

COMBIMOULD MacroPower Multi-component 400 – 1000 t



MacroPower MC – The flexible large-scale machine
Technology working for you.

Battenfeld
world of innovation

Special features of the MacroPower multi-component series

COMBIMOULD – extra functionality and more scope for design

COMBIMOULD is the multi-component technology from WITTMANN BATTENFELD. Multi-component technology offers every possible solution to meet the market's more and more stringent demands in terms of design and functionality of plastic parts, and ensures optimal product coordination through a great diversity in process variants.

Based on the MacroPower model with 2-platen technology, the MacroPower multi-component series comes with a wide range of options and an

extensive choice of different combinations, thus offering the right package for every multi-component technology. In this way the machine, mold and automation technologies can be optimally adapted to each individual product.

The WITTMANN BATTENFELD know-how covers all process variants, such as multi-color, 2-component, assembly, multi-component and sandwich injection molding.



Hard-soft combinations and overmolded sealing components

The use of thermoplastic elastomers allows direct overmolding of sealing components. Moreover, the surface touch can be improved by adding a soft component. Thus handles can be given a soft touch effect. A prerequisite for such

applications is a material combination with high bonding strength. The bonding strength can be increased by mechanical anchoring. Multi-component technology is also frequently used in LIM processes (liquid silicon processing).

Multi-color injection molding

Several parts made of the same material but in different colors are combined into one component. Classic examples are multi-colored bottle cases with soft-handles and the frames for flat screens (LED TV sets, computers, laptops etc.) with piano finish effect. Modern design also

requires more than one color. Multi-colored products are in demand especially in the world of children's toys. Multi-color injection molding improves the appearance of parts with guaranteed colorfastness



Photo: courtesy of Haidlmair GmbH

In-Mould-Assembling und Montage-Spritzgießen



Parts consisting of two halves can be joined together directly in the mold. To make this two-component oil closure, its two halves are injected in separate stations with the help of cube molds, then, following rotation, brought together in the 3rd station by closing the mold.

But jointed connections can also be injected in one production step. Non-adhesive materials are chosen for this purpose. Ball joints and hinges can easily be formed in this way.

Sandwich injection molding

With two independent injection units, two materials are injected one after the other into a conventional mold through a specially designed nozzle. The result is a so-called sandwich structure, normally in three layers, i.e. one core and two surface layers. The core can be foamed or reinforced, thus improving the mechanical properties of the product. Or cost advantages may be achieved by using reclaim material to produce the core. The surface layers made of high-grade materials provide the

desired surface quality. A special two-channel nozzle head connecting two injection units with each other is used, which allows separate opening and closing of the two channels, so that the injection process can be optimally coordinated. Moreover, standard multi-component machines can easily be retrofitted for sandwich applications by simply inserting an adaptive sandwich platen between the mold and the fixed platen.



Rotation unit on the moving platen

The optional, adaptive rotation unit comes with a servo-electric drive and is laid out for a rotation angle of $\pm 180^\circ$ as standard. In addition, it is characterized by extremely low installation height, high dynamics, flexibility, safety and gentle treatment of the mold.

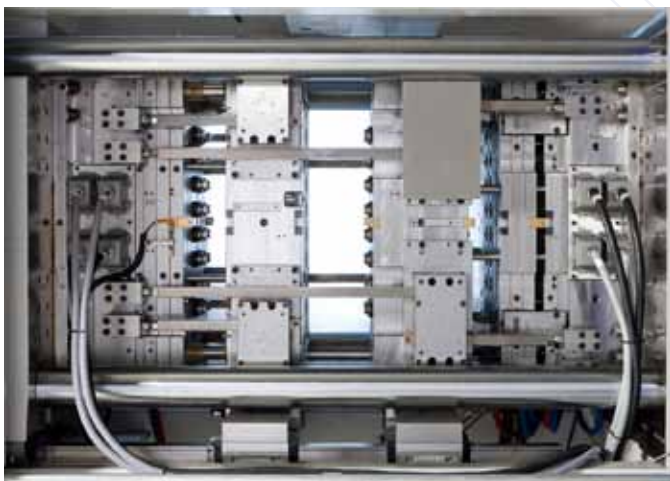
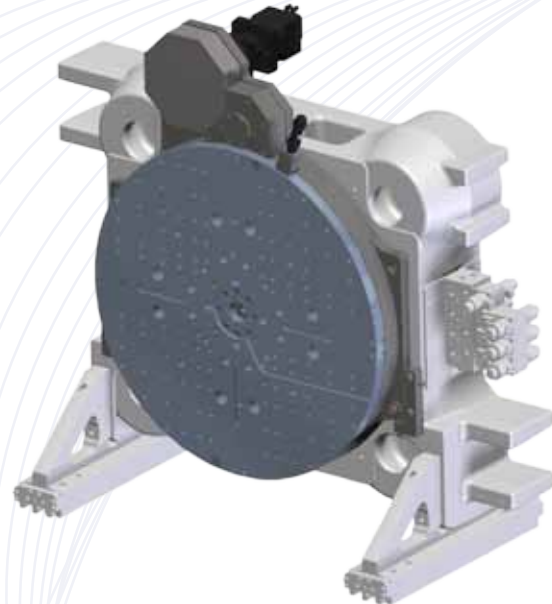
The servo-electric drive generates high dynamics, which enables minimal rotation times and parallel movements, with the result of shorter cycle times.

A high degree of flexibility is achieved thanks to easy installation and removal of the rotation unit. If necessary, the unit can be deactivated via the control system. This keeps changeover times short.

Safety and gentle treatment of the mold are ensured by a dampened end position control and an indexing device.

Extension of the standard version by various options

- 3-station (120°) or 4-station (90°) processes
- Additional media circuits
- Individual ejector positions
- Magnetic clamping plate



Horizontal rotary technology

In cube technology, a central part of the mold is rotated horizontally following mold opening.

The rotation unit can either be a part of the mold or provided as an adaptive rotary device between the machine's platens.

The injection units are positioned opposite each other on the two platens of the machine (B configuration) and allow parallel injection into the respective levels.

This technology offers the following benefits:

- Integration of insertion, parts removal and assembly processes parallel to injection.
- Easy production of multi-component parts with large surfaces.
- A smaller machine size can be used than is possible with standard rotation units mounted on the moving platen.

Injection units

Configuration of injection units

The *MacroPower MC* offers a choice of V, S and L configurations as standard. Special configurations, such as the B or H-H configuration, are available upon request.



V configuration

Injection from above, also into the mold parting line

- Generous adjustment range.
- Sliding unit with linear guides.
- Easy horizontal adjustment.
- Excellent access to the nozzle.
- Complete V aggregate can be moved back to provide an absolutely free mold space.

S configuration

Slanted above horizontal injection unit

- Compact machine design.
- Small footprint.
- S and H aggregates can be moved independently.
- Independent, adjustable, torque-free nozzle contact pressure.
- Excellent access to the nozzle.



L configuration

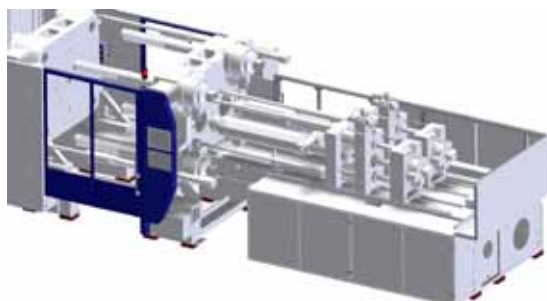
Injection from the non-operator side, also into the mold parting line

- Sliding unit freely mounted on the back of the fixed platen.
- Injection unit supported by linear guides.
- Long adjustment path.
- Access to the nozzle and to the mold from the rear via large operator safety gate.
- Fixed platen kept free for standard linear robot.

B configuration

Injection unit on the moving platen

- For cube technology.
- Injection into the moving mold half.



H-H configuration

2 parallel horizontal aggregates

- Both aggregates can be moved independently.
- For sandwich technology.
- Excellent thermal insulation of each aggregate.

Combination options of clamping units and injection units

	MacroPower MK 400				
Injection unit H	130	210	350	525	750
2250	V-L	V-L-S	V-L-S	V-L-S	V-L-S
3400	V-L	V-L-S	V-L-S	V-L-S	V-L-S
5100	V-L	V-L-S	V-L-S	V-L-S	V-L-S

	MacroPower MK 500				
Injection unit H	130	210	350	525	750
2250	V-L	V-L-S	V-L-S	V-L-S	V-L-S
3400	V-L	V-L-S	V-L-S	V-L-S	V-L-S
5100	V-L	V-L-S	V-L-S	V-L-S	V-L-S
8800	V-L	V-L-S	V-L-S	V-L-S	V-L-S

	MacroPower MK 650				
Injection unit H	210	350	525	750	1000
3400	L-S	L-S	L-S	L-S	L-S
5100	L-S	L-S	L-S	L-S	L-S
8800	L-S	L-S	L-S	L-S	L-S

	MacroPower MK 800					
Injection unit H	350	525	750	1000	1330	2250
3400	L-S	L-S	L-S	L-S	L-S	L-S
5100	L-S	L-S	L-S	L-S	L-S	L-S
8800	L-S	L-S	L-S	L-S	L-S	L-S
13800	L-S	L-S	L-S	L-S	L-S	L-S

	MacroPower MK 1000					
Injection unit H	350	525	750	1000	1330	2250
3400	L-S	L-S	L-S	L-S	L-S	L-S
5100	L-S	L-S	L-S	L-S	L-S	L-S
8800	L-S	L-S	L-S	L-S	L-S	L-S
13800	L-S	L-S	L-S	L-S	L-S	L-S
19000	L-S	L-S	L-S	L-S	L-S	L-S

* Special combinations available upon request..

H = horizontal
V = vertical
S = slanted from above
L = horizontal from the rear