# Product Portfolio

# **Production Plant: ITALY**

ENGINEERING and CONSTRUCTION, R&D, SERVICE and AFTERSALE

IMR E&T s.r.l.

Via Riva Rossa 8, 34076 – Romans d'Isonzo (GO) – ITALY

JAN 2023

• *IMR* was founded in 1959 an it is known as leading supplier of high-quality machines and services for the casting of copper based alloys.

- ✓ 1960: 1st GRAVITY DIE-CASTING MACHINE installed
- 1980: LOW-PRESSURE PROCESS PROJECT STARTS
- ✓ 1982: 1st LOW-PRESSURE DIE-CASTING MACHINE installed

• Through the years an extensive experience has been acquired world-wide through its supply of machinery and complete plants.

• As the industry progresses, so does **R&D** became the creative thinking at *IMR*, so as to bring the most up to date technology to our Customers.

SINCE 1959	SUPPLIED WORLDWIDE		
CUSTOMERS	614		









## **FINISHED PRODUCTS**







• FAUCETS

#### • WATER-METERS

• VALVES





## **CORE-BLOWER Machines**





TECHNICAL DATA	FA 2.5 P	FA 3.0 P	FA 3.0 E	FA 5.0 H	FA 6.0 E
Max. size of core boxes [L x W x H]	400 x 250 x 200	400 x 300 x 200	420 x 300 x 200	500 x 300 x 220	650 x 400 x 320
Max. weight of core boxes [Kg]	100	100	100	150	300
Max. closing force [N]	4300	6000	6000	9600	15000
Dry Cycle time [s]	15	15	10÷12	12÷15	12
Sand cylinder capacity [L]	2,5	3,0	3,5	5,0	9,0
Sand container capacity [L]	25	35	35	55	60
Movements	PNEUMATIC	PNEUMATIC		HYDRAULIC	
Core-boxes Fast-changing Sys.	NO	YES	YES	YES	YES



### FA 2.5 P – Automatic Core-Blowing machine with pneumatic movements

- □ Production of small/medium size sand-cores
- Hot-box Process
- **2.5** I shoot capacity
- □ Pneumatically driven
- □ PLC Control Unit (Siemens) and 7" touch-screen control
- Core-boxes heating controlled by 2 indipendent thermocouples / regulators
- Chromed sliding rounded rails and protected by bronze bushing
- Automatic discharge of sand cores on conveyor belt by core-box tilting
- Blowing head cooled by water cooling system
- □ Adjustable blowing head for multiple core-boxes design
- $\hfill \Box$  Automatic metal core heated and controlled by
  - thermoregulator



#### FA 3.0 P – Automatic Core-Blowing machine with pneumatic movements

□ Production of small/medium size sand-cores and small cores in

#### multi-cavity core-box

- Hot-box Process or convertible in Shell upon request
- □ 3.0 I shoot capacity
- □ Pneumatically driven
- □ PLC Control Unit (Siemens) and 7" touch-screen control
- Core-boxes heating controlled by 2 indipendent thermocouples / regulators
- Chromed sliding rounded rails and protected by bronze bushing
- Automatic discharge of sand cores on conveyor belt by core-box tilting
- Blowing head cooled by water cooling system
- $\hfill \hfill \mathsf{Adjustable}$  blowing head for multiple core-boxes design
- Automatic metal core heated and controlled by thermoregulator
- Core-boxes fast-changing-system (supporting arms front opening)
- Predisposed for movable hopper for sand charging at operator



#### HOPPER SYSTEM FOR SAND CHARGING





#### FA 3.0 E – Automatic Core-Blowing machine with electrical movements

□ Production of small/medium size sand-cores and small cores in multi-cavity core-box

□ Hot-box Process or convertible in Shell upon request

□ 3.0 I shoot capacity

**ALL ELECTRICAL DRIVEN thanks to high speed servomotors and high torque gearboxes** 

for higher Production yield (thanks to finest closings and precisions)

Rotary movements are performed by Siemens brushless gear motors
 Linear movements are performed by Siemens brushless linear actuators

- $\square$  Energy recovery system during the braking phase of the movement
- $\Box$  All electric motors are certified with IP65 degree of protection
- □ All gearboxes are guaranteed for millions of cycles
- □ Adjustable core-box closing stroke and speed
- Electric heating with independent P.I.D. temperature control (each plate)
- □ Automatic cores discharge onto conveyor belt
- □ Blowing system with adjustable pressure and water cooled blowing head
- Automatic drawer for vertical metal core, heated with thermoregulator
- Core-boxes fast changing system (in frontal position to the operator)
- □ Pre-arranged for teleservice and SPC (Statistical Process Control)



efficient

ecologic

electric

Siemens PLC Control Unit (S7-1200) and 7" touch screen operator panel This document may contain privileged or confidential information and should not be copied, distributed or reproduced in whole or in part, nor passed to any third party



#### FA 5.0 H – Automatic Core-Blowing machine with hydraulic movements

□ Production of medium/large size sand-cores and cores in multi-

#### cavity core-box

- Hot-box Process or convertible in Shell upon request
- **5.0** I shoot capacity

#### **Hydaulically driven**

- □ PLC Control Unit (Siemens) and 7" touch-screen control
- Core-boxes heating controlled by 2 indipendent thermocouples / regulators
- Chromed sliding rounded rails and protected by bronze bushing
- Automatic discharge of sand cores on conveyor belt by core-box tilting
- Blowing head cooled by water cooling system
- Adjustable blowing head for multiple core-boxes design
- Automatic metal core heated and controlled by thermoregulator
- Core-boxes fast-changing-system (supporting arms front opening)











#### FA 6.0 E – Automatic Core-Blowing machine with electrical movements



□ Production of medium/large size sand-cores and large sizes cores in

multi-cavity core-box (i.e. 2 x 190mm watermeters, alligned)

- Hot-box Process or convertible in Shell upon request
- **9.0 I shoot capacity**
- **ALL ELECTRICAL DRIVEN thanks to high speed servomotors and**

high torque gearboxes (for higher Production yield thanks to finest closings and precisions)

- □ PLC Control Unit (Siemens) and 7" touch-screen control
- Core-boxes heating controlled by 2 indipendent

thermocouples / regulators

- Chromed sliding rounded rails and protected by bronze bushing
- Blowing head cooled by water cooling system
- Automatic discharge of sand cores on conveyor belt by core-box tilting
- Adjustable blowing head for multiple core-boxes design
- □ Automatic metal core heated and controlled by thermoregulator
- Core-boxes leveling system (brushless elevator) and accessibility for

#### easy core-boxe changing





## **REFERENCE LIST (CORE-BLOWER machines)**







# **INDUCTION FURNACES**





TECHNICAL DATA	B3R 125 (B3R 125 L)	B3R 160
STANDARD basin capacity [Kg]	1050	2000
W type: ENLARGED basin capacity [Kg]	<mark>1500</mark>	<mark>2500</mark>
Output rate [Kg/h]	410	600
Active power at max. position [kW]	125	160
Apparent power [kVA]	150	200
Cos $\Phi$ power factor	0,95	0,95
Main voltage / frequency [V/Hz]	400 / 50	400 / 50
Rectifier capacitor for power factor correction [kVar]	160	240



#### B3R 125 H/160 H – Induction Furnaces

□ One basin for melting and one for holding

Cleaner molten thanks to the selected flow of the induction currents



- 3 thermocouples (both in the molten, in the refractory basin and at the coils air cooling system for a precise temperature control system
- PLC Control Unit (Siemens) and 7" touch-screen control
- **P.I.D.** proportional optimized melting control
- □ Availability of Thyristore powering







## **GRAVITY DIE-CASTING Machines**

• C 50 H • C 60 H • C 60 XR



TECHNICAL DATA	С 50 Н	С 60 Н	C 60 X / XR
Max. die dimensions [mm]	Ø 500	Ø 600	Ø 600
Max. die weight [Kg]	150	200	200
Max. distance between die-supporting flanges [mm]	504	698	698
Max. closing force [N]	6600	12000	12000
Max. opening force [N]	9600	15000	15000
Dry Cycle time [s]	11	14	14
Inclination for side / front pouring [°]	0 ÷ 90 / 0 ÷ 90(180)	0 ÷ 90 / 0 ÷ 90(180)	0 ÷ 90 / 0 ÷ 90(180)
Dipping tank capacity [L]	2 x 600	2 x 600	2 x 600
NOTES:	STANDARD PROCESS	STANDARD PROCESS	SPECIAL APPLICATIONS



### C 50 H – Gravity die-casting machine

- Dies up to dia. 500mm and 150 kg
- □ Frontal and side pouring (manual or automatic)
- Dipping angle presetting
- Die rotation in dipping tanks while submerged
- □ Frontal positioning of dies for assembling and cleaning
- Bench tilting and die closing adjustable for different die types
- Sturdy design with all vital components installed in both accessible and protected positions
- Emergency pushbotton for die opening and pourings counter
- NEW PLC Control Unit (Siemens) and 7" touch-screen
  control CONFIGURABLE BY THE END USER (i.e. according to tailor made casting methods and Productions).





#### C 60 H – Gravity die-casting machine

#### Dies up to dia. 600mm and 200 kg

- □ Frontal and side pouring (manual or automatic)
- Dipping angle presetting
- Die rotation in dipping tanks while submerged
- □ Frontal positioning of dies for assembling and cleaning
- Bench tilting and die closing adjustable for different die types
- Sturdy design with all vital components installed in both accessible and protected positions
- Emergency pushbotton for die opening and pourings counter
- NEW PLC Control Unit (Siemens) and 7" touch-screen control
  CONFIGURABLE BY THE END USER (i.e. according to tailor made casting methods and Productions).





## C 60 X / XR – Gravity / Rotative die-casting machine

Same features and characteristics of C 60 X with adding of:

**Tools for SPECIAL APPLICATIONS** (i.e. mechanical products, bronzes, particular shapes with metal cores, etc).

**90° rotation to have 2 machines work coupled from a common furnace** 



## **REFERENCE LIST (GRAVITY DIE-CASTING machines)**











# **LOW-PRESSURE DIE-CASTING Plants**

# BPC 155/160 H BPC H BPC E SERVED BY • TR CNV (OPTIONAL)



TECHNICAL DATA	BPC 155 H	BPC 160 H	BPC H	BPC E
Max. die dimensions [mm]	Ø 500	Ø 600	Ø 600	Ø 600
Max. die thickness [mm]	100+100	100+100	100+100	110+110
Max. die weight [Kg]	150	200	200	250
Max. distance between die-supporting flanges [mm]	504	698	504	598
Max. closing force [N]	8000	12000	12000	15000
Max. opening force [N]	11500	15000	15000	15000
Induction Furnace capacity [kW]	125	160	125 – 160 – 70 (crucible)	125 – 160 – 70 (crucible)
FURNACE INSTALLATION	MOVABLE	MOVABLE	FIXED	FIXED
MOVEMENTS	HYDRAULIC	HYDRAULIC	HYDRAULIC	



#### **BPC 155 H and BPC 160 H – Compact low-pressure DC Plant with hydraulic movements**

- Compact machine and modularly designed
- Plug & Play concept
- **On-board electric and power-control panel**
- One operator to work the Plant
- Single manipulator hydraulically driven for multi-impression dies up to dia. 500mm (BP/C 155H) or 600mm (BP/C 160H)



- Pressurized 3-phases LIFTABLE low frequency channel Induction Furnace - 125 kW (BP/C 155H) or 160 kW (BP/C 160H)
   PLC Control Unit (Siemens) and 17" touchscreen control
- Predisposed for automatic ingot and sprue charging











### BPC H – Compact low-pressure DC Plant with hyd. movements, fixed & changeable furnace

- Compact machine and modularly designed
- Plug & Play concept
- **On-board electric and power-control panel**
- One operator to work the Plant
- Single MANIPULATOR LIFTABLE ON GUIDES (for a perfect coupling on
  - furnace), hydraulically driven for multi-impression dies up to dia. 600mm





- Pressurized 3-phases FIXED low frequency channel Induction Furnace
  Available with 125 kW, 160 kW, or 70 kW Crucible type (i.e. for Bronzes or Zamak) with CAPABILITY TO CHANGE FURNACE AFTER INSTALLATION (i.e. following Production increasing/changing)
   PLC Control Unit (Siemens) and 17" touch-screen control
- Automatic cassting discharging INCLUDED
- $\hfill\square$  Predisposed for automatic ingot and sprue charging





#### **BPC E – Compact Low-pressure DC plant with electrical movements**

- Fully electical die-casting Plant (set-up is done completelly electronically)
  HIGHLY REDUCED MAINTENANCE by the complete replacement of the oil-circuits by electronic mechanisms INTEGRATED WITH A DIAGNOSTIC AND TROUBLE SHOOTING SOFTWARE
- Compact machine, modularly designed, Plug & Play concept
- One operator to work the Plant

conveyor

- On board PLC Unit (iMR/Siemens) and power-control panel with 17" touch-screen control - SPC
- Smooth and precise movements thanks to the sturdy construction coupled with state-of-the-art servomotors and precision high torque gearboxes
- □ 11 reduction gearboxes of which six are of the Zero Backlash type with trochoidal type movement and lubricated for life
- □ Single manipulator for multi-impression dies up to 600mm.
- Available with 125 kW, 160 kW, or 70 kW Crucible type (i.e. for Bronzes or Zamak) with CAPABILITY TO CHANGE FURNACE AFTER INSTALLATION (i.e. following Production increasing/changing)
- □ Torque control and measurement for each motor, as the positional accuracy on all movements made (Absolute Proximity Position)
- □ Predisposed for automatic ingot and sprue charging, double conveyor belts and three-levels casting cooling







#### **TR CNV – Automatic Sprue Cutting CNC machine**

- □ Suitable for cutting brass, aluminum, and zinc alloys
- Designed for ergonomic loading and unloading operations with high safety standards and easy blade changeover system
- □ Available both in single (TR1CNV) or coupled configuration (TR2CNV)
- □ High performance bandsaw sprue cutting machine CNC controlled
- □ Equipped with Sinumerik One CNC-system from Siemens
- □ Auto learning in ISO language or CAD-CAM programming
- □ All Siemens electric motors
- □ Able to perform curved cuts
- Compatible with blade sizes 27 x 0.9 mm and/or 34 x 1.1 mm blade
- Capable of handling pieces up to 15 kg and inscribed in circumference up to 600 mm in diameter
- $\hfill\square$  Sprues and chips collection system to reduce machine cleaning time
- $\hfill \square$  Fully compatible with loading and unloading robots







#### **REFERENCE LIST (LOW-PRESSURE DIE-CASTING machines & Plants)**





#### ON-LINE SERVICE AND PROMPT AFTERSALE





#### **OUR IN-HOUSE WORKSHOP FACILITIES**





### We thank you for your kind attention



### **ALL IN-HOME:** from the Idea to the Construction through the Design and testing (even tailormade)