

# MAXIMATOR®

## Maximum Pressure.



High Pressure Technology • Testing Equipment  
Hydraulics • Pneumatics



» Gas- and Water Assisted Molding  
Gas Injection Technology

# Content

Content:	Page:
Introduction	2
Applications	3
Assisted Molding Technologies	4
System Technology	5
Compressor Stations N2 / CO2	6 – 7
Control Modules N2 / CO2	8 – 11
Compressor Control Modules N2 / CO2	12 – 13
Water Assisted System	14 – 15
Gasdosing Station	16 – 17
Gas Injectors	18
Gas Injection Control GIC	19
External Hydraulic Power Pack HAG	20
Service	21
Additional Products	22 – 23



» With High Pressure.

**Do what you want with your injection molded parts: with the pioneering gas injection technology of the market leader.**

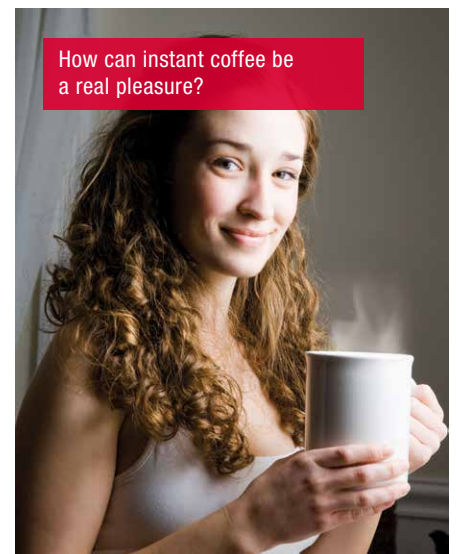
The assisted injection molding technology provides low pressure gradients in the component resulting in less residual stress and distortion. Even thick-walled components such as exterior car wing mirrors or car door handles can be produced true-to-size through uniform pressure distribution.



» With High Pressure.

**Put the production of your injection molded parts into turbo drive: with the pioneering water injection technology of the market leader.**

Components such as, e.g. automotive cooling lines, are not only cooled from the inside but also from the outside. This reduces cooling times by up to 80%. Seize the competitive edge which this advantage gives to you.



» With High Pressure.

**Make the eyes of coffee experts light up: with pioneering gas dosing technology by the market leader.**

A microcellular foam structure is generated which gives instant coffee, the optimal consistency, even lighter and foamier for a matchless taste together with more volume for maximum standout on the shop shelf.

# Applications

## Automotive and Transport



### Exterior

- Wing Mirrors
- Side panels
- Door handles
- Lighting
- Bumpers
- Radiator grills
- Roof rails
- Foot plates
- Motorcycle rear grab bars

### Interior

- Overhead grab handles
- Door handles & pockets
- Instrument panels
- Clutch pedals
- 'A' and 'B' pillars
- Glove boxes
- Seating components
- Rear parcel shelves
- Sat Nav fascia
- Air bag covers

### Under Bonnet

- Air intake manifold covers
- Engine cover and trays
- Battery lids
- Fluid pipes

### Rail and Air Transport

- Seatback tables
- Luggage area panels
- Oxygen mask panels

## Consumer and Office Electronics



- Flat screen TV panel surround
- Flat screen TV back panel and base
- Hi-Fi and car stereo fascia
- Computer keyboard
- Computer mouse

- Computer flat screen surround and base
- Laptop cases
- Telephone casings
- Photocopier panels
- Mobile telephone casings

## Home and Garden



- Kitchen appliances
- Furniture (tables and chairs)
- Games consoles
- Toys
- Vacuum cleaners
- Bath panels
- Bathroom cabinets

- Shower heads
- Faucet spouts and tap components
- Baby carrier handles
- DIY Tools
- Garden tools
- Garden machinery

- Office chairs
- Cycle handle bar ends
- Hosepipes

## White Goods



- Fridge, freezer and oven handles
- Washing machine top panels
- End caps
- Clothes iron handles
- Control panels & facings

## Other Application Areas



### Medical

- Bed sideboards/rails
- Hospital bed tables
- Handwash dispensers
- Diagnostic instrument boxes
- Support handles
- Crutch components

### Packaging

- Pallets
- Bottle crates
- Storage boxes
- Trolley & bucket handles
- Shopping baskets
- Coat hangers
- Polystyrene food trays

### Construction

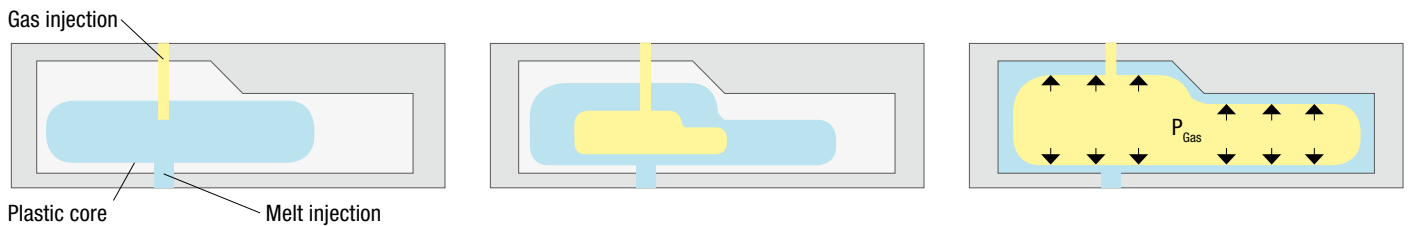
- Manhole covers & surrounds
- Street kerbing
- Spirit levels
- Stadium seats
- Window vents
- Rigid PVC piping
- Fibre optic & other cables
- Window profiles

# Assisted Molding Technologies

## Assisted injection molding technologies

Assisted Injection Molding (AIM) is part of a family of technologies that are operated with plastics processing methods to improve product quality and significantly reduce cost. The technologies include the injection of gas or water at high pressure into plastic in an injection mold. This cores out sections of the part, leaving hollow areas which lower part weight and cycle time.

### The short shot process



#### Injection phase

- 70% ± 20% of the volume of the cavity is dosed and injected
- According to process, the gas injection occurs via machine nozzle, injector modules in the sprue or in the molded piece

#### Gas injection phase

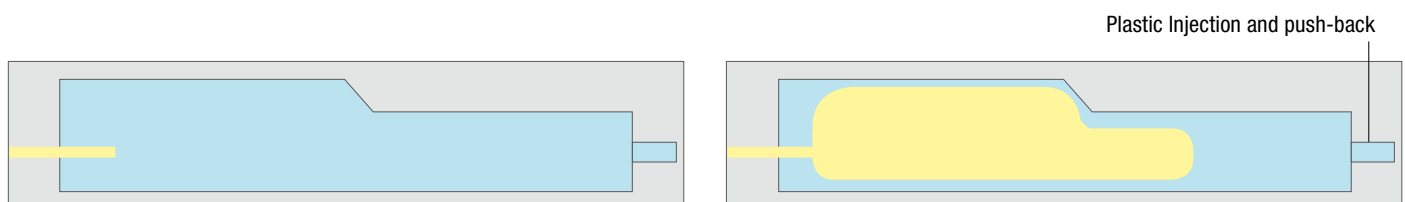
- This begins shortly before the termination of the injection phase, in order to avoid switchover markings
- Gas fills the cavity and drives the melt front forward
- Targeted hollow spaces form in the molded piece

#### Gas hold-pressure phase

- The gas pressure is retained after the complete filling of the cavity, until the molded piece is stable
- Relief of the gas pressure after solidifying of the melt

### The full shot process

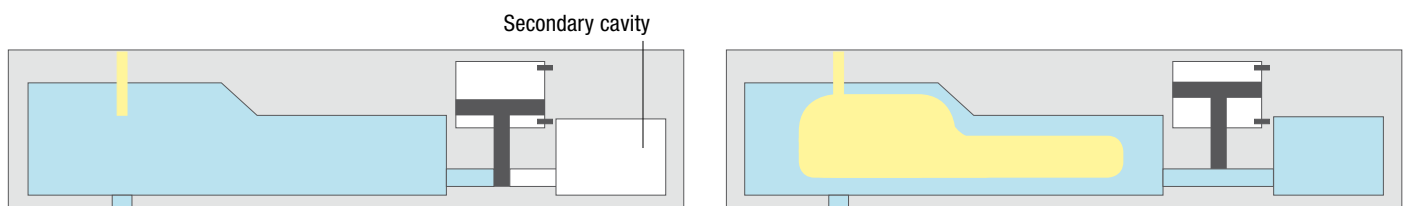
#### Push-back process



- The cavity is completely filled with melt - at the flow path end the gas injection begins.

- The molten core is pushed back into the barrel of the molding machine and the screw is withdrawn.

#### Overspill process



- The cavity is completely filled with melt. A secondary cavity is connected to the main cavity by a valve gate.

- The surplus mass is displaced into the secondary cavity by the gas pressure.

# System Technology

## Systems technology of gas and water assisted molding technology

For the application of gas and water assisted injection technology, as well as the injection molding machine, basically two additional functions are to be applied: Pressure generation and pressure control.

In the area of gas assisted molding technology, two different types of gas pressure generation are differentiated. On the one hand, discontinuous gas pressure generation which is mainly employed for the GIT process in case of individual machines

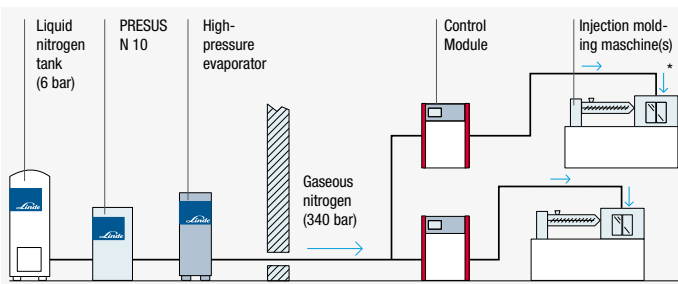
and, on the other hand, continuous gas pressure generation which is employed for the centralized supply of several injection molding machines. The gas pressure regulation is applied individually with pressure-control modules at every injection molding machine. The pressure-control module decreases the supplied system pressure to the necessary gas pressure. Communication with the injection molding machine is realized by means of an electrical control. Maximator offers

compressor stations and control modules, as well as combined compressor control modules, for discontinuous and continuous gas pressure generation.

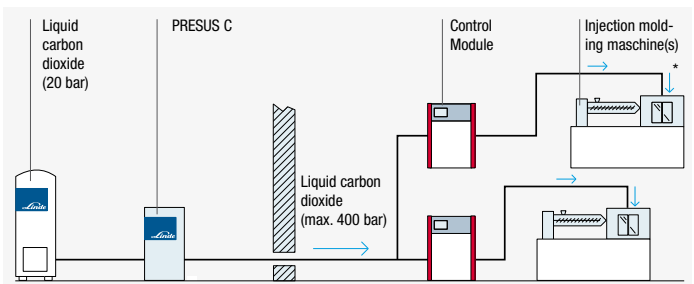
In the area of water assisted molding technology of the MAXIMATOR WID system, both the pressure generation and the pressure control are applied in one system. The following schematics indicate the basic structure of the systems technology.

## Gas assisted molding with liquid gas supply

### Supply with liquid nitrogen

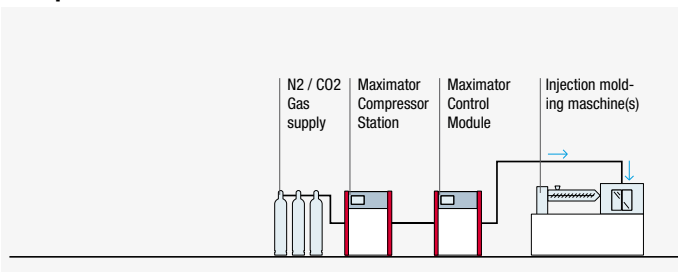


### Supply with liquid carbon dioxide

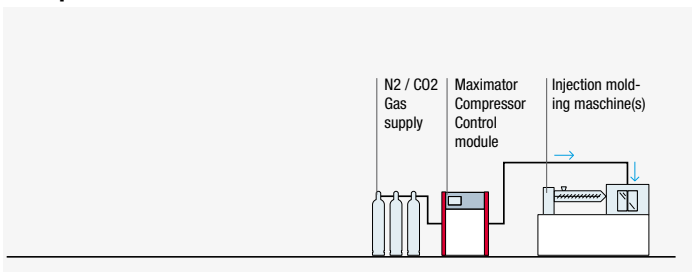


## Gas assisted molding with gas bottle supply

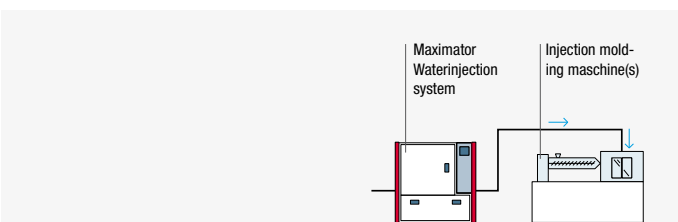
### Compressor Station and Control Module



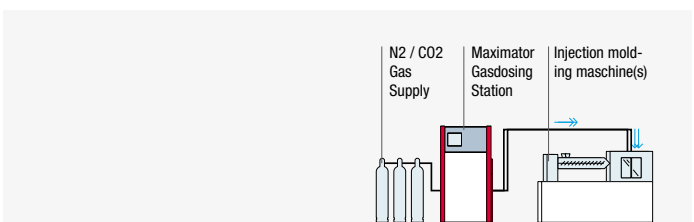
### Compressor- Control Module



## Water assisted molding



## Gasdosing Technology



# Compressor Stations

**Maximator Compressor Stations** are specially designed for the compression of nitrogen or carbon dioxide from gas bottles, and are employed for pressure generation in gas assisted molding applications.

## VP/120/500/300/N2

### Compressor station for nitrogen to 415 bar

The VP/120/500/300/N2 compressor station is designed for the effective compression of nitrogen. The nitrogen supply can be implemented both via nitrogen bottles (200 bar and 300 bar) or a liquid nitrogen storage (20 bar - 30 bar).

- Compressor with continuous pressure generation
- Mobile
- Bottle pressure is used optimally
- Oil-free and grease-free gas compression
- No electric auxiliary energy required
- Cooling water not required



### Application

This mobile compressor station is an autonomously-working, pneumatically-driven, gas compressor unit, constructed in compact design.

The station is equipped with two Maximator gas boosters, which compress the injection gas in two stages. As a result of the integrated gas cooler and the media filtration, an optimal operation is ensured.

Technical Data	VP/120/500/300/N2	VP/500/CO2
Working Pressure		20 - 500 bar
Outlet Pressure		3,5 - 415 bar
Flow Capacity	max. 400 l <sub>v</sub> /min*	max. 60 kg/h**
Accumulator	6l / 550 bar	-
Inlet Pressure	10 - 300 bar	approx. 56 bar from riser pipe bottles
Compressed Air Drive***		6 - 10 bar
Cabinet		mobile with guide roller
Weight (incl. Packaging)		211 kg (315 kg)

\* at 300 bar inlet pressure, following VDMA 4362 Tol. ±5%

\*\* at approx. 56 bar inlet pressure liquid CO2 supply from riser pipe bottles, following VDMA 4362 Tol. ±5%

\*\*\* operation with 4 bar air drive pressure is possible, but this will reduce the flow capacity.

The gas booster supplies continuously into a storage tank and thus guarantees that the pressure in this storage tank is always within the adjustable limit values.

The required gas volume of the connected control modules is made available from this storage tank.



## VP/500/CO2

### Compressor station for liquid carbon dioxide to 415 bar

The VP/500/CO2 compressor station is designed for the effective compression of carbon dioxide for the new CO<sub>2</sub> GIT process. The carbon dioxide supply is implemented with CO<sub>2</sub> riser pipe bottles or riser pipe bundles.

- Special CO<sub>2</sub> Gas Booster
- Optimized cross sections for the highest supply capacities



#### Technical Data Connections

Compressed air connection	1/2" BSP Hose nozzle
N <sub>2</sub> / CO <sub>2</sub> Inlet	M16 x 1,5 (Ermeto 8S) 1 Nos.
N <sub>2</sub> / CO <sub>2</sub> Outlet	M16 x 1,5 (Ermeto 8S) 1 Nos.
N <sub>2</sub> Gas bottle connection 200 bar*	W24,32 x 1/14" Thread (DIN 477, No. 10)
N <sub>2</sub> Gas bottle connection 300 bar*	M30 x 2 Thread (DIN 477, No. 54)
CO <sub>2</sub> Gas bottle connection*	W21,80 x 1/14" Thread (DIN 477, No. 6)
Dimensions (W/D/H)	725 / 562 / 1230 mm

\*Adapter available as accessory.

# Control Modules

**Maximator Control Modules** are suitable for series production with high-pressure nitrogen supply or high-pressure carbon dioxide supply, at a pressure of 500 bar (7,250 psi). The control modules regulate the injection pressure in the GID process.

## RM/500/2(4)/N2

### Control Module for nitrogen up to 500 bar

The RM/500/2(4)/N2 Control Module is designed for the exact injection of nitrogen in gas assisted molding processes. Depending on the design, the Control Module is equipped either with 2 or 4 highly-dynamic, Maximator 3/3-way proportional valves for the pressure control, and can optionally supply up to two injection molding machines.

- Very high reproducibility
- Self-contained functional unit
- Available with two or four 3/3-way proportional pressure-control valves
- Graphic representation of curve progressions
- Pressure/Time profile freely programmable
- Compatible with all injection molding machines
- EUROMAP 62 interface



### Application

The Control Module is a self-contained functional unit for pressure-controlled fluid injection in the GIT process, and can be adapted to all injection molding machines, independent of the type and manufacturer.

After receipt of the start signal from the injection molding machine, the fluid injection is implemented. The pressure control is realized exactly by means of hydraulically-operated, 3/3-way

Technical Data	RM/500/2/N2	RM/500/2/CO2	RM/500/4/N2	RM/500/4/CO2
No. of proportional valves	2	2	4	4
Control tolerance	± 0,5 bar			
Range of control	5 - 500 bar			
Response period	0 - 400 bar in 140 ms			
High pressure filter	2 Nos. / 90 µm		4 Nos. / 90 µm	
Curve visualisation	1 to 2		1 to 4	
Interface	EUROMAP 62			
Air drive consumption	approx. 500 l <sub>n</sub> /min			
Compressed air connection	6 bar / 1/2" BSP Hose nozzle			
N2 / CO2 Inlet	M16 x 1,5 (Ermeto 8S) 1 Nos.			
N2 / CO2 Outlet	M16 x 1,5 (Ermeto 8S) 2 Nos.		M16 x 1,5 (Ermeto 8S) 4 Nos.	
Dimensions (W/D/H)	725 / 562 / 1230 mm	725 / 630 / 1830 mm	725 / 562 / 1230 mm	725 / 630 / 1830 mm
Weight	approx. 180 kg	approx. 330 kg	approx. 220 kg	approx. 370 kg



proportional valves from Maximator. As a result, both switchover markings and melt standstills are effectively avoided.

Thanks to the intelligent software, production parameters can be flexibly adapted to individual requirements. With this, rising as well as falling ramps can be freely adjusted with up to 10 individual pressure levels. This guarantees perfect interior surface quality in the gas channel.



## RM/500/2(4)/CO2

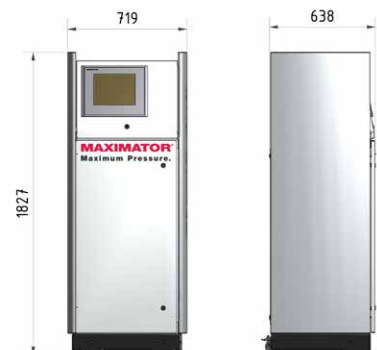
**Control Module for liquid carbon dioxide up to 500 bar**

The RM/500/2(4)/CO2 Control Module is designed for the exact injection of carbon dioxide in the new CO2 GIT process. Depending on the design, the Control Module is equipped either with 2 or 4 highly-dynamic, Maximator 3/3-way proportional valves for pressure control. As a result of the integrated 2.5 liter / 500 bar piston accumulator, a continuous volume flow is ensured for a stable process with high-quality results.

- CO2 compatible 3/3-way proportional valve technology
- Optimized cross sections for the highest flow capacities
- Integrated 2.5 liter / 500 bar piston accumulator for continuous volume flow



**RM/500/2(4)/N2**



**RM/500/2(4)/CO2**

# Control Modules

The **MAXIMATOR RM350 Series Control Modules** are precision Gas Controllers for Assisted Injection Molding up to 350 bar. The Control Modules are equipped with 2 or 4 gas control valves. Two interfaces allow the RM 500 Series Gas Control Modules to work with 1 or 2 injection molding machines at the same time.

## RM350 Series

**Control Module for Nitrogen up to 350 bar, equipped with a gas booster and core control packs as an option.**

The Control Modules of the RM350 Series are designed for the precise injection of nitrogen for Assisted Injection Molding processes up to 350 bar.

Because of the modular design of this Control Modules, the RM350 Series can be equipped with an air driven Maximator gas booster as an option. This allows the nitrogen supply from standard nitrogen gas bottles.

Furthermore, the Control Modules of the RM350 Series can be equipped with core control packs including controls for hydraulic cores to operate overspill pins or valve gates. This option is available as signals only or with integrated 2 or 4 valve hydraulic power pack.

- RM350 basic unit has 2 or 4 valves and operates with high pressure (up to 350 Bar, 5000 psi) nitrogen gas supply
- RM350B includes air driven Maximator high pressure gas booster
- Core control packs include controls for hydraulic cores to operate overspill pins or valve gates. Options for signals only, or with integrated 4 or 8 valve hydraulic power pack.

### Ordering information

**RM350/ [ / / ]**

No of valves **2**  
**4**

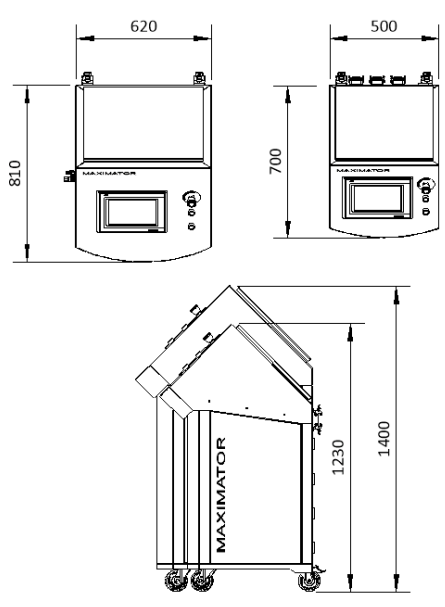
No gas booster  
With gas booster **B1**

### Technical Data

Valves	Direct acting electromagnetic valves of proven design. Units supplied with 2 valves can be upgraded to 4 valves by purchasing valve upgrade sets.
Control system	<ul style="list-style-type: none"> <li>• High speed closed loop control, provided by 12 bit Industrial control system.</li> <li>• Full color visualisation on 10.4" TFT screen with resistive touch panel.</li> </ul>
Control functions	<ul style="list-style-type: none"> <li>• Up to 4 valves controlled independently, interfaced to two injection molding machine interfaces, allows unit to be operated with two molds at the same time.</li> <li>• 5 phases of pressure control per cycle with adjustable ramp on increase and decrease of pressure.</li> <li>• Programmed purge function.</li> <li>• Alarm monitoring system and information screens.</li> <li>• Hydraulic control functions with changeover capability and manual operation.</li> </ul>
Booster (B1)	High duty cycle oil free Maximator gas booster with air drive as option.
Core signals (CS)	Additional control system hardware and 32 way interface to connect to external hydraulic power pack as option.
Hydraulic power packs (C2, C4)	Additional control system hardware and electrically driven hydraulic power pack (3 phase electric induction motor with overload protection, Gear pump, Oil Tank, Pressure gauge, Bypass valve, 4 or 8 changeover valves for cores)



- No Core Controls
- CS** Core control signals with interface for external hydraulic power pack
- C2** Internal hydraulic power pack for operation of 2 cores
- C4** Internal hydraulic power pack for operation of 4 cores



Technical Data Connections	
Air inlet (B1 only)	G1/2
N2 Inlet	G1/4
N2 Outlet	2 or 4 x G1/4
Hydraulics (C2 or C4)	Quick release pairs G1/4
Electrical power (not C2 or C4)	Single phase 110v/220v 50/60Hz Power cable provided
Electrical power (C2 or C4)	220v-575v 3 phase, 50/60 Hz. Cable gland provided, power cable by customer.

# Compressor Control Modules

**Maximator Compressor Control Modules** are suitable for mold trials and smaller production run applications with the gas assisted injection molding process with gas bottle supply. As a result of the integrated Maximator gas booster, the gas is compressed to the required pressure level and subsequently controlled to the required injection pressure using the pressure-control technology.

## RM/500/2/VP/80/500/N2

### Compressor Control Module for nitrogen up to 500 bar

The N2 Compressor Control Module is used for the pressure supply and pressure control for the N2-GIT process. With this system, N2 is compressed to 500 bar and then controlled to the required pressure in each case by the high-precision and rapid 3/3-way proportional control technology.

- Compressor and control unit in one system
- Very high repeat accuracy
- Integrated 3 liter / 690 bar storage for continuous volume flow
- Integrated N2 gas booster approx. 80 l<sub>N</sub>/min, 500 bar
- Visual representation of pressure/time profiles
- Pressure/Time profile freely programmable
- Compatible with all injection molding machines



## Application

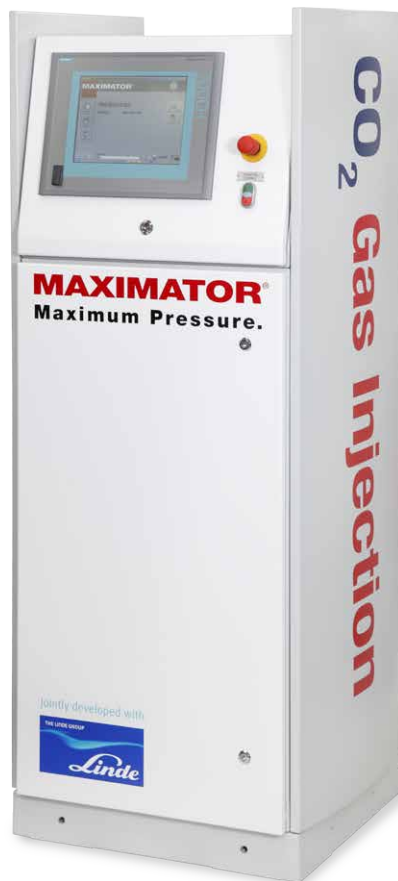
The Compressor Control Module is a self-contained functional unit for pressure generation, as well as pressure-controlled fluid injection in the GIT process, and can be adapted to all injection molding machines independent of the type and manufacturer.

The gas booster supplies continuously into a storage tank and thus ensures that the pressure in this storage tank is always within the adjustable limit values.

Technical Data	RM/500/2/VP/80/500/N2	RM/500/2/VP/500/CO2	RM/500/4/VP/500/CO2
No. of proportional valves	2	2	4
Control tolerance		± 0,5 bar	
Range of control		5 - 500 bar	
Response period		0 - 400 bar in 140 ms	
Booster flow capacity	80 l <sub>N</sub> /min	approx. 60 kg/h	approx. 60 kg/h
High pressure filter		2 Nos. / 90 µm	4 Nos. / 90 µm
Curve representation		1 to 2	1 to 4
Interface		EUROMAP 62	
Air drive consumption		approx. 500 - 4000 l <sub>N</sub> /min	
Compressed air connection		6 bar / 1/2" BSP Hose nozzle	
N2 / CO2 Inlet		M16 x 1,5 (Ermeto 8S) 1 Nos	
N2 / CO2 Outlet		M16 x 1,5 (Ermeto 8S) 2 Nos	M16 x 1,5 (Ermeto 8S) 4 Nos
Dimensions (W/D/H)	725 / 562 / 1230 mm	725 / 630 / 1830 mm	
Weight	approx. 180 kg	approx. 370 kg	approx. 385 kg

After receipt of the start signal from the injection molding machine, the fluid injection is implemented. The pressure control is realized exactly by means of hydraulically-operated, 3/3-way proportional valves from Maximator. As a result, both switchover markings and melt standstills are effectively avoided.

Thanks to the smart software, production parameters can be flexibly adapted to individual requirements.



## RM/500/2(4)/VP/500/CO2

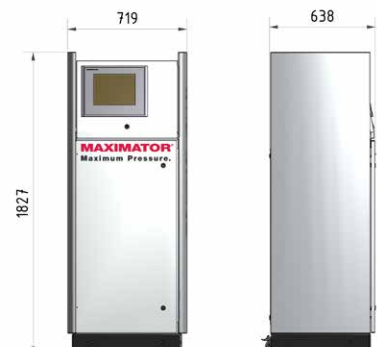
### Compressor Control Module for liquid carbon dioxide to 500 bar

The CO2 Compressor Control Module is employed for pressure supply and pressure control in the new CO2-GIT process. CO2 is compressed in this system to 500 bar and then controlled to the required pressure in each case by the high-precision and rapid 3/3-way proportional control technology. As a result of the integrated 2.5 liter / 550 bar piston accumulator, a continuous volume flow is ensured for a stable process with high-quality results.

- CO<sub>2</sub>-compatible, 3/3-way proportional valve technology
- Special optimized CO<sub>2</sub> gas booster
- Integrated 2.5 liter / 550 bar piston accumulator for continuous volume flow



RM/500/2/VP/80/500/N2



RM/500/2(4)/VP/500/CO2

# Water Assisted System

The **MAXIMATOR Water Assisted System** is suitable for assisted molding applications with water (WIT) in the area of assembly line production of component parts with large cross sections or channels. Considerably shorter cycle times and lower gas costs are a characteristic feature of this process variant.

## WID/DV/2/300/1,5

### Water Assisted System for up to 300 bar

The MAXIMATOR water assisted system combines two equipment concepts in one system by providing both volume-flow and pressure control. This innovation remarkably extends the range of potential applications in the plastics industry.

Pressure is generated by a three-piston pump driven by an electric motor. One pressure accumulator is provided for each cavity. Pressurised water controls the injector.

The pressure accumulator charges the tool either directly via a proportional valve or through a pressure piston. Following reception of the start signal, both volume flow and pressure can be controlled.

Additional volume metering is measuring the whole charged volume in both cases. Specified and generated values are graphically displayed on the touch panel.

The touch panel is used for all necessary inputs and monitoring of process data.

The system is also equipped with a temperature and filling level monitoring function. Following depressurisation, components may be blown out with compressed air. Design and installation are in particular focused on low maintenance demands, clear arrangement and easy handling of system components.

- Volume-flow and pressure-controlled system
- Curve form freely programmable with ramp function
- Compact design for 2 cavities
- Emptying of components by blow-out
- Separate volume monitoring of each cavity also during pure pressure control
- TIK-WIT process selectable via touch panel

## Application

The water assisted molding technology (WIT) is a process variant of the assisted molding technology where, instead of gas, water is injected into an injection molding part.

As water has a considerably greater heat capacity than, for example, nitrogen, a significant advantage results through the utilization of water as an injection medium in comparison to the gas internal-pressure process: The cycle time can be significantly reduced as a result of the higher cooling effect (up to 50%).

## Technical Data

### WID/DV/2/300/1,5

No. of proportional valves	2
Pressure intensifiers	2 Nos. (each 1,5 l/cavity)
Pressure accumulators	2 Nos. (each 20 l/cavity)
Output capacity, max.	0-17 l/min, at 400 bar
Inlet filter	20 µm
Medium	cold water 2-4 bar
Operating pressure max.	approx. 300 bar
Water outlet	2 x Ermeto 12 S
Injector control	oil- and grase free, 2 pcs. /cavity (8 pcs. overall)
Interface	EUROMAP 62
Tempering	up to 60°C as option
Water inlet connection	3/4" BSP female
Dimensions (W/D/H)	1550 / 1000 / 2100 mm
Weight	approx. 1400 kg

Furthermore, better surface structures, as well as smaller remaining wall thicknesses, are achieved by this process.

The water assisted molding technology is employed mainly for component parts where large cross sections and channel lengths are to be applied. Such component parts are, for example, media-carrying lines in the automotive sector. Also, as a result of the good surface qualities, different component parts in the sanitary area are produced with this process.



View without operating terminal

# Gasdosing Station

The **MAXIMATOR Gasdosing Station** is designed for the high-pressure dosing of gas for the physical foaming of plastics. The physical foaming is applied in the process variants extrusion foaming, polyurethane foaming and pressure-die casting foaming (microcellular foaming).

## DSD 500

### Gasdosing Station for up to 500 bar

The MAXIMATOR DSD 500 Gasdosing Station compresses the gas with air driven Maximator gas booster to pressures up to 500 bar and doses very uniformly, also in case of severe back-pressure fluctuation, through an innovative mass-flow regulation concept and the highly-dynamic Maximator 3/3-way proportional pressure control valve.

The gas volume is measured on the pressure side. The mass-flow regulation is insensitive to temperature and adapts optimally to pressure variations with constant dosing quantity.

The measured values are visualized. Because of the precise injection flow regulation, production fluctuations under the same product, material and process conditions can be reduced.

- Generation of a constant, uniform microcellular foam structure
- Injection flow capacity is controlled extremely precisely, as well as independently of pressure and temperature in the extruder (also in case of very small dosing quantities)
- automatic adjustment to extruder pressure reduces start-up process
- a high-dynamic control valve responds promptly to process changes
- Insensitive to gas bubbles in the liquid CO<sub>2</sub> - no extensive cooling required

## Application

In case of physical foaming, the gas dosing station injects the gas (propellant) into the extruder under high pressure via an injection valve. The gas quantity can be adjusted directly and adapted to the polymer and the foam density to be achieved.

At the tool outlet, a sudden, large pressure drop leads to a supersaturation of the melts with the propellant. The gas is again released from the polymer and thus forms a consistent, microcellular foam structure.

### Technical Data

	DSD/500/30	DSD/500/60
Proportioning volume (min./max.)	0,2 - 30,0 kg/h CO <sub>2</sub>	2,0 - 60,0 kg/h CO <sub>2</sub>
Proportioning range	0,2 - 3 / 0,5 - 10 / 2 - 30 kg/h	2 - 30 / 6 - 60 kg/h
MAXIMATOR Gas Booster (Nos.)	DLE30-75-2-GU-C (1)	DLE30-75-2-GU-C (2)
Extruder pressure	max. 350 bar	
Medium	CO <sub>2</sub> / N <sub>2</sub>	
Flow capacity CO <sub>2</sub> with high pressure supply –liquid-	max. 30,0 kg/h	max. 60,0 kg/h
Flow capacity CO <sub>2</sub> with riser pipe bottles –liquid-	max. 20,0 kg/h	max. 40,0 kg/h
Flow capacity N <sub>2</sub> with gas bottle inlet pressure 200 bar down to 20 bar	min. 2,0 kg/h	min. 4,0 kg/h
Air drive pressure*	6 – 10 bar	
PLC	Siemens S7	
Control Panel	5,7" , visualisation 320x240	
Weight	approx. 275 kg	approx. 320 kg
Dimensions (W/D/H)	720 / 685 / 1830 mm	

\*Operation with 4 bar air drive pressure is possible, but this will reduce the flow capacity.



As well as the low raw material consumption, the significant characteristics of this production process are positive product properties, such as low density, exceptional heat and sound insulation, mechanical damping, low levels of water vapor permeability and reduced moisture absorption.

Further advantages are a homogeneous foam structure, very good process stability and low propellant costs.



### Variants of Maximator DSD500 Gasdosing Station for different applications

#### DSD/500/Atex

For dosing of combustible gases such as propane / butane Maximator has developed a version of the DSD500, which can be used in conformity with the explosion protection directive 94/9 EC in hazardous areas.

#### DSD/500/20/SS-Stainless Steel

Especially for the dosing of CO<sub>2</sub> in drying processes in the food industry the stainless steel version of the DSD500 is designed.



### Technical Data Connections

Compressed air connection	1/2" BSP Hose nozzle
N <sub>2</sub> / CO <sub>2</sub> Inlet	M16 x 1,5 (Ermeto 8S) 1 Nos
N <sub>2</sub> / CO <sub>2</sub> Outlet (Depending on injection volume)	1/8" or 6mm metric tube Swagelok pipe fitting (1 Nos)
N <sub>2</sub> gas bottle connection 200 bar*	W24,32 x 1/14" Thread (DIN 477, No. 10)
N <sub>2</sub> gas bottle connection 300 bar*	M30 x 2 Thread (DIN 477, No. 54)
CO <sub>2</sub> gas bottle connection*	W21,80 x 1/14" Thread (DIN 477, No. 6)
Electrical connection	230 V / 50 Hz

\*Adapter available as accessory.

# Gas Injectors

## Gas injector / Injector service kit

Nitrogen is charged – controlled by the control module – through the mold lines into the injector. The velocity of flow makes the needle move forward. The freely movable needle extends the molding time and the cleaning cycle. Additional gas channels prevent the melt from forming a skin around the injector. Upon pressure relief the needle moves backwards and wipes off impurities.

- self-cleaning function
- fast replacement with open mold
- high reproducibility
- increased service life and improved cleaning characteristics through coating of the needle



### Mold Injector Service Set

Service box for injector installation and cleaning including:

- Installation tool with torque and injector pin ejector device
- Cleaning tool
- Cleaning fleece

Order Code: 3920.4822



Technical Data			
Type Standard design *	Immersion diameter	Immersion depth	Order Code
M4 x 0,5/4/5	4 mm	5 mm	3920.3814
M4 x 0,5/4/10	4 mm	10 mm	3920.3815
M6 x 1,0/4/5	4 mm	5 mm	3920.3816
M6 x 1,0/4/10	4 mm	10 mm	3920.3817
Type Special design	Immersion diameter	Immersion depth	Order Code
M6 x 1,0/6/5	6 mm	5 mm	3920.3818
M6 x 1,0/6/10	6 mm	10 mm	3920.3819
M4 x 0,5/3/5	3 mm	5 mm	3920.3820
M10 x 1,5/8/5	8 mm	5 mm	3920.3822
M10 x 1,5/8/10	8 mm	10 mm	3920.3823
Type Needle for injector	Immersion diameter		Order Code
1/100 1°	1,5 mm		3920.3945
3/100 1°	1,5 mm		3920.3946

\*Standard: including needle with annular gap 1/100 1°

# Gas Injection Control GIC



## Gas Injection Control

### Process monitoring Type GIC/500

The process monitoring module is positioned between control module and mold. The introduced N<sub>2</sub> volume and the recirculated N<sub>2</sub> volume are exactly measured. Thus, the system is capable of detecting gas outbursts, injector impurities and mold leakages. This is the first device for operators to determine and monitor their gas consumptions.

- Process monitoring in conformity with DIN ISO 9000
- Monitoring of gas consumption
- Detection of mold leakages
- Cost reduction
- GOOD/BAD criteria via Interfaces
- also conditionable for multicavities

## Technical Data

### GIC/500

Mass sensors	1 Nos Stainless Steel
Measuring range	0 – 500 bar
Response period	150 msec
Dimensions (W/D/H)	578 / 216 / 300 mm
N <sub>2</sub> -inlet/outlet	M16 x 1,5 (Ermeto 8S) 2 Nos.
Control unit	S 7
Voltage supply	220 V / 50 Hz
Accuracy	± 1 % of measured value
Temperature	Room temperature (RT)
Flow rate	min. 0,05 IN/s max. 15 IN/s (65 kg/h)
Weight	16 kg
I <sub>N</sub> conversion (N <sub>2</sub> )	1 g = 0,85 IN / 1 IN = 1,17 g

# External Hydraulic Power Pack HAG

The **MAXIMATOR-HAG hydraulic unit** is designed for the supply of hydraulic driving mechanisms, as well as the actuation of cores, valve needles and retractable gas and water nozzles.

## HAG/160-210/(8; 12)

### External Hydraulic Unit with PLC Control

The Maximator-HAG hydraulic unit controls up to 6 double-acting cylinders or cores in the mold. The connection with the injection molding machine is made over an interface. Limit switches in the tool are processed as a signal in the PLC, and ensure reliable operation.

- hydraulic pressure up to 210 bar
- 3 independent pressure circuits
- controls up to 6 double-acting cylinders or cores in the mold
- compatible with all injection molding machines
- cart-type, for individual applications



### Application

The mobile core control is the ideal extension for all injection molding machines which do not have any core control.

It is simple to install and operate. With it, movable units at the tool can be moved, such as for example injectors or hydraulic shutters.

### Technical Data

#### HAG/160-210/(8; 12)

Valves	8 or 12 Nos. seat valves
Hydraulic pressure	20 – 210 bar, adjustable
Control unit	Siemens PLC 7
Drive	6 bar pneumatic or 380V / 50Hz / 10A
Connections	M16x1,5 24° cone (Ermeto 8S) 12 Nos.
Compressed air connection	1/2"
Dimensions (W/D/H)	720 / 560 / 1230 mm
Voltage supply	220V / 50Hz (110V / 60Hz) / 2A
Weight (incl. packaging)	190 kg, cart-type (280 kg)

# Service



## Service for your Gas- and Water Injection Systems

Our team of more than 50 specialists is ready to provide support with technical and engineering expertise at 20 locations around the globe, in order to assist with everything involved in your system - from the stage of operational startup, through operator training, to maintenance.

In addition, we supply your gas and water assisted systems at all times with original spare parts.

Aligned to transparency, we demonstrate to you the functioning method of the technologies in product instructions, so that you economize on time and costs right from the beginning. As a result of safe and competent handling in operating and maintenance work, you contribute to a longer service life of all components and prevent unnecessary shutdowns - your investment is thus ensured in the long-term.

Maximator service and maintenance agreements guarantee the regular maintenance and repair of your system.

We take the load off in your day-to-day business, where we make sure that the inspection schedules and continuous maintenance are planned and implemented, so that the performance capability of your machine remains at the highest level.



## Design Consultancy & Tooling Service

Design, Consultancy and Tooling Projects experts are available worldwide to advise how gas assisted molding can benefit your product and company - from concept to production. CAE plastic and gas flow analyses are provided when appropriate.

Mold trials may be undertaken at our global facilities or supervised by our technicians at a molder's factory.

Comprehensive training for customers including:

- Factory technicians – in the operation of all Maximator equipment and processes
- Maintenance engineers – in the servicing and maintenance of Cinpres and Maximator equipment
- Design engineers - in the design of AIM products to take full advantage of the potential economic and technical benefits
- Sales people – in the advantages and benefits of AIM as well as the scope for design flexibility, with a view to increasing sales with new product applications.

# Additional products

## » Hydraulic and Pneumatic



### High Pressure Gas Booster and Pumps

- Oil-free compression of industrial gases and compressed air up to 2,400 bar, liquids up to 7.000 bar
- Air-driven piston boosters which operating according to the principle of a pressure intensifier
- Air-driven operation makes them particularly suitable for use in explosion-protected areas
- No power consumption during long pressure holding periods



### Hydraulic systems and gas booster stations

- Compact hydraulic units for clamping and testing applications
- Injection units and sampling systems
- Flushing stations for extreme environmental conditions



### Valves, Fittings and Tubings

- Engineering and manufacturing exclusively in Germany
- Extensive product range (high-pressure valves, fittings, tubings, check valves, filters, adaptors and more)
- Short delivery times thanks to highly flexible manufacturing
- Certificates available for all products (manufacturer's declaration, ATEX and more)



- Hydraulic systems for on- and offshore applications (Wellhead control panels, testing and supply systems for subsea control modules)
- Booster stations for increasing sealing pressure with gas-sealed mechanical seals

- Gas booster stations for testing and filling tasks
- Hydraulic units and booster stations in stainless-steel design
- Feed systems for mechanical seals

# » High-pressure technology and testing equipment



## Testing and Production Systems

- Autofrettage machines (20,000 bar)
- Leakage and burst pressure testing technology
- Assembly and functional test systems
- Expansion units
- Pressure pulse test machines (6,000 bar)
- High-pressure forming machines
- Testing technology for plastic components
- Testing technology for high-pressure-carrying components in hydrogen mobility



## Oil and Gas High Pressure Equipment

- Compact liquid and gas power packs for flexible high pressure generation
- Central feed and circulation systems, cooler for liquid and gas mechanical seals
- Booster stations for gas sealed mechanical seals and Seal Gas Conditioning Skids for Turbocompressors
- High Pressure Test Equipment
- Standard and Customized Surface Control Panels for wellheads
- Hydraulic systems for on- and offshore production systems as well as various test and flushing applications

## On your side everywhere

As the technology leader in the area of high-pressure and testing technology, hydraulics and pneumatics up to 25,000 bar, Maximator GmbH, with its company headquarter in Nordhausen, has been extremely successful worldwide for more than five decades.

With our products and innovative system solutions, we are the long-standing partner of companies of repute in the automotive and supplier industry, as well as the chemical and mechanical engineering, energy, oil and gas industry sectors.

The production of high-quality parts with optimized cycle times in gas and water assisted molding processes requires reliable systems for the generation of gas and water pressures, as well as extremely exact pressure control with maximum repeatability.

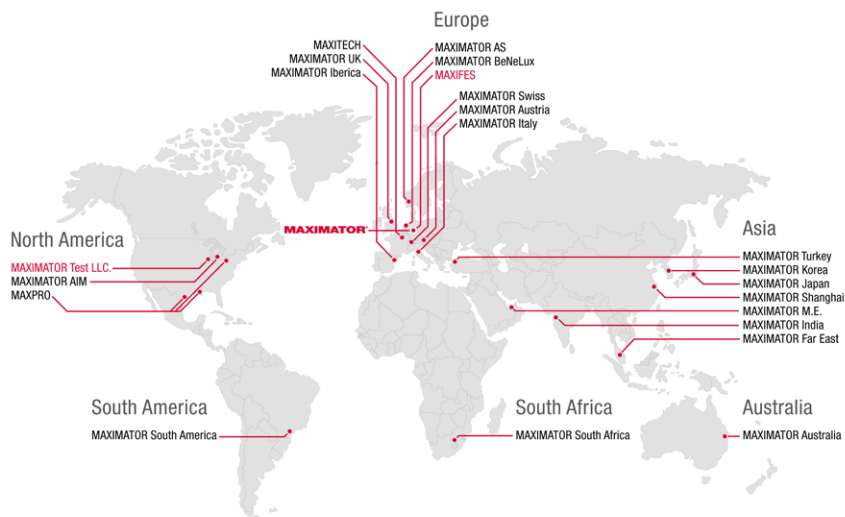
As a result of the application of the most varied, highly-complex testing and production systems, for example in the automotive sector, we have a unique knowledge base which we have applied in innovative systems for pressure generation, pressure control and process diagnostics, as well as injector technology.

With our international partner companies, experienced experts in high-pressure technology are always ready to assist you. We have compiled detailed contact information for our international partners which you can find on our website at:

[www.maximator.de/worldwide+distribution](http://www.maximator.de/worldwide+distribution)

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