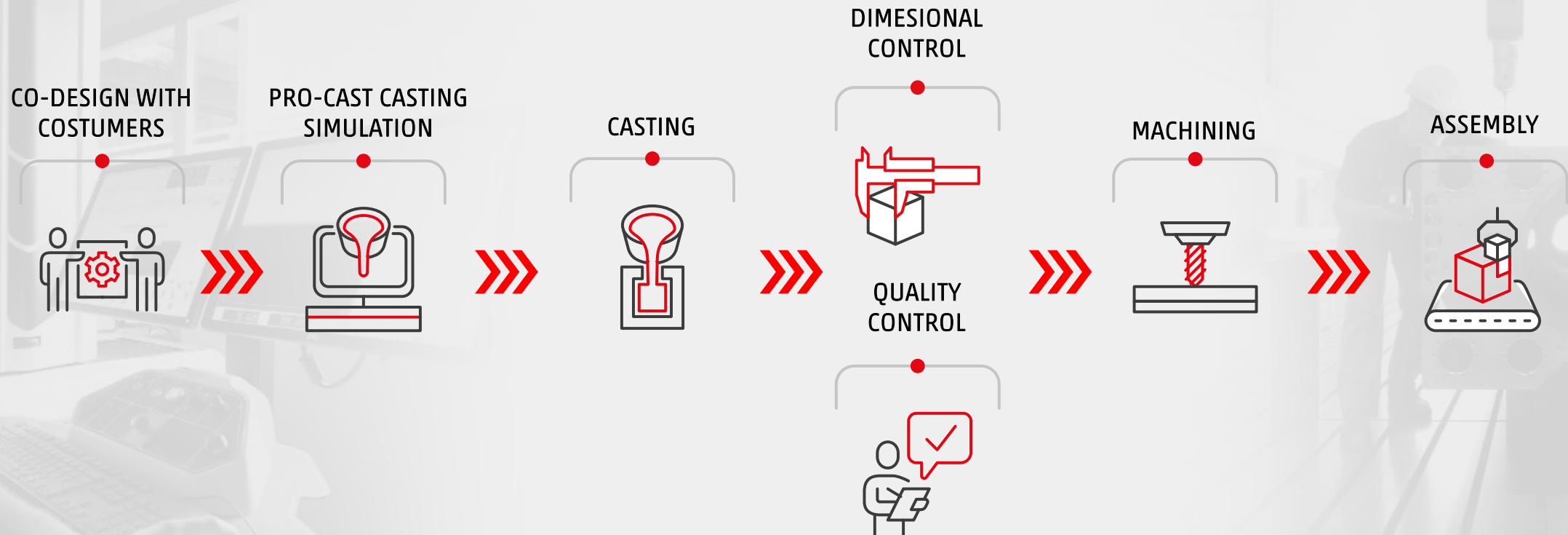


Aluminium Foundry



INTEGRATED FOUNDRY SOLUTIONS | FROM CASTING TO MACHINING

FMG's skills go far beyond the **knowledge of processes** to embrace the complete management of the production chain. The goal is to create added value for customers in every single phase, combining technology with **experience**.



MORA FOUNDRY | PROCESS CERTIFICATIONS



ISO 9001

Management System Certificate

Cast Iron Foundry - Business Unit
Aluminium Foundry - Business Unit



IATF 16949

Management System Certificate (Automotive)

Cast Iron Foundry - Business Unit
Aluminium Foundry - Business Unit



ISO 14001

Management System Certificate

Cast Iron Foundry - Business Unit
Aluminium Foundry - Business Unit



FROM CASTING TO MACHINING | ON-DEMAND SERVICE

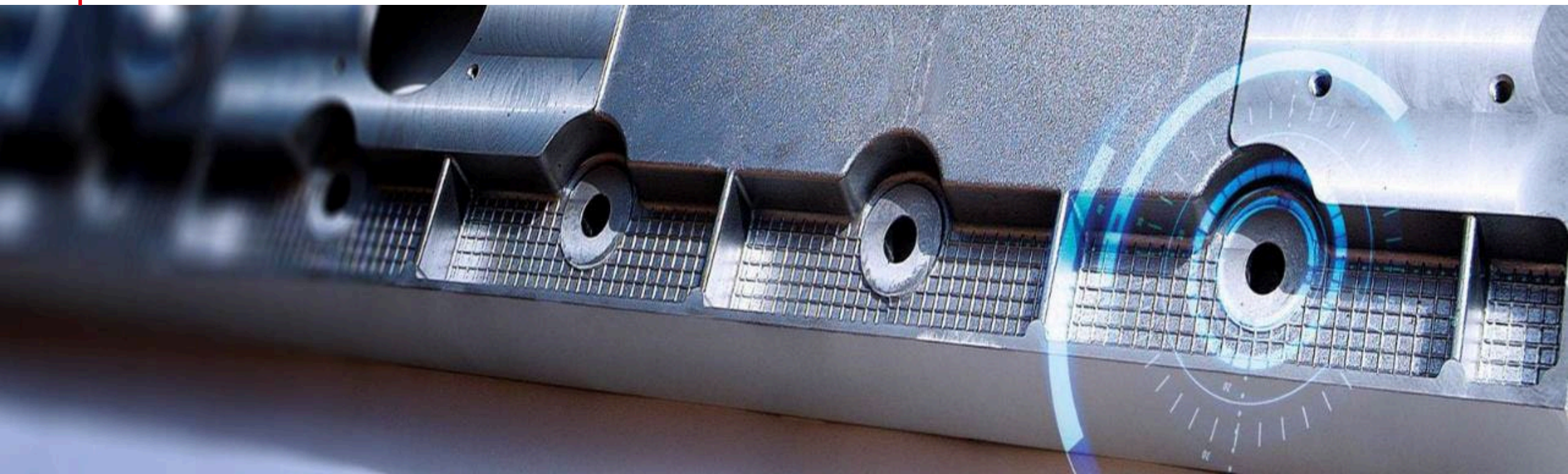
Collaborations with **Camozzi Group companies**, particularly **CAM Machining** and **Innse-Berardi**, enable **Mora Foundry** to deliver tailored solutions for machining projects of any size or weight, ranging from aluminum components weighing just a few grams to cast iron pieces weighing way above 100 tons. Mora Foundry, with the synergy of the Group, offers a **fully finished product**, managing every step **from casting to machining** in-house.





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FONDERIE MORA GAVARDO ALUMINIUM BUSINESS UNIT



FMG BUSINESS UNIT | ALUMINIUM FOUNDRY



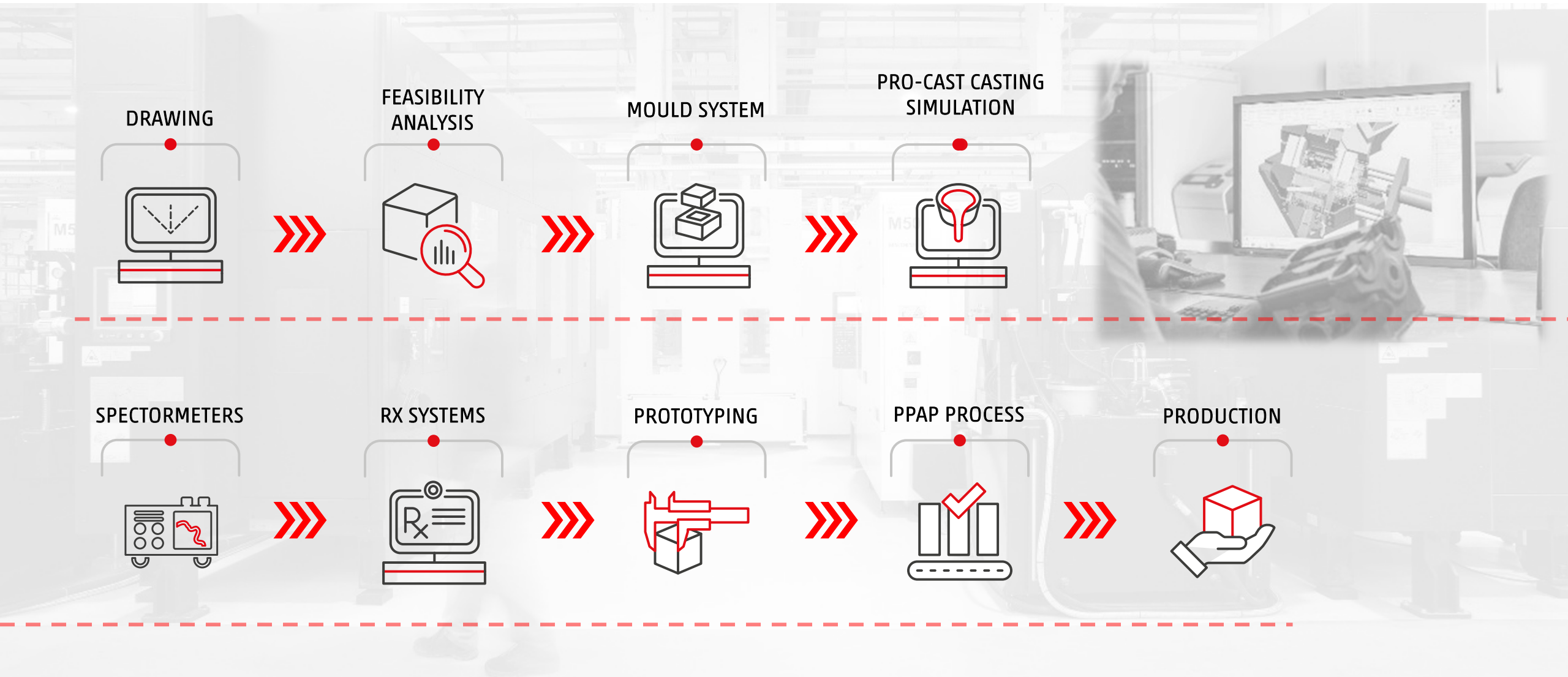
3.300 m²
Covered surface

500g /30 kg
Casting
production range

6.000 m²
Total area

1.200 tons/year
Production capacity

UNIQUE KNOW-HOW FOR A FULL SERVICE APPROACH



PRODUCTION TECHNOLOGIES | OUR PLANT CAPACITY

Control instruments

- nr. 1** XRAY GILARDONI control machine
- nr. 1** NGR quantometer
- nr. 1** COORD CMM
- nr. 1** Durometer
- nr. 1** FARO lavel scanner

Furnace centre

- nr. 5** Crucible melting furnaces

Foundry department

- nr. 8** Casting machines
(with opening from 1200 to 1600)
- nr. 4** Holding furnaces
(with different load capacities)

Mechanical department

- nr. 1** COMEV lathe machine
- nr. 1** C.B. FERRARI vertical workcentre
- nr. 1** IDRA MV850 vertical workcentre

Finishing department

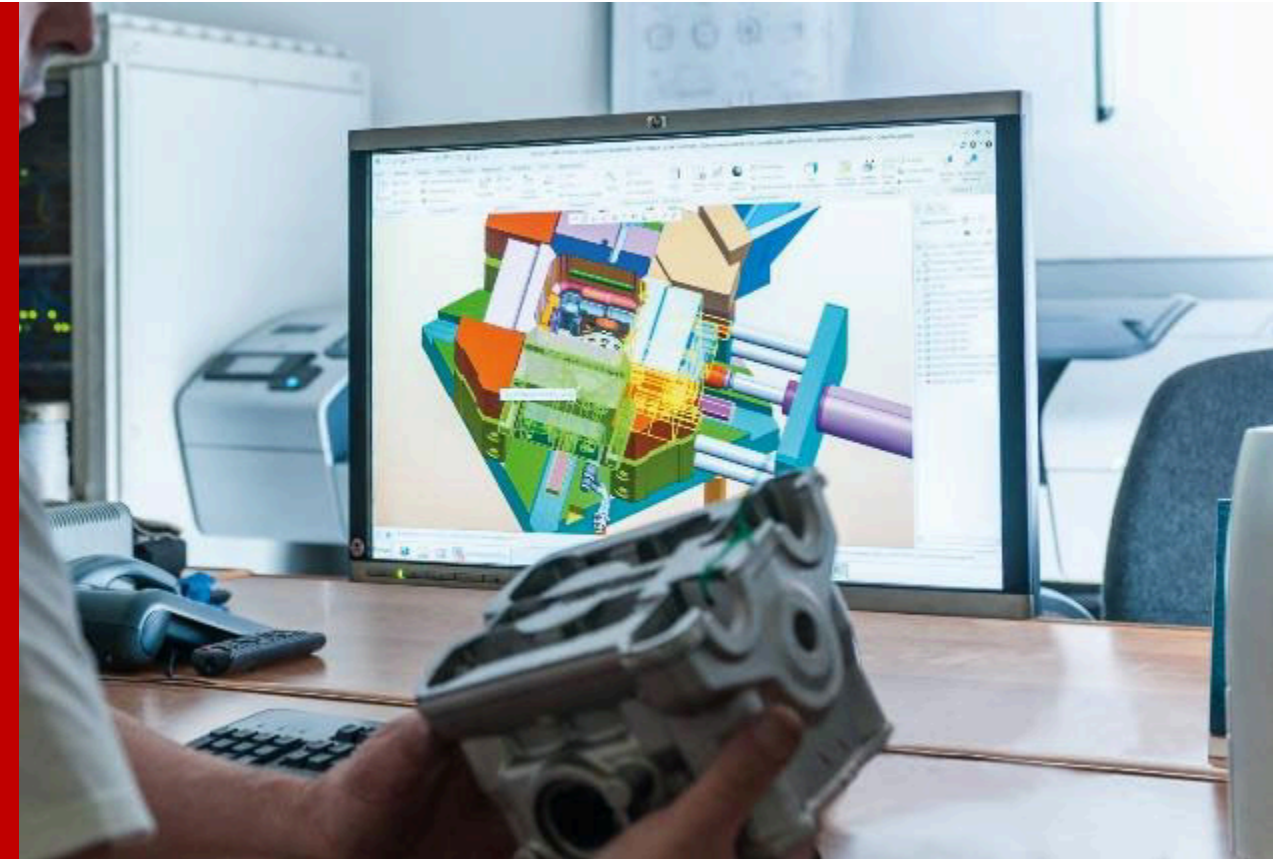
- nr. 2** Manual cutting machines
- nr. 2** Automatic cutting machines
- nr. 1** Fonsab shotblasting machine

HIGH QUALITY ALSO FOR COMPLEX GEOMETRIES

Manufactures aluminium items according to the client's drawings and specifications.

The dimensions of the die-casting machine, with a maximum opening **from 1200 to 1600 mm**, allow the production of components with a net **weight of up to 30 kg**.

Customer support in product development through the use of the **most advanced 3D design software (PRO-E) and simulation software (PRO-CAST)**.



5 FURNACE CENTRES

5 methane melting furnaces of different capacities allow the management of several alloys at the same time, ensuring a **high level of production**.

Once melted, the alloys are tapped and transferred to the degassing station and, after a compliance check, transferred to the holding furnaces.

**UP TO 7 DIFFERENT
ALUMINIUM ALLOYS**



FOUNDRY DEPARTMENT

The casting department has **4 holding furnaces** of different capacities and **8 automatic die casting machines** of various sizes.

A robotic arm picks predetermined amounts of material, which is automatically poured into the moulds.



BEYOND CASTING | SURFACE MACHINING, TREATMENTS AND FINISHES

The de-sanding operation takes place in a dedicated department using a high-frequency vibration system, in which **the sand is recovered for reuse.**



The raw pieces are transferred to the cutting and deburring department.

Here the casting sprues and casting burrs are removed at the various processing stations.

Sandblasting machines are installed in the finishing department for the surface treatment of pieces.

PRODUCTION UNDER CERTIFIED QUALITY SYSTEM

Throughout the production cycle, **visual and dimensional checks** are carried out on a sample basis to ensure full compliance of the pieces with the defined standards.

Laboratory equipped for **sophisticated metallurgical and dimensional controls**.

Structural checks of the fusions by means of RX appliances.



Quality system
According to AD
2000 Merkblatt W0 Sect. 3.3



MAIN SECTORS

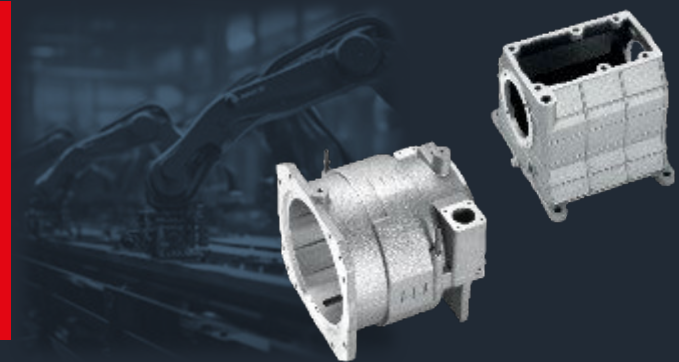
Automotive



Motorcycle



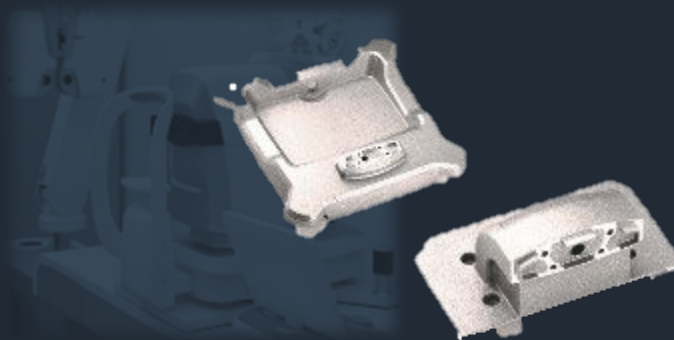
Industrial



Agricultural



Medical

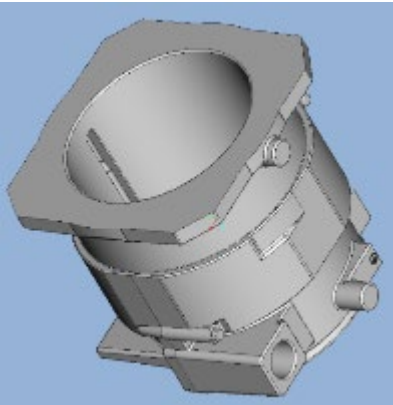


Naval



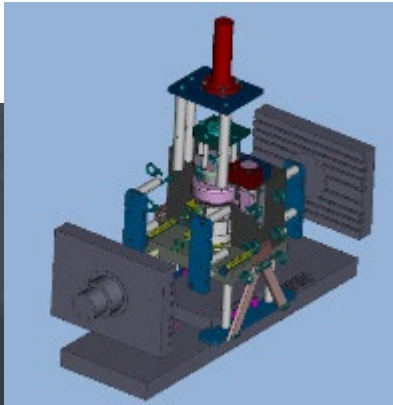
PROJECT STEPS

1.



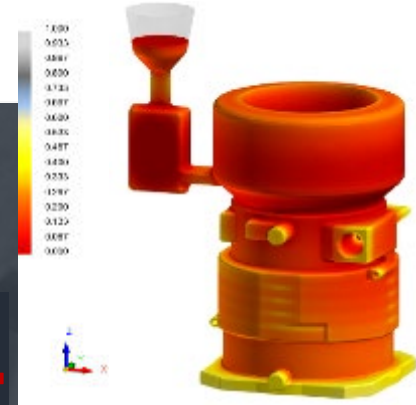
Feasibility Analysis

2.



Mould Engineering

3.



Casting Simulation

4.



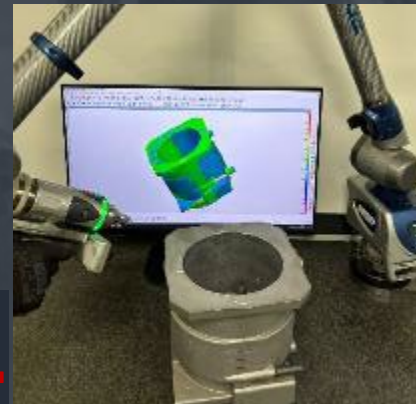
RX Systems

5.



Prototyping

6.



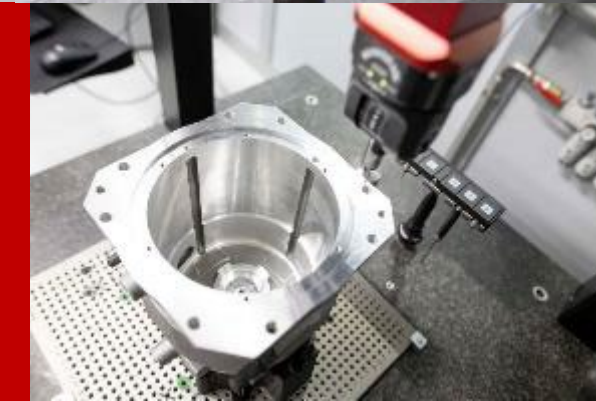
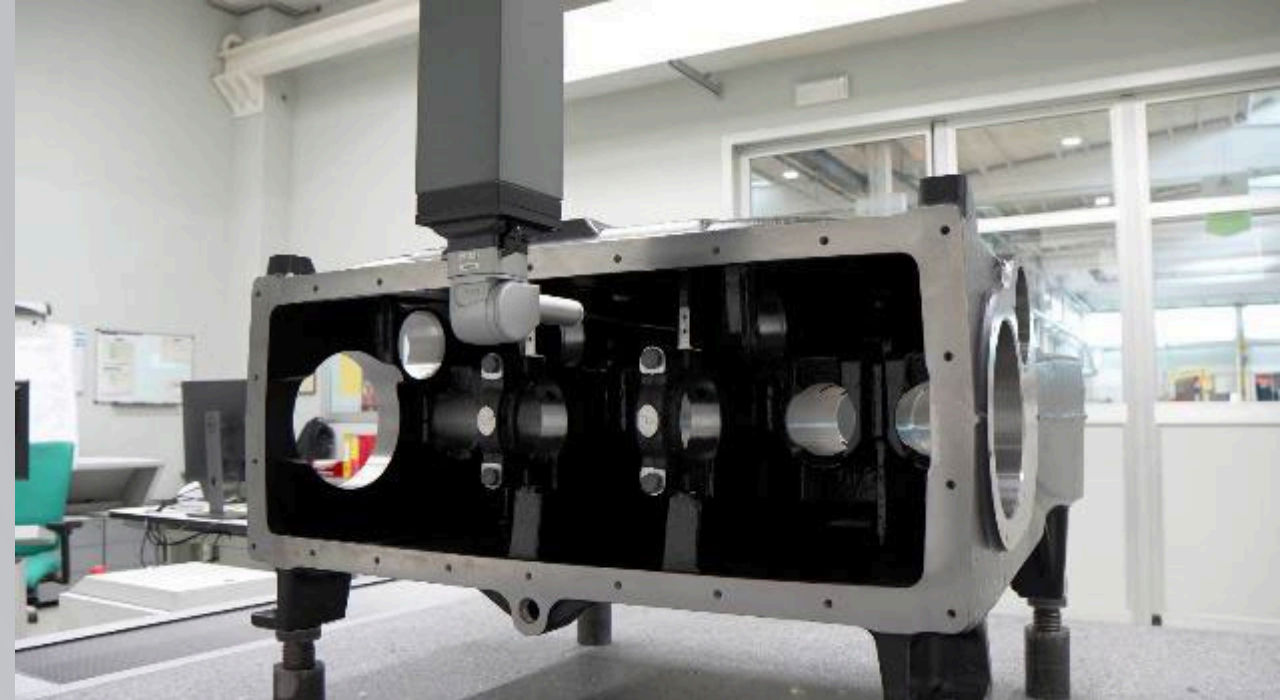
PPAP Process

TIME TO MARKET STANDARD

New Project: Starting from Co-Design to PPAP samples,
machined and tested **12 weeks**
Machined Item's Standard Lead Time **6 weeks**
Raw Item's Standard Lead Time

QUALITY STANDARD

Internal Scrap Ratio: **20.000 ppm**
Non Conformity Ratio : **4.500 ppm**





Foundry

FONDERIE MORA GAVARDO CAST IRON BUSINESS UNIT



FONDERIE MORA GAVARDO (FMG) | OUR NUMBERS



32.000 m²
Covered surface

20 kg / 120 tons
Casting
production range

1945
Foundation

60.000 m²
Total area

32.000 tons/year
Production capacity

CAST IRON FOUNDRY | PRODUCTS CERTIFICATIONS



**Cast Iron in Grey
and Spheroidal Graphite**
(max weight 60 tons)



**Cast Iron in Grey
and Spheroidal Graphite**
(pressure equipment)



**Cast Iron in Grey
and Spheroidal Graphite**
(max weight 80 tons)

"Q.G.S." n. A-138
ASSOFOND

Spheroidization process

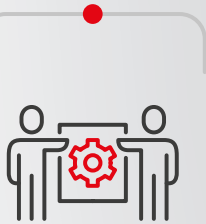


**Production of special spheroidal
and lamellar iron castings from
1kg to 120Tons (Naval)**



UNIQUE KNOW-HOW FOR A FULL SERVICE

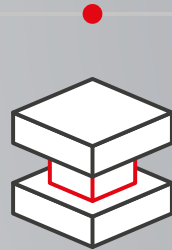
CO-DESIGN WITH
COSTUMERS



PRO-CAST CASTING
SIMULATION



MOULDING



CASTING



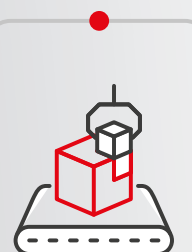
QUALITY
CONTROL



MACHINING



ASSEMBLY



CAST IRON GRADES

All Grades of mechanical and nodular iron

Grey cast iron

EN-GJL-150
EN-GJL-200
EN-GJL-250
EN-GJL-300
EN-GJL-350

Graphitic cast iron

EN-GJS-400
EN-GJS-500
EN-GJS-600
EN-GJS-700

Special cast iron

Si-Mo
Ni-Mo
(High-resistance)
Ni-Re
(Amagnetic)

MELTING AREA



5 INDUCTION FURNACES



55 tons



28 tons



5 tons



The furnaces are powered by:
30/3 KVA 20.000 Kw electrical cabin
underground and automatic transformer
booths and cooling systems

AUTOMATIC CORES PLANT

6 CORE MACHINES

From **2,5** lt to **100** lt.

Capacity machine for cold-box forming.



AUTOMATIC CASTING PLANT

The Automatic Casting **plant H1** guarantee **high repeatability and rigidity** of the moulds, ensuring the dimensional constancy of the pieces produced. The plant is equipped with a 'green sand' preparation system, in which temperature and humidity are kept under control in order to **maintain uniform cohesion and permeability** of the sand.

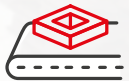
PLANT H1



Moulds: 1240x840mm (400+400)



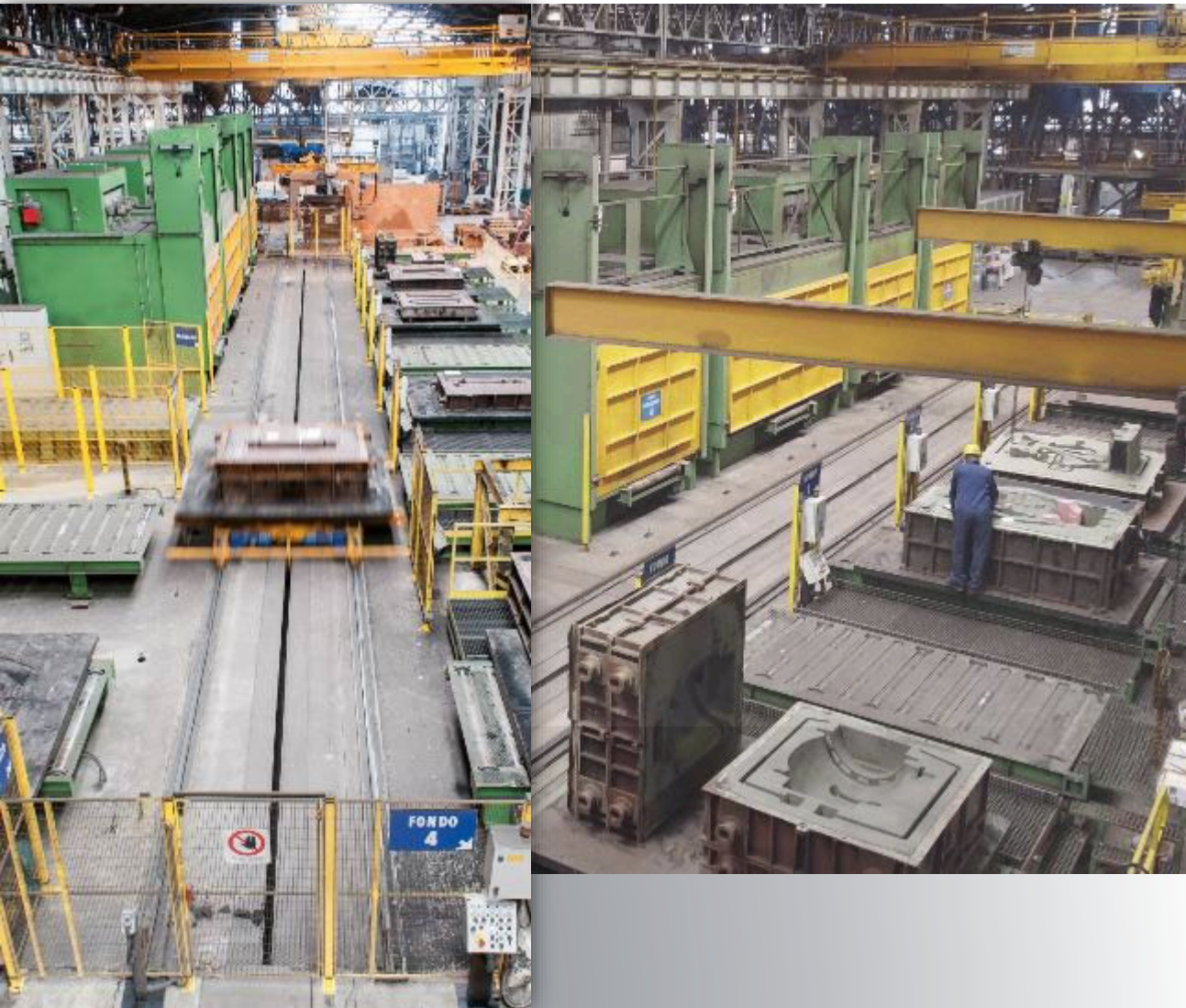
Casting: From 20 to 300 kg



Capacity: 75 mouldings/hour



SEMI - AUTOMATIC CASTING PLANTS



MOULDING PLANT FOR MOULDS

- Capacity: from 1300 x 1300 mm to 3000 x 2500 mm
- Chemical moulding from 300 to 8000 kg
- No.1 Mixer 36/60 Ton/h

DRYING FURNACES FOR MOULDS

- Capacity: up to a dimension of 4000 x 3000 mm

MOULDING PLANT FOR CORES

- nr.1 Mixer 18/25 Ton/h

DRYING FURNACES FOR CORES

- Capacity: up to a dimension of 1800 x 2000 mm

LESS IMPACT | MORE SUSTAINABILITY

Particular attention was paid to long-term **sustainability**.

In the finishing phase, water-based refractory coatings are used for coating the molds, which, in addition to **reducing the impact in environmental terms**, guarantees a better quality of casting after drying in the oven.



LARGE MANUAL CASTING PLANT



Big pit hand moulding plant:

- castings from 5 tons to 120 tons

Pit dimension:

- 90x7xh5,5 m

1 mixer:

- 60 ton/h – 10,5m arm lenght

Max dimension:

- 17000 x 6000 mm (foundry bracket)

Double level overhead bridge-cranes:

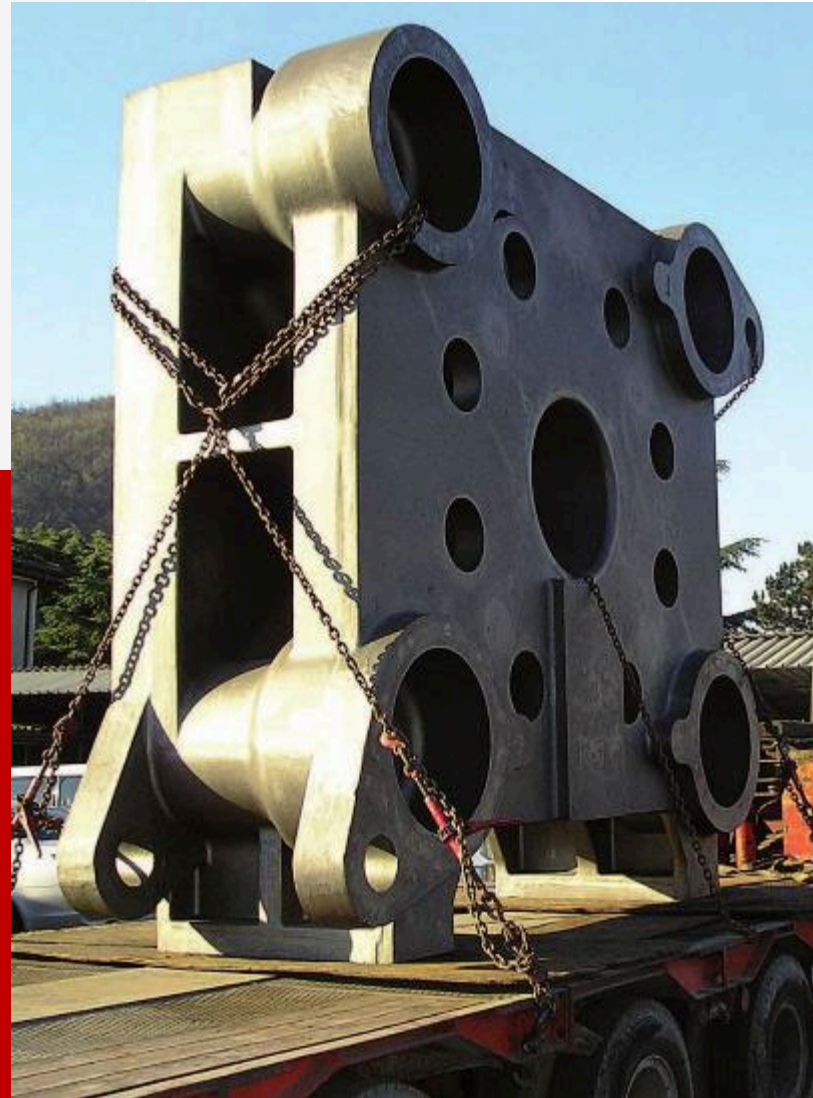
- 120 tons cad

LARGE MANUAL CASTING PLANT

Sand and resin rabble car for large-sized moulds and cores

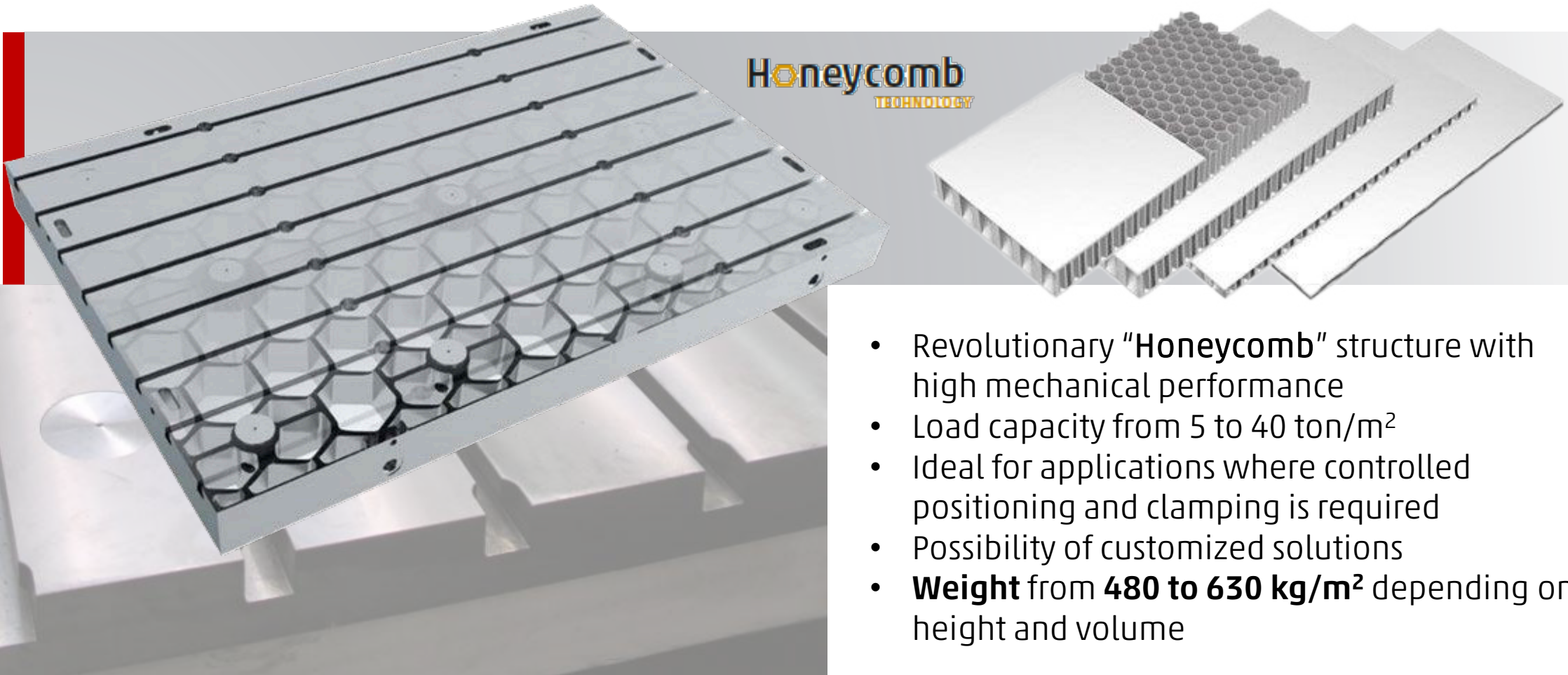
Blasting robot for castings cleaning (dim.18x10x12m)

Heat treatment furnace for large castings



HONEYCOMB TECHNOLOGY: CAST IRON WORK SURFACES

In collaboration with **the Camozzi Research Centre**, FMG has developed work surfaces with a "honeycomb" structure able to **satisfy the widest mechanical requirements** in the clamping technology field.

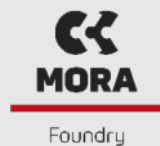


QUALITY CONTROL TO THE MOST DEMANDING STANDARDS



- ✓ **Tailored quality plans** and **radiometric material checks** on entry.
- ✓ Full-suite in-house lab: **NDT, metallurgical analysis, 3D laser scanning.**
- ✓ Chemical, metallographic analyses, and FMEA for **proactive quality assurance.**
- ✓ **Ongoing casting evaluation** against 3D models.

Thank you



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