

MacroPower E 400 – 1100 t

Compact large machine with hybrid drive

world of innovation



POWERFUL – COMPACT – HIGHLY EFFICIENT

High performance and speed in large machines

The advantages

- » Combination of electric injection unit and servo-hydraulic clamping unit
- » Short cycle times through parallel operation of injection and clamping unit
- » High dynamism and precision through servo-electric injection unit
- » Small footprint thanks to compact design
- » Generously dimensioned 4 tie-bar/2 platen clamping system
- » Long-stroke system to release the tie-bars facilitates mold insertion from the side
- » Fast locking through QUICKLOCK®
- » User-friendly new UNILOG B8 control system with integrated assistance systems
- » With WITTMANN 4.0 perfect integration of machine and peripherals in "plug & produce" system
- » Attractive price/performance ratio

The machine series

MacroPower E (Electric): 14 clamping force sizes from 400 to 1100 t

MacroPower standard: 19 clamping force sizes from 400 to 2000 t

MacroPower COMBIMOULD: for multi-component injection molding – from 400 to 2000 t





MacroPower E

The system highlights

» Servo-hydraulic clamping unit

In the standard version of the *MacroPower E*, the movements of the clamping unit, the ejector and the nozzle system are driven by servo-hydraulics. The combination of an electrically adjustable pump with a speed-controlled servo drive is highly energy efficient, since it invariably runs at the optimal operating point. Parallel movements for core pulls and the ejector are possible with the standard twin pump system.

The *MacroPower* clamping system is a 4 tie-bar/2 platen system with generously dimensioned clamping areas. The four tie-bars are each combined with a pressure cushion unit and fastened to the fixed platen of the machine. The tie-bars are position-monitored to ensure optimal platen parallelism.

» Maximum energy efficiency through servo-electric injection unit

With the servo-electric injection unit, the injection process is powered by a highly efficient servo motor with a linear rack-and-pinion unit. A highly dynamic injection process is achieved through minimal inertia moments. An integrated force measurement device in front of the screw also ensures maximum precision and repeatability.

» Parallel plasticizing

The servo motor drive of the screw is effected directly via a reduction gearbox, which makes for high plasticizing output. Excellent homogeneity is ensured by the parallel function. The unit's outstanding degree of efficiency also leads to high energy efficiency. Flexibility is secured by universal compatibility of identical barrels with different injection units for both hydraulic and electric injection aggregates.

» Insertion of the mold made easy

The *MacroPower* clamping system provides in standard a large gap between the ends of the tie-bars and the moving platen, thanks to its standard large platen stroke and the relatively short length of the tie-bars. This allows for lateral insertion and fastening of the molds from the rear of the machine using a crane.

CLAMPING UNIT

High functionality with ample mold space

» Large and flexible

The extensive *MacroPower* system kit offers a wide range of combination options from numerous clamping force variants with matching distances between tie-bars, in both standard and XL versions.

» Sensitive and precise

In the *MacroPower* clamping system, the tie-bars are only used for the force transmission between the mold platens. The moving platen is mounted on a carriage, which travels on high-precision linear bearings along the machine frame. The minimal rolling friction in the linear bearings is the prerequisite for highly sensitive mold protection and high cleanliness.

» Fast and synchronized

The QUICKLOCK® locking system between the tie-bars and the moving platen consists of four synchronized tooth segment nuts, which are integrated in the moving platen to minimize the machine's footprint.

» Compact design for minimal footprint

The integrated tie-bar nuts and short tie-bars offer two advantages: short footprint and simultaneously free space for lateral mold insertion.

» Symmetrical and powerful

The moving platen is driven by two diagonally positioned traveling cylinders designed for high speed. The traveling drive in combination with a hydraulic differential gear system provides the basic conditions for high speed, precision in movements and power.



SERVO-ELECTRIC INJECTION UNIT

Precise – dynamic – efficient

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» **Everything for series consistency**

- All screws come with a 22:1 L/D ratio.
- Direct drive for screw and injection/holding pressure via speed-controlled servo motors
- Maximum changeover accuracy and series constancy
- Start of injection parallel to clamp force build-up possible
- Low sound emission
- Moment-free nozzle contact through axial positioning of traveling cylinders
- Quiet running through encapsulated in-line positioning of the injection and plasticizing axes
- Plasticizing barrels can be mounted to different injection units with identical screw diameters.
- In combination with the WITTMANN BATTENFELD HiQ software modules (optional), sensitive adjustment systems are available to compensate environmental factors such as fluctuations in temperature and moisture, regrind or masterbatch content.

» **Optimal user-friendliness and easy servicing**

- Free access to the injection unit for easy material feeding, machine setting and servicing
- Low maintenance requirements thanks to permanent lubrication



Anti-wear options

In addition to the premium-quality standard equipment, an extensive range of options is available to provide extra anti-wear and/or anti-corrosion protection. Predefined option packages and a selection matrix facilitate the selection of the right plasticizing unit.



DRIVE TECHNOLOGY

Hybrid technology



Fast-responding, precise, economical

The plasticizing and injection units of the *MacroPower E* basically follow the design of the proven aggregates with hydraulic drives. Instead of hydro motors and cylinders, the screw rotation and injection stroke are powered via encapsulated drives and a servo motor. The drive is designed for high dynamism and high injection speeds of up to 450 mm/sec and still consumes significantly less primary energy than comparable hydraulic models. For economic reasons, the contact pressure of the nozzle carriage is maintained by servo hydraulic cylinders.

High-end hydraulics – drive-on-demand (standard)

A drive-on-demand system to cut energy consumption is standard for the clamping unit. Here, a water-cooled, speed-controlled servo motor is combined with electrically adjustable pumps. The advantage of this combination is that the hydraulic system is kept within the range of the system's optimal degree of efficiency, by adjustment of both the motor speed and the pump's displacement volume.



PRODUCTION CELL

Customized configuration

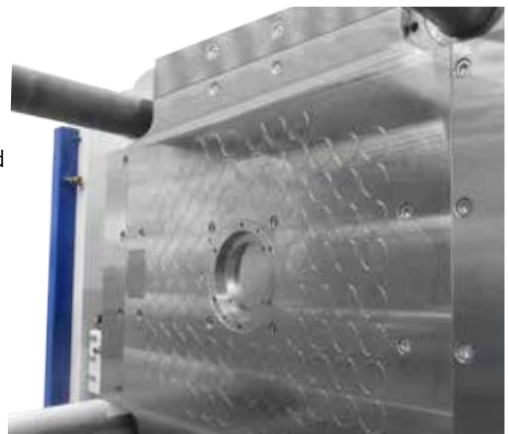


Complete installation at Buzek Plastic Poland Sp. z o.o.

WITTMANN BATTENFELD injection molding machines come with a flexibly adjustable basic modular design. From this basis, the machine can be extended with a wide range of automation equipment into a production cell. This includes primarily devices for fast mold change, fast coupling of complex media connections and the automation of finished parts handling.

MacroPower automation options:

- » **"Handling robot automation module"** with linear or articulated arm robot and logistics peripherals
- » **Mold clamping systems**
Both hydraulic and magnetic clamping systems are available including all safety monitoring features, if required combined with roller conveyor units for lateral mold transfer.
- » **Automatic mold change system** as fixed carriage and pre-heating station or as a flexibly movable carriage system with docking interface
- » **Combination with WITTMANN peripheral units** via WITTMANN 4.0
Temperature control or cooling, material feeding, coloring and drying



UNILOG B8

Complex matters simplified

The new UNILOG B8 machine control system is the WITTMANN BATTENFELD solution to facilitate the operation of complex processes for human operators. For this purpose, the integrated industrial PC has been equipped with an enlarged intuitive touch screen operator terminal. The visualization screen is the interface to the new Windows® 10 IoT operating system, which offers extensive process control functions. Next to the pivotable monitor screen, a connected panel/handset is mounted on the machine's central console.



UNILOG B8

Highlights

- » **Operating logic**
with a high degree of self-explanation, similar to modern communication devices
- » **2 major operating principles**
 - Operating/movement functions via tactile keys
 - Process functions on touch screen (access via RFID, key card or key ring)
- » **Process visualization**
via 21.5" touch screen display (full HD), pivoting laterally
- » **New screen functions**
 - Uniform layout for all WITTMANN units
 - Recognition of gestures (wiping and zooming by finger movements)
 - Container function – split screen for sub-functions and programs
- » **Status visualization**
uniform signaling system across the entire WITTMANN group
 - Headline on the screen with colored status bars and pop-up menus
 - *ambiLED*-display on machine
- » **Operator assistance**
 - *QuickSetup*: process parameter setting assistant using an integrated material database and a simple query system to retrieve molded part data with machine settings pre-selection
 - Extensive help library integrated

The process in constant view

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» **SmartEdit**

SmartEdit is a visual, icon-based cycle sequence programming facility, which enables direct addition of special functions (core pulls, air valves, etc.) based on a standard process via touch operation on the control system's monitor. In this way, a total user-defined sequence can be compiled from a sequence menu. This machine cycle, visualized either horizontally or vertically, can be adjusted simply and flexibly to the process requirements by finger touch with "drag & drop" movements.

The advantages

- Icon visualization ensures clarity.
- Clear events sequence through node diagram
- Alterations without consequences through "dry test runs"
- Theoretical process sequence can be quickly implemented in practice.
- Automatic calculation of the automation sequence based on the actual set-up data set without machine movements

» **SmartScreen**

- Partitioning of screen displays to visualize and operate two different functions simultaneously (e.g. machines and peripherals)
- Uniform design of the screen pages within the WITTMANN group
- Max. 3 containers can be addressed simultaneously for the *SmartScreen* function.
- Adjustments of set values can be effected directly in the set value profile.



Remote communication

» **QuickLook**

- Production status check via smartphone – simple and comfortable:
- Production data and statuses of all essential units in a production cell
- Complete overview of the most important production parameters
- Access to production data, error signals and user-defined data
- Facilities for grouping of units and sorting according to status available

» **Global online service network**

- Web-Service 24/7: direct Internet connection to WITTMANN BATTENFELD service
- Web-Training: efficient staff training by means of the virtual training center

WITTMANN 4.0

Communication in and with production cells

With its internal communication standard WITTMANN 4.0, the WITTMANN group offers a uniform data transfer platform between injection molding machines and peripheral equipment from WITTMANN. For an appliance exchange, the correct operating software is loaded automatically via an update function according to the "plug & produce" principle.

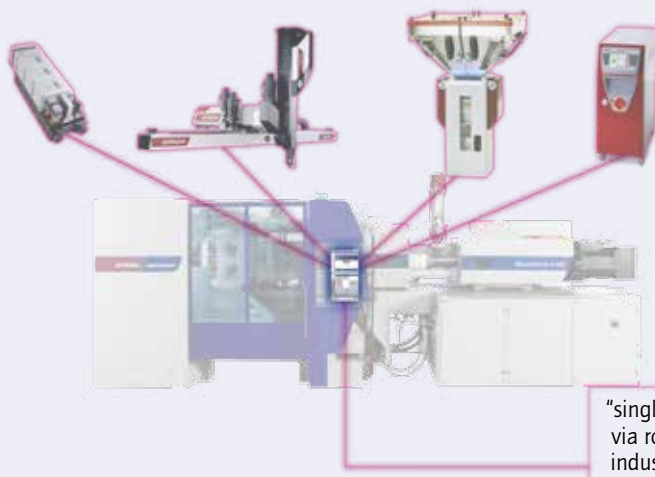
Connection of peripherals via WITTMANN 4.0

- » **WITTMANN FLOWCON plus water flow regulator and GRAVIMAX blenders**
 - Units directly addressed and controlled via the machine's control system
 - Joint saving of data in the production cell, the machine and in the network via MES
- » **WITTMANN robots with R9 control system**
 - Operation of robots via the machine's monitor screen
 - High-speed communication between machine and robot to synchronize movements
 - Important machine movements can be set via the R9 robot control system
- » **WITTMANN TEMPRO plus D temperature controllers**
 - Setting and control of temperatures via the machine's control system possible
 - All functions can be operated either on the unit or via the machine's control system

Production monitoring

- » **SmartMonitoring: process data acquisition via authentig**

For monitoring of machines or production cells or entire manufacturing areas, WITTMANN BATTENFELD uses the "authentig" MES system (Manufacturing Execution System). In combination with the "SmartMonitoring" module, the current status of an injection molding operation can be visualized also on any machine monitor screen B8 in real time.



WITTMANN 4.0 system
With WITTMANN 4.0, a machine and its robots and peripherals are transformed into a uniform technical organism, which communicates externally via a specific IP address. A single point entry increases the cyber security significantly.

OPTIONS

Modular and flexible

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MacroPower E

The optional highlights

- » **High-performance injection unit**
With the option of "high-speed injection", injection speeds of up to 450 mm/sec can be reached. This enables the production of thin-walled high-precision plastic parts for the packaging and electronics industry. Moreover, high-performance plasticizing systems with a larger L/D ratio of 26:1 with barrier screws are also available for this type of applications.
- » **Faster ejection**
As an alternative to the standard servo-hydraulic drive for the ejector, a more powerful version with a servo-mechanical drive is available as an option.
- » **Free space for conveyor belt in the small sizes of large machines as standard**
In the machines from 400 to 700 t clamping force, the machine frame comes prepared for the installation of a conveyor belt inside the frame for longitudinal transport of molded parts. An optional elevation of the frame to accommodate a conveyor belt for parts transport to the side can also be supplied.
- » **Servo-electric mold axis**
Control, monitoring and integration into the cycle of a servo-electric drive axis, for example for alternative triggering of a servo-electric core pull or a shut-off nozzle inside the mold.
- » **WITTMANN peripherals**
The comprehensive range of WITTMANN peripheral units offers appropriate solutions for all secondary processes of injection molding, including parts handling, material feeding and drying, sprue recycling, mold cooling and temperature control. Via the optional WITTMANN 4.0 integration package, all additional units can be integrated into the injection molding machine's program sequence according to the "plug & produce" principle.

APPLICATION TECHNOLOGY

Outstanding competence



» IML – In-Mold labeling

High-speed *MacroPower E* machines combined with the proven WITTMANN BATTENFELD handling technology provide the basis for high-performance in-mold labeling production cells to manufacture directly decorated buckets, containers or bottle crates.



» CELLMOULD® – structured foam technology

The production of structured foam parts through targeted blending of pressurized nitrogen into the plastic melt prior to injection into the mold has been a WITTMANN BATTENFELD core competence based on in-house R & D for more than 30 years.



» AIRMOULD® – gas injection process*

AIRMOULD® is the gas-assisted injection molding process developed by WITTMANN BATTENFELD. Its two variants are the AIRMOULD® internal gas pressure process and the AIRMOULD® CONTOUR external gas pressure process.

*see separate brochure



» High performance plasticizing

The injection dynamism and high precision of the servo-electric injection plasticizing units for large machines offer the necessary prerequisites for manufacturing thin-walled parts with a large surface requiring high standards of dimensional accuracy.

TECHNICAL DATA

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COMBINATIONS OF CLAMPING UNITS/INJECTION UNITS

Clamping unit	Injection unit						
t	E 1100	E 1100+	E 2100	E 2100+	E 3300	E 3300+	E 5000
400	•	•	•	•	•	•	•
450	•	•	•	•	•	•	•
XL 450	•	•	•	•	•	•	•
500	•	•	•	•	•	•	•
550	•	•	•	•	•	•	•
XL 550			•	•	•	•	•
650			•	•	•	•	•
700			•	•	•	•	•
XL 700			•	•	•	•	•
850			•	•	•	•	•
900			•	•	•	•	•
XL 900					•	•	•
1000					•	•	•
1100					•	•	•

+ = fast injection

Material	Factor
ABS	0.88
CA	1.02
CAB	0.97
PA	0.91
PC	0.97
PE	0.71
PMMA	0.94
POM	1.15
PP	0.73

The maximum shotweights (g) are calculated by multiplying the theoretical shot volume (cm³) by the above factor.

Material	Factor
PP + 20 % Talc	0.85
PP + 40 % Talc	0.98
PP + 20 % GF	0.85
PS	0.91
PVC hard	1.12
PVC soft	1.02
SAN	0.88
SB	0.88
PF	1.3
UP	1.6

Dark grey boxes = thermosets

MOLD DIMENSIONS

» Overview mold weights

The *MacroPower* series is laid out for the following maximum mold weights and/or mold torques. If the maximum weight or maximum torque is exceeded, an additional mold support will be necessary. Whenever the values are exceeded, WITTMANN BATTENFELD must be consulted.

$$\begin{aligned} W_m &= 2/3 \times W \\ T_m &= W_s \times \text{max. mold h.}/3 \\ W_f &= 1/2 \times W \end{aligned}$$

$$\begin{aligned} T_f &= W_f \times \text{max. mold h.}/4 \\ W_c &= 2/5 \times W \\ W_{\text{max.}} &= W + W_c \end{aligned}$$

Clamping Unit	machine		moveable platen		fixed platen		center platen	
	max. mold weight	max. mold height	max. weight	max. torque	max. weight	max. torque	max. weight	max. total weight
	W (t)	(mm)	W _m (t)	T _m (tm)	W _f (t)	T _f (tm)	W _c (t)	W _{max} (t)
400, 450	6.5	850	4.3	1.2	3.3	0.7	2.6	9.1
XL 450, 500, 550	8	900	5.3	1.6	4.0	0.9	3.2	11.2
XL 550, 650, 700	10	950	6.7	2.1	5.0	1.2	4.0	14.0
XL 700, 850, 900	12	1000	8.0	2.7	6.0	1.5	4.8	16.8
XL 900, 1000, 1100	19	1200	12.7	5.1	9.5	2.9	7.6	26.6

» Mold torque calculation examples

MacroPower 850 t clamping force
Mold weight W = 11 t

Mold weight clamping side W_m = 7 t
Distance to center of gravity x_m = 0.3 m

Mold weight on fixed platen side W_f = 4 t
Distance to center of gravity x_f = 0.2 m

$$\begin{aligned} T_m &= 7 \text{ t} \times 0.3 \text{ m} = \mathbf{2.1 \text{ tm}} \\ T_f &= 4 \text{ t} \times 0.2 \text{ m} = 0.8 \text{ tm} \end{aligned}$$

All values within specifications, no additional support required.

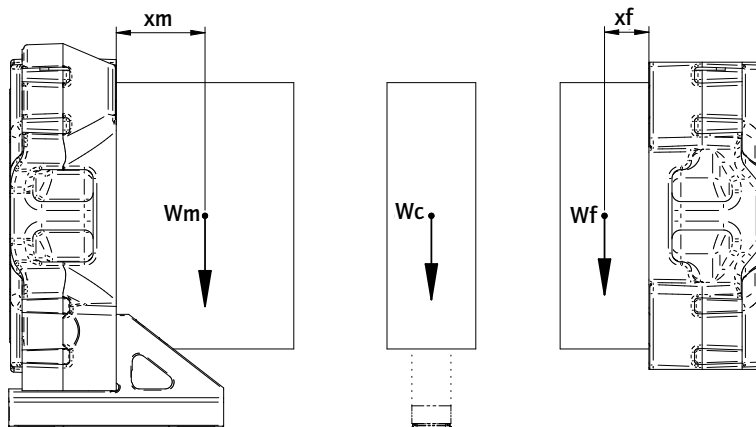
MacroPower 850 t clamping force
Mold weight W = 11 t

Mold weight clamping side W_m = 8 t
Distance to center of gravity x_m = 0.4 m

Mold weight on fixed platen side W_f = 3 t
Distance to center of gravity x_f = 0.2 m

$$\begin{aligned} T_m &= 8 \text{ t} \times 0.4 \text{ m} = \mathbf{3.2 \text{ tm}} \\ T_f &= 3 \text{ t} \times 0.2 \text{ m} = 0.6 \text{ tm} \end{aligned}$$

Value T_m exceeds specification, additional support required.



REDUCTIONS IN CLAMPING FORCE

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» Reductions in clamping force for smaller molds

The *MacroPower* machine series is laid out for minimum mold dimensions as indicated in the technical specifications. Down to the minimum mold size specified, the machine's clamping force can be fully utilized. When smaller molds are used, the clamping force must be reduced, depending on the mold dimensions, according to the overview below. The mold size used must not fall below the minimum mold dimensions specified in the chart.

» Example of clamping force reduction (chart)

MacroPower 850 t clamping force, mold dimensions 700 mm x 800 mm (smaller dimension is relevant). A mold dimension of 700 mm leads to a reduced maximum clamping force of 780 t.

» Mold parallelism

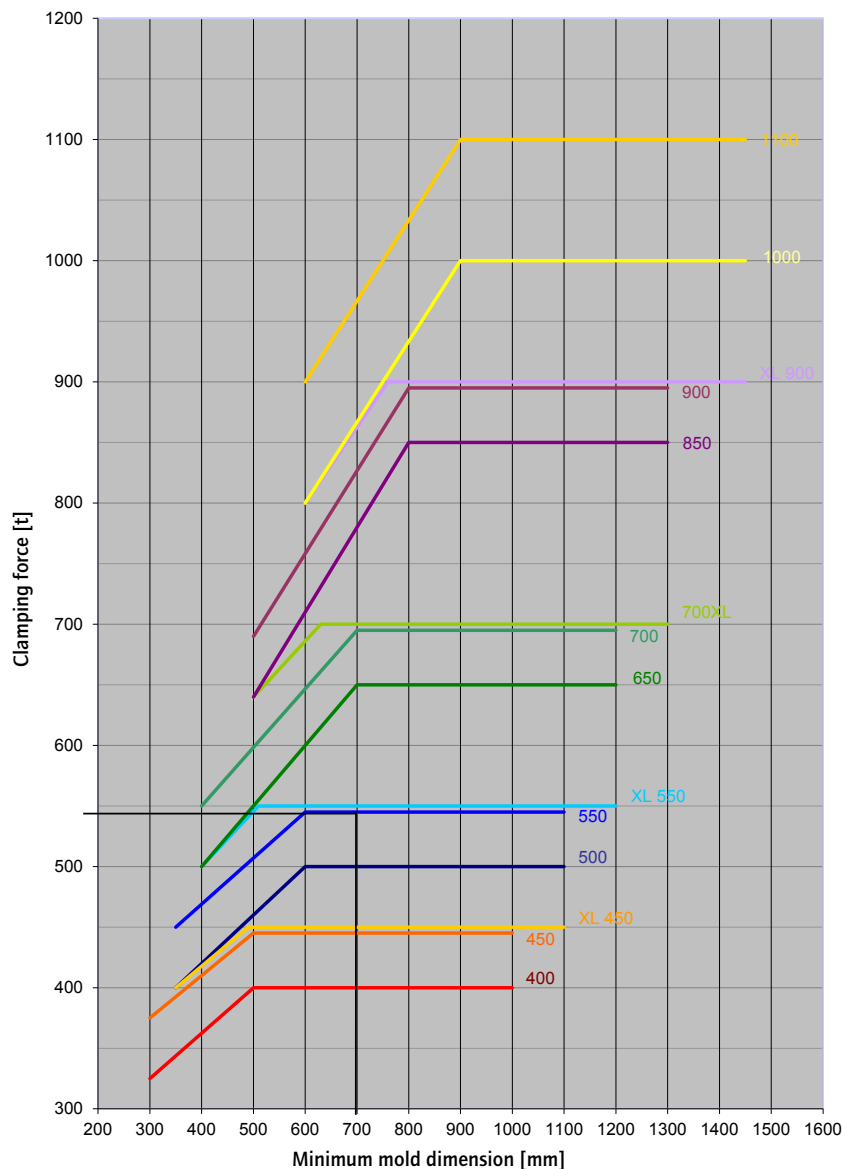
The *MacroPower* is equipped with high-precision linear guides on the moving platen and therefore guided with extreme accuracy and parallelism across the entire stroke.

Its platen parallelism is within half of EUROMAP 9 tolerance. For correct operation, the maximum parallelism of 0.2 mm with minimum mold dimensions must not be exceeded.

PLEASE NOTE:

The molds must be inserted symmetrically to both axes of the clamping platens!

Reductions in clamping force for smaller molds *MacroPower*



STANDARD

Machine in general
Paint RAL7047 tele grey/RAL5002 ultramarine blue
Two-piece machine frame, clamping unit/injection unit
Built-in control cabinet
Hydraulics
Speed controlled servo motor for hydraulic pump to increase the energy efficiency incl. additional pump for core pull movement or parallel ejection
Injection parallel to clamp force build-up
Oil filtration by fine flow filter with electrical clogging indicator
Oil level indicator with alarm
Closed-loop oil temperature control with oil pre-heating
Oil temperature monitoring
Lock-up valve with supervision for suction pipe
Oil tank with connections for external oil filtration
Separate hand keys for core pulls
Hydraulic pressure displayed
Separate bypass filtration unit
Clamping unit
Clamping force adjustable via touchscreen
Closing and opening speed adjustable
Closing and opening force adjustable
Mold safety program
Moving platen supported by positioned linear guides
Platen drilling and register rings according to EUROMAP
Fixing holes for robot on top of the fixed platen as per EUROMAP 18
Hydraulic mold close inhibit, electrically monitored
Central hydraulic multi-stroke ejector, adjustable
Injection unit
Servo-electrically controlled injection
Screw drive by a.c. servomotor – for parallel plasticizing
Screw L/D = 22 with check valve, wear and corrosion resistant screw and barrel AK+
Thermocouple failure monitor
Maximum temperature supervision
Defined nozzle carriage pressure
Plug-in ceramic heater bands
Temperature control of feed throat integrated
Open nozzle
Purge guard electrically monitored
Slide device without material hopper, prepared for WITTMANN material feeder
Linear bearings for the injection unit
Selectable barrel stand-by temperature
Decompression before and / or after metering
Physical units – bar, ccm, mm/s etc.
Screw protection
Peripheral screw speed indication
Linear interpolation of holding pressure set values
Bar chart for barrel temperature with set value and actual value display
Selectable injection pressure limitation
Changeover from injection to holding pressure depending on stroke, time and pressure

Safety gate
Monitored safety gate electrically controlled according to CE on front and rear side
Maintenance-free safety gate locked by electro magnet
Safety gate free for mold change and handling by robot
Safety gate rear side lowered at the top of the upper tie-bar
USB – 1 x operating unit
Electrical components/ Control unit
Operating voltage 230/400 V-3PH, 50 Hz
Fuse protection for sockets
Control system UNILOG B8 – 21,5" multi-touch screen (full HD)
Non-contact stroke transducers
Clamp force display and supervision
Software for operating hours counter
Closing/Opening – 5 profile steps
Ejection forward/back – 3 profile steps
Nozzle forward/back – 3 profile steps
Injection/Holding pressure – 10 profile steps
Screw speed/Back pressure – 6 profile steps
Parts counter with good/bad part evaluation
Purging program through open mold
Stroke zero offset settings
Start-up program
Switchover to holding pressure MASTER / SLAVE by injection time, screw stroke/injection volume and injection pressure
Self-teaching temperature controller
Display of temperature inside electrical cabinet
Seven-day timer
Access authorization via USB interface, password system and RFID authorization system
Freely configurable status bar
Physical, process-related units
Automatic dimming
Logbook with filter function
User programming system (APS)
Userpage
Note pad function
Cycle time analysis
BASIC Quality Monitoring (1 freely configurable network connection, quality table with 1000 storage depth, events protocol (logbook) for 1000 events, actual value graphics with 5 curves, 1 envelope curves monitoring)
Hardcopy function
Internal data storage via USB connection or network
Online language selection
Online selection of imperial or metric units
Operator manual incl. hydr., mech. and el. schedules online
Time monitoring
Injection integral supervision
Metering integral supervision
Alarm message via e-mail
1 Ethernet interface (switch cabinet)
Printer via USB connection or network
<i>SmartEdit</i> – sequence editor
<i>QuickSetup</i> – assistance program for initial parameter setting

Base machine

Non-standard mold height/Opening stroke
Mounting of fast-stroking cylinder exchanged diagonally
Machine frame increased

Hydraulics

Hydraulic core pulls. Limit switch function according to EUROMAP 13. Pressure and speeds adjustable
Core pull pressure release
Pneumatic core pull
Hydraulic manifold for Mouldmaster nozzle (controlling 1 nozzle or more, parallelly or sequentially, in the mold)
Pneumatic manifold for Mouldmaster nozzle (controlling 1 nozzle or more, parallelly or sequentially, in the mold)
Ejector pressure/speed controlled by P/Q servo valve
Extra large oil cooler
Filter in water inlet of oil cooler
Adapter with ball valve on the oil tank for oil maintenance

Clamping unit

Support for middle plate or heavy molds
T-slots in mold platens
SPI bolt pattern
Ejector cross in clamping platen as per EUROMAP/SPI
Maximum ejector force increased
Ejector platen safety device
Hydromechanical mold safety mechanism
Air valve, action initiated (ON) and timer (OFF)
Tie-bar retract device for upper tie-bar
Quick mold clamping system electromagnetic or hydraulic

Injection unit

Grooves in the feeding zone of barrel for improved feeding
High temperature heater bands (max. 450 °C)
Barrel insulation
Fast injection
Ball type screw tip
Check valve with carbide insert
Needle type shut-off nozzle operated with spring, pneumatically or hydraulically
Pneumatic cross-bolt type shut-off nozzle
Melt temperature sensor in cylinder head
Pressure transducer for melt pressure switch over
Open AIRMOULD®-nozzle, pressure controlled
Wear resistant screw and barrel AKPA for polyamide
Corrosion resistant screw and barrel AKCN in chrome nitride or AKTN titan nitride
High wear and corrosion resistant screw and barrel AK ++
Screw with mixing section or barrier section
Injection unit equipped for CELLMOULD®
Slide device with spindle/crank handle adjustment
Material hooper volume 60 liters
Hopper magnet
Access to material hopper via ladder and platform

Safety gate

Front side gate safety system for manual part removal
Electric safety gate at the operator side
Safety gate clearance operator side/rear side extended

Cooling and conditioning

Flow controller with temperature gauges
Shut-off valve for cooling water battery
Blow out valve for cooling water battery
Distributor of cooling circuits on the fixed platen and the moving platen
Cooling water flow rate integrated into control system via FLOWCON plus

Electrics

Temperature control zone for hot runner
Special voltage
Control cabinet cooler
Additional sockets
Emergency stop button on rear side
Signal tower with acoustic element
Temperature control interface digital, serial 20 mA TTY protocol
CAN-Bus-interface for mold conditioner as per EUROMAP 66-2
Interface for BFMOLD® via CAN BUS for WITTMANN D series
Interface for AIRMOULD® mobile
Interface for robots as per EUROMAP 67
Interface for conveyor belt
Interface for dosing pump
RJG eDart interface
Master interface for danger zone boundary (DZB)
Interface for full integration of robot incl. Ethernet switch
Host computer interface/PDA (EUROMAP 63)
Relays contact parallel to plasticizing
Machine fault (potential-free contact)
BNC connectors for injection process analysis
Interface for vacuum pump

Control system

Energy consumption analysis
Integrated Tandemmould
Switch over to holding pressure by cavity pressure
Switch over to holding pressure by external signal
Injection compression program/venting program
Melt cushion control
Second injection data setting for automatic start up
User specific programmable set value limits
Web- and Remote-Service
HiQ-Cushion – melt cushion control
HiQ-Flow – injection integral control
HiQ-Melt – monitoring of material quality

EXPERT Quality Monitoring (4 freely configurable network connections, quality table with 10000 storage depth, events protocol (logbook) for 10000 events, actual value graphic with 16 curves, 4 envelope curves monitoring, SPC charts, trend diagrams)

Additional equipment

Lighting in mold space
Europackage
Inline thermography
Webcam
Special paint and/or touch-up paint
Tool kit
Levelling pads
Additional manual on USB flash drive



WITTMANN BATTENFELD GmbH

Wiener Neustädter Strasse 81

2542 Kottingbrunn | Austria

Tel.: +43 2252 404-0 | Fax: +43 2252 404-1062

info@wittmann-group.com

www.wittmann-group.com