



For the production of complex, net-shaped components of

- *ceramics*
- *metals*
- *intermetallics*

Medium Pressure Injection Moulding Machine

GOCERAM Medium Pressure Injection Moulding (MPIM) machines are designed for moulding of ceramic, metal and intermetallic (tungsten carbide) feedstocks, primarily using wax-based binders. The machines are compact, flexible and service friendly and are constructed for durable large scale, fully automatic production, as well as for short series in semi-automatic or manual mode. There are two injection directions, either horizontal or vertical, of which the latter is suitable for the manufacture of prototypes, preceding large volume output in horizontal mode. The GC-MPIM-2-M(A) is an essential unit of a complete, cost-effective, production line for complex, net-shaped components of the materials listed above.

CIModule®

Both GC-MPIM-2 and GC-MPIM-3 are equipped with a unique Compact Injection moulding Module - CIModule® - in which the feedstock is kept. It consists of the pressure chamber, the injection piston and the hopper - all made of stainless steel. The module is designed to be easy to clean and rapidly interchangeable (requires about 5 min). The versatile

CIModule® can, in addition to the wax system, be used for other binder concepts, for instance gel-casting or freeze forming.



Mode of operation

In the standard version of the MPIM Machines, the feedstock is injected into the mould by a pneumatic piston - a simple, reliable and robust system. As an option, the machines can be equipped with an electrical servo-motor with digital, high precision motion control including a supervising PC. In this case injections with different rate profiles can be run in order to perfectly adapt the injection cycle

to a certain mould and/or feedstock.

Tooling

Because of the moderate injection pressure, the tooling cost is low. The moulds can be produced of not only steel but also of more easy-to-machine metals such as aluminium and brass. In addition even plastics, preferably with heat conductive additives, can be used.

Options

Fully automatic operation with a pick-up device

PC-controlled electrical servo-motor with digital motion control

Pressure gauge in the CIModule® with digital display unit

Extra CIModule® (including pressure chamber, piston and hopper), from 35 to 300 ccm in one stroke

Mould tool with glass window for testing

Custom-built MPIM Machines according to specific requirements

Technical Data

GC-MPIM-2

GC-MPIM-3

GC-MPIM-2-MA, GC-MPIM-3-MA		Injection by pneumatic cylinder, Automatic and Manual mode
GC-MPIM-2-M(A), GC-MPIM-3-M(A)		Injection by pneumatic cylinder, Manual mode (prepared for Automatic mode)
GC-MPIM-2-MA-X, GC-MPIM-3-MA-X		Injection by servo-motor, Automatic and Manual mode
Operation temperature		RT - 120°C
Injection pressure		0 - 50 bar
Mould cavity volume		
CIModule® 35	GC-MPIM-2	0.005 - 35 ccm
CIModule® 100	"	0.010 - 100 ccm
CIModule® 200	GC-MPIM-3	0.020 - 200 ccm
CIModule® 300	"	0.030 - 300 ccm
Injection rate		
CIModule® 35	GC-MPIM-2	0.1 - 20 ccm/s
CIModule® 100	"	0.3 - 60 ccm/s
CIModule® 200	GC-MPIM-3	0.4 - 100 ccm/s
CIModule® 300	"	0.6 - 150 ccm/s
Injection time		0.6 s - 60 min
Production rate		up to 360 cycles/hour (one cavity tool)
Hopper volume		1.25 l (GC-MPIM-2), 3.0 l (GC-MPIM-3)
Dimensions (wxdxh)		90x80x80 cm ³ (GC-MPIM-2), 110x100x100 cm ³ (GC-MPIM-3)
Weight, approx.		150 kg (GC-MPIM-2), 220 kg (GC-MPIM-3)
Mains connection		230 V 5%, 50-60 Hz, 1-phase, max. 2000 W
Pressurised air supply		3-12 bar

Specifications subject to change

CE-mark

The GC-MPIM-2-MA and GC-MPIM-2-M(A) conform to the regulation stipulated by the European Community for CE-marking.

About GOCERAM

GOCERAM has long experience of net shape forming of ceramic and metal powder based components, especially utilising injection moulding. GOCERAM supplies complete production lines for injection moulding, including roll mills, drying ovens, mixers*, medium pressure injection moulding machines*, automatic mould tools*, debinding furnaces*, with or without weight-loss rate control, and special sintering furnaces*. In addition, a know-how package is offered for rapid start up of the production.

*Equipment designed and manufactured by GOCERAM

GOCERAM also carries out test runs of a specific material and mould according to the client's wishes, on contract basis. Another service is prototype development and test production of a variety of components.

Please contact GOCERAM or its representatives for further information.

The picture shows a selection of ceramic, metal and tungsten carbide components manufactured by the GOCERAM route.



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