

- ▶ *Products*
- ▶ *Services*



This is what Wollin stands for



Economic Efficiency

The Eco+ spray systems bring our customers significant savings in energy costs, release agent consumption and water usage, along with an economic advantage through the improvements in process quality that are achieved.



Quality

Our high-quality products are designed and produced in-house. We are DIN ISO 9001 certified. Our quality management system has been certified since 2002 and we consistently provide products and services that meet customer and regulatory requirements.



Know-How

Our highly highly trained and motivated employees are specialists in their fields and make the difference.



Innovation

As a market and technology leader, Wollin is a pioneer in reducing energy and release agent consumption in foundries. We strive to work with our customers and offer them the latest developments in the industry.



Sustainability

We firmly believe in the importance of social and environmental responsibility. We produce our electricity with our own solar system and our vehicle fleet consists of electric or hybrid vehicles that are charged with solar power at 18 in-house charging stations.

Foreword

As a medium-sized family business, we offer innovative and dependable products, automation technology and special machines in the field of spray technology for die casting foundries.

The optimal solution for your application in terms of efficiency of coolant and release agent application is our expertise and strength.

Together, we create the ideal solution for your process - from development and order placement to the finished product. With experience and technical know-how, our specialists in sales, design and manufacturing are at your service.

We support you all the way to the turnkey end product and beyond.



Björn Wollin

Dipl.Ing. (FH),
Managing Director Wollin GmbH

Worldwide excellence is a must

The in-house development and production of our products enabled us to have the greatest possible influence on the process-relevant parameters. Competence, customer proximity and cooperation with exclusive partners and suppliers result in an efficient and reliable system with customized solutions. That is why our customers worldwide trust in the quality Made in Germany by Wollin.

Facts



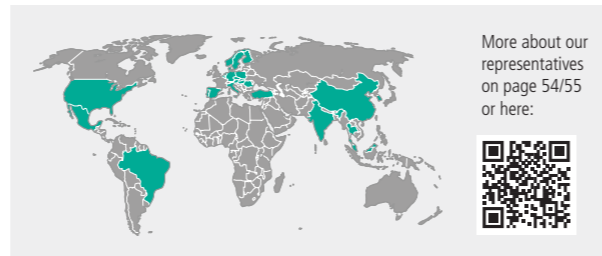
Company: Wollin GmbH
Foundation: 1973
Headquarter: Lorch, Germany
Employees: 150
Locations: Lorch, Deutschland
 Taicang/Jiangsu, China
 Plymouth, MI, USA

History



1973 Foundation of the Wollin company by Rudolf Wollin in Schorndorf
1983 Relocation from Schorndorf to Lorch
1999 Björn Wollin joins the company
2003 Foundation of Wollin USA
2005 Appointment of Björn Wollin as Managing Director
2008 Foundation of Wollin China
2010 Acquisition of Acheson Industries (today AED Automation)
2018 Record sales year

Agencies



Europe:	Worldwide:
Belgium	Brazil
Denmark	China
Germany	India
Finland	Malaysia
Italy	Mexico
Netherlands	Singapore
Norway	South Korea
Poland	Thailand
Portugal	USA
Austria	
Romania	
Sweden	
Slovakia	
Spain	
Czech Rep.	
Turkey	
Hungary	

Product Legacy

Companies work in a future-proof manner when they bring benefits to their customers and offer solutions for upcoming challenges. Wollin has always thought and acted according to this maxim, setting new impulses for existing products and new innovations.

2003	2008/09	2010	2017	2020/21
PSM 1-4	Minimum Quantity-Spraying development	Patent DD Nozzle	Patent DDV Nozzle	Portal & Heavy-DCM Solutions
Reliable for 20 years in use.	Less is more, even less is even better.	Manually venting outer mixing nozzle for smaller spraying tools with Eco+ technology.	Self-venting, efficiency-enhanced external mixing nozzle for more complex applications with Eco+ technology.	THINK BIG, SPRAY BIG! Future-proof, flexible large-scale DCM spray solutions.

► **Eco+ & Eco Spray**

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Eco+ and EcoSpray

Spray solutions with savings potential

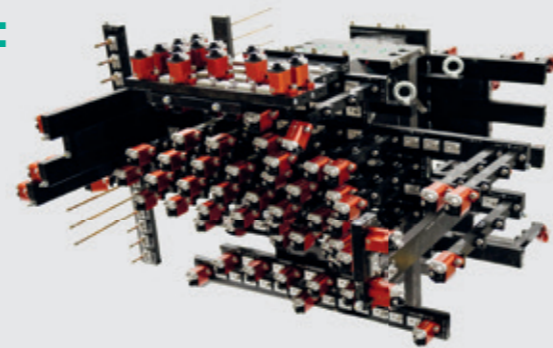
Estimated savings with microspraying (Eco+) with Wollin EcoSpray:

- Cycle time 10 - 20%
- Energy (mold tempering) 60 - 80%
- Compressed air (vol.) 70 - 80%
- Fresh water 99 - 100%
- Waste water 100%
- Mould life 50 - 300%

Reduction of scrap rate, easier rework, lower maintenance effort, significant increase in die service life up to 300%.

Eco+ Application example: Volumetric spraying with DDV nozzles

- Mask spraying tool for suspension strut support
- Number of nozzles: 127
- Release agent consumption per cycle: ~ 8 ml



In the die casting industry, the development of resource-saving technologies is a continuous endeavor. Wollin is taking the lead with the development of the patented Eco+ microspray technology.

Eco+ and EcoSpray essentially work with two developments:

- Application technology that optimizes the lowest spray quantities possible
- Improved release agents (oil/water-based) which operate at higher temperatures, up to 400°C

The use of oil- or water-based concentrates, combined with Eco+ micro-spray technology, offers:

- Economic advantages
- Ecological advantages
- Production advantages

„Eco - less is more, even less is even better.“

Eco

- For Eco spray, the following equipment needed is:
 - Spraying tool with FSD
 - Release agent supply such as OSA 1-50-2 or OSA 2-15
- Expected outcomes using Eco spray:
 - Resource-saving (when using an appropriate release agent)
 - Better part quality
 - Longer die service life
 - Continuous spraying



All Eco and Eco+ components are marked with a seal in the catalog.

Eco+

- For Eco+ spray, the following equipment needed is:
 - Spraying tool with DD or DDV nozzles
 - Release agent supply such as OSA 1-50-2 or OSA 2-15
 - ECO-prepared mold spraying machine (ex works or retrofitted)
 - Pressure boosting station if air pressure network < 7 bar (only for DDV nozzles)
- Expected outcomes using Eco spray:
 - Resource-saving (when using an appropriate release agent)
 - Better part quality
 - Longer die service life
 - Lower release agent consumption
 - Higher process reliability
 - Volumetric spraying



Spraying methods compared:

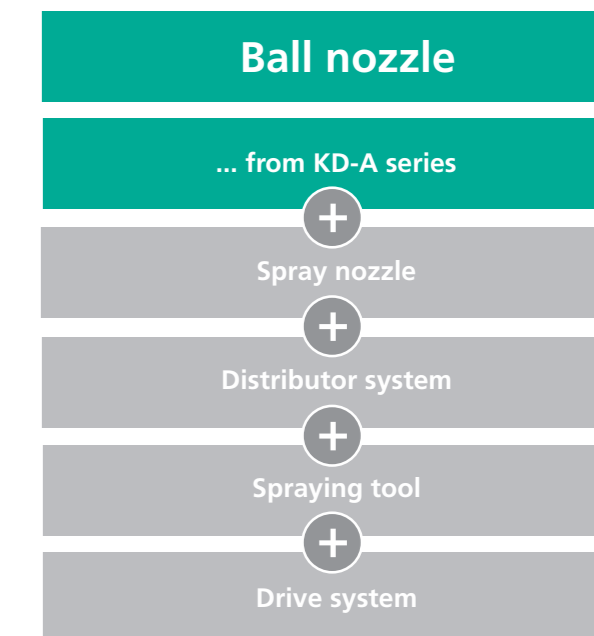
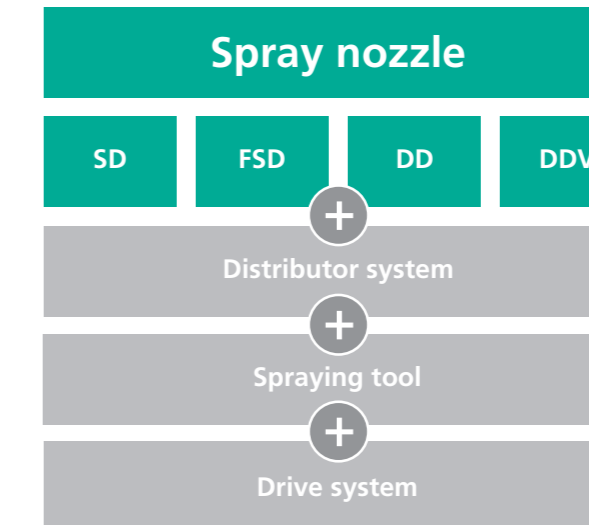
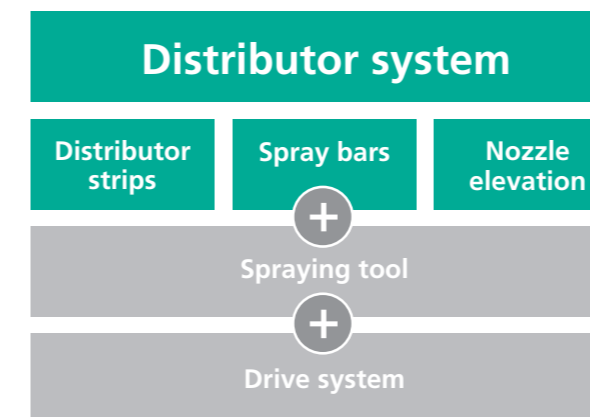
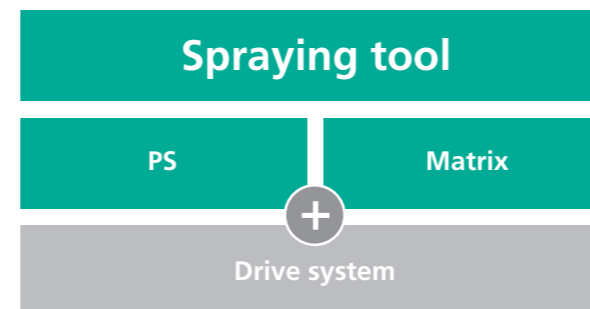
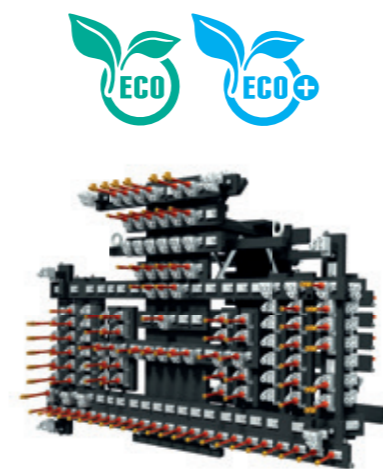
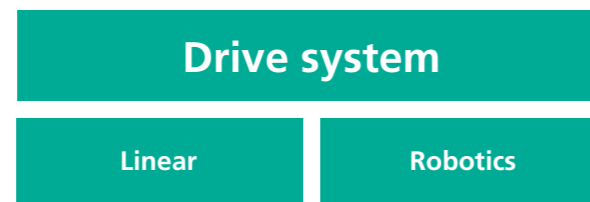
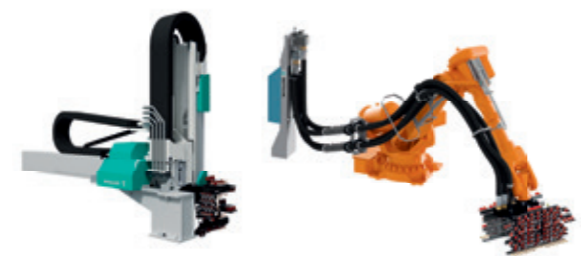
	Conventional Hybrid spraying	EcoSpray Minimum quantity spraying	Eco+ Microspraying
	Water-based release agent	Water-based release agent	Release agent concentrate
Casting weight (complete)	5.000 g	5.000 g	5.000 g
Cycle time	63 sec	60 sec	54 sec
Release agent consumption	2,7 l/cycle	55 ml/cycle	4 ml/cycle
Spray nozzle Spray	SD nozzle continuous	FSD nozzle continuous	DD/DDV nozzle volumetric

Modular system

Step by step to the perfect solution

We make the decision simple

- Easy to assemble modular design
- Flexible to use
- Adaptable to your mold with standard modules
- Process-safe due to permanent fixing of all mold-specific settings
- Cost-effective due to the use of standard components

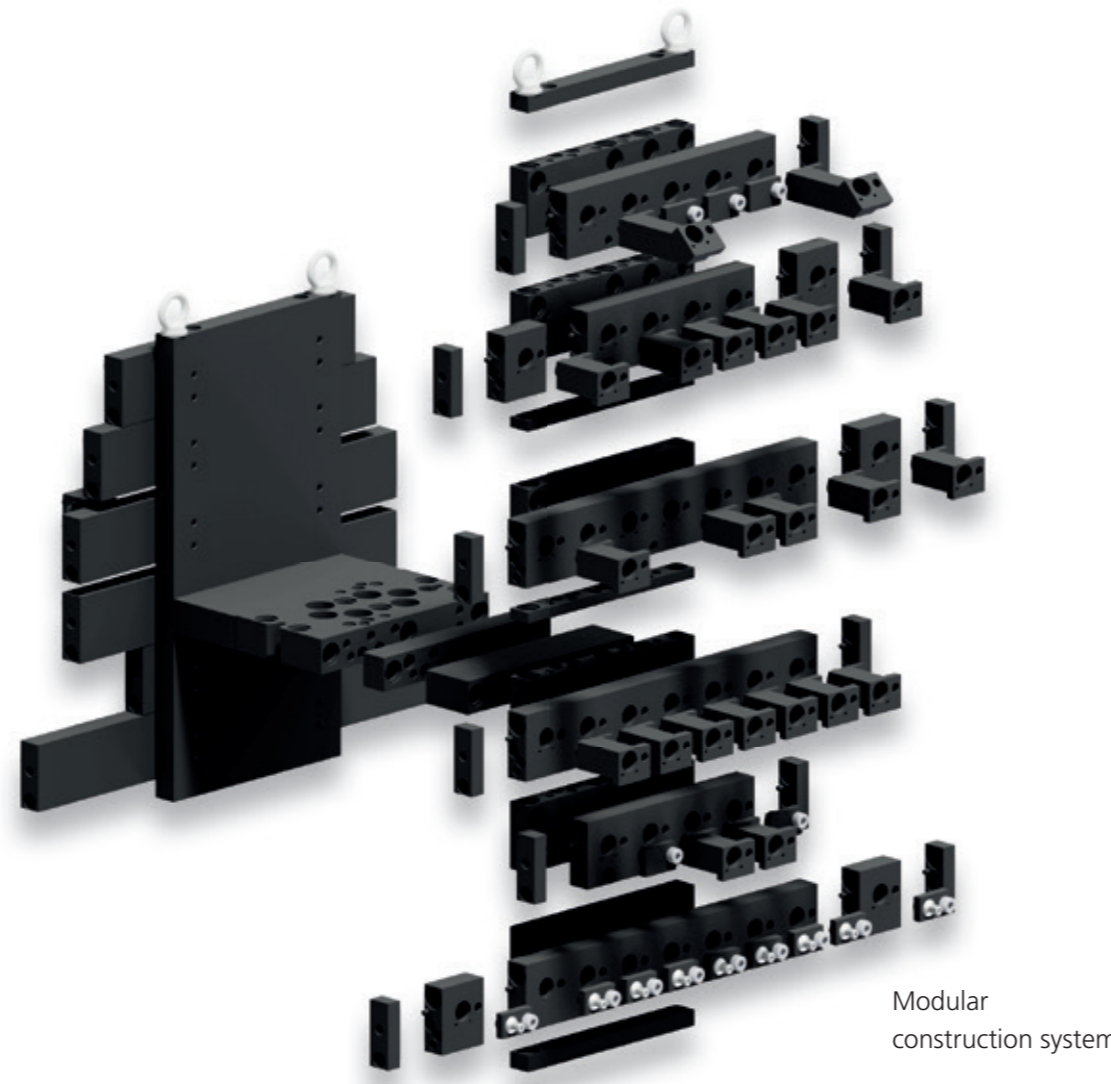


PowerSpray

makes short work of it -
worldwide

PowerSpray spraying tools

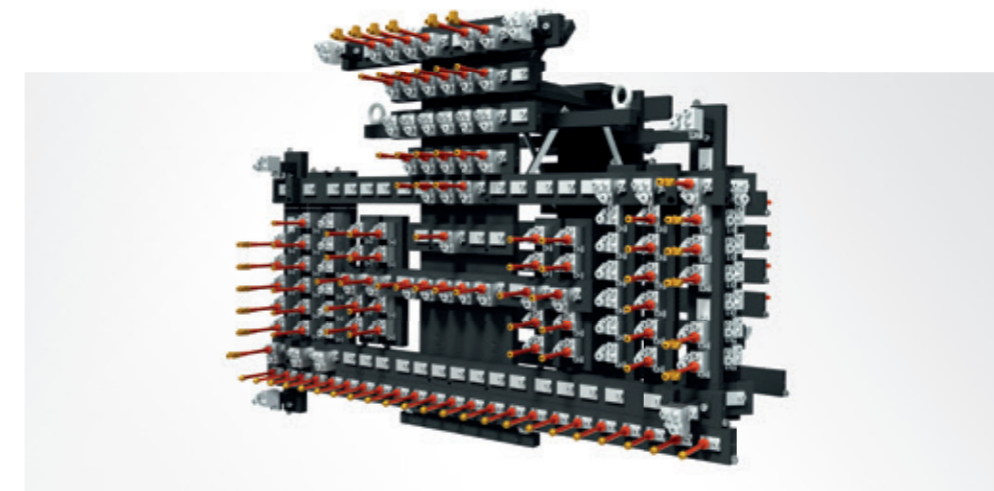
The spraying tool consists of a distribution system (PS 16 or PS 25) which is the backplane that the spraying and blow off strips are mounted too. The modularity of the system allows for spray zone configuration to optimize die spraying.



Modular construction system

PS16

- Easy assembly due to proven modular system
- Flexible due to large parts catalog, individually adaptable to any shape
- High performance due to large media throughput
- High process reliability and reproducibility due to mask spraying tools without tubes
- Cost-effective due to use of standard modules



for machine type

PSM1	PSM/ESM2	PSM/ESM(T)3F	PSM/ESM(T)4F
x	x	x	x

for spray nozzle type

SD2	SD12	SD3	SD13	SD4	SD14	SD16	SD18	DD(V)	FSD
x	x	x	x	x	x	x	x	x	x

MODULAR SPRAYING TOOLS

PS16c

- Easy assembly due to proven modular system
- Lower weight due to compact design
- Higher spray density due to double & combination bars
- Can be combined with PS16 standard
- High process reliability and reproducibility due to mask spraying tools



for machine type

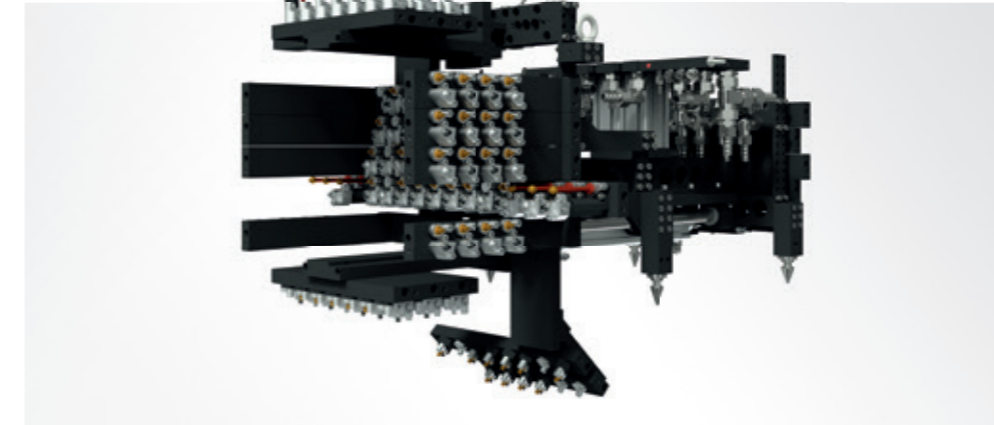
PSM1	PSM/ESM2	PSM/ESM(T)3F	PSM/ESM(T)4F
x	x	x	x

for spray nozzle type

SD2	SD12	SD3	SD13	SD4	SD14	SD16	SD18	DD(V)	FSD
				x	x	x	x	x	x

PS16 XL

- PS16 system with expandable spray tool option
- Simultaneous spraying of both mold halves
- High throughput of release agent and blow-out air
- High process reliability and reproducibility due to mask spraying tools without tubes
- Simple assembly due to proven modular system



for machine type

PSM1	PSM/ESM2	PSM/ESM(T)3F	PSM/ESM(T)4F
			x

for spray nozzle type

SD2	SD12	SD3	SD13	SD4	SD14	SD16	SD18	DD(V)	FSD
x	x	x	x	x	x	x	x	x	x

MODULAR SPRAYING TOOLS



- High performance blow-off and spraying due to increased size of air and lube porting
- Suitable for medium and large die casting molds
- Can be used on ESM3 and ESM4
- Can be combined with PS16 and PS16c
- High process reliability and reproducibility due to mask spraying tools
- Easy assembly due to proven modular system

for machine type

PSM1	PSM/ESM2	PSM/ESM(T)3F	PSM/ESM(T)4F
			x

for spray nozzle type

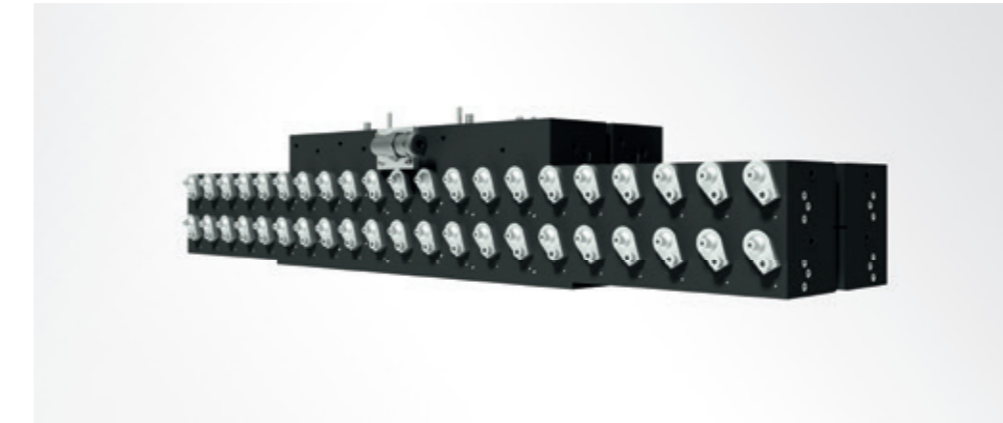
SD2	SD12	SD3	SD13	SD4	SD14	SD16	SD18	DD(V)	FSD
x	x	x	x	x	x	x	x	x	x



Matrix

Individual spraying of the mold sections by switching individual nozzles or nozzle groups on and off

- Individually controlled nozzles
- Suitable for small part runs with many mold changes
- One spray tool with multiple programs for different parts
- Designed for small to medium die casting molds



Each nozzle can be switched individually via the PC3 spraying machine control system

- Release agent reduction
- Gentle on the mold
- When changing die, only the spraying program needs to be changed
- When changing molds, only the spray program for the clamped mold is selected
- Single nozzle control with freely programmable single nozzles or nozzle groups
- One spraying tool for several molds
- Only the spray nozzles matched to the mold are controlled
- Designed for small to medium die casting moulds
- Suitable for small as well as large series

for machine type

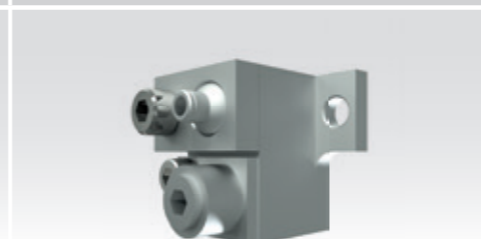
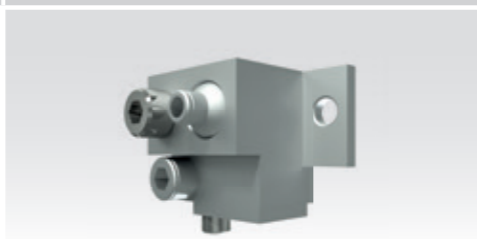
PSM1	PSM/ESM2	PSM/ESM(T)3F	PSM/ESM(T)4F
	x	x	

Spray nozzles

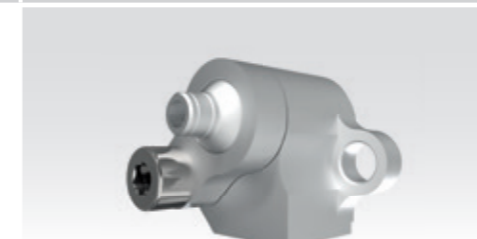
Dosing sets

- Wide selection of spray nozzle configurations
- Spray nozzles can be configured with any spray tip
- There are two types of conventional spray nozzles:
 - External mixing principle
(SD-A-02+..., SD-A-03+..., SD-A-04+...)
 - Internal mixing principle
(SD-I-02+..., SD-I-03+..., SD-I-04+...)

	SD12	SD13
Quantity regulation	exchangeable dosing set	fixed dosing screw
Construction	Standard	Standard
Adjustment of flow rate per nozzle	Limitable via dosing sets, overview see page 21	Steplessly adjustable via adjusting screw
Ball nozzle	freely selectable	freely selectable
for PS16	x	x
for PS16c		
for PS16XL	x	x
for PS25	x	x
for ECO		
Weight per nozzle	0,114 kg	0,177 kg



	SD14	SD16	SD18
Quantity regulation	-	exchangeable dosing set	fixed dosing screw
Construction	Compact	Compact	Compact
Adjustment of flow rate per nozzle	Regulation of the spray quantity via ball nozzle	Limitable via dosing sets	Steplessly adjustable via adjusting screw, overview see page 21
Ball nozzle	freely selectable	freely selectable	freely selectable
for PS16	x	x	x
for PS16c	x	x	x
for PS16XL	x	x	x
for PS25	x	x	x
for ECO			
Weight per nozzle	0,08 kg	0,09 kg	0,132kg

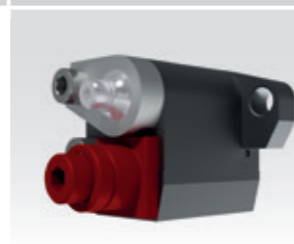


ECO-Series

- ECO spray externally mixing nozzles offered:
- FSD:
 - Efficient release agent application
 - Produces a finely atomized and continuous spray pattern that can be precisely adjusted
 - Optimally suited for the smallest release agent/ dispensing quantities
 - Applications for use in mask and sweep spraying
 - Support of the cooling process possible
- DD/DDV:
 - Adjustable volumetric spraying
 - Nozzles with different chamber volumes (DD/DDV 3, 4, 5), which can be fine tuned via adjustment screw
 - Designed for mask spray tools to spray with maximum efficiency
 - DD for smaller spraying tools, DDV for more complex applications.



	FSD	DD	DDV
Quantity regulation	stepless, fine adjustability	fixed filling quantity per cycle, manual venting	fixed filling quantity per cycle, self-venting
Construction	Standard	Standard	Standard
Adjustment of flow rate per nozzle	infinitely finely adjustable	Integrated tank volume, can be further reduced via adjustment screw	Integrated tank volume, can be further reduced via adjustment screw
Ball nozzle	freely selectable	freely selectable	freely selectable
for PS16	x	x	x
for PS16c	x	x	x
for PS16XL	x	x	x
for PS25	x	x	x
for ECO	x	x	x
Weight per nozzle	0,194 kg	0,189 kg	0,202 kg



Spray nozzles

Dosing sets

Our SD2 and SD12 spray nozzles (internal mixing and external mixing nozzles) must be equipped with dosing sets that allow a defined flow volume depending on the release agent pressure.

For flexible applications we offer an adjustable dosing set which allows a stepless change of the volume flow.

Type	DB-0-04	DB-1-06	DB-2-08	DB-3-10	DB-4-12	DB-5-16	DB-6-20	DB-E	DB-V	BD-FE
Bore Ø diameter	0,4 mm	0,6 mm	0,8 mm	1,0 mm	1,2 mm	1,6 mm	2,0 mm	0,17 - 1,36 mm	-	0,0 - 1,0 mm
Identification feature	Head without puncture	Head with one puncture	Head with two puncture	Head with three puncture	Head with four puncture	Head with five puncture	Head with six puncture	Stainless steel	Aluminium red anodised	Stainless steel

Ball nozzles

- External mixing nozzles
- Can be mounted on spray nozzles according to individual requirements to produce different outputs and spray patterns
- Possible spray patterns: Point jet, flat jet and circular in different forms

NEW

Ball nozzles, clamp caps and adjusting screws are now scaled as a standard







Point Jet

- Point jet ball nozzles
 - Available in different performance classes
 - Angle nozzles with medium and large spray angle KD-A-06-S

Ball nozzle type	KD-A-04	KD-A-06	KD-A-08	KD-A-10	KD-A-15	KD-A-20	KD-A-06-S 30° angled	KD-A-06-S 60° angled
Spray pattern	Point jet	Point jet	Point jet	Point jet	Point jet	Point jet	Point jet	Point jet
Bore diameter of parting agent bores	0,4 mm	0,6 mm	0,8 mm	1,0 mm	1,5 mm	2,0 mm	0,6 mm	0,6 mm
								
								

Special spray patterns

- Maps approximated circular ring geometries

Ball nozzle type	KD-A-B-60°	KD-A-F	KD-A-02
Spray pattern	Full circular	Oval approximated rectangle	Fine atomizing Full circle
Bore diameter of parting agent bores	1x 0,4 mm + 6x 0,6 mm	1x 0,4 mm + 2x 0,6 mm	0,2 mm
			
			

Flat Jet

- Maps approximated rectangle geometries
- Available in different performance classes 0,6 - 1,2 mm

NEW

Ball nozzle type	KD-A-L-06	KD-A-L-08	KD-A-L-10	KD-A-L-12
Spray pattern	Flat jet	Flat jet	Flat jet	Flat jet
Bore diameter of parting agent bores	0,6 mm	0,8 mm	1,0 mm	1,2 mm
				
				

MOLD SPRAYING MACHINES ESM

Efficient Spray Machine (ESM)



Makes short work of the process

Arguments that pay off!

- Increase in payload with unchanged space requirement.
- Easier integration of flow measurement, pressure monitoring and control, Eco-Spray, etc.
- Compact integration platform - more cost-effective options
- Interchangeable with predecessor series
- Spraying tool adaptation compatible with previous series
- Easier maintenance
- New concept for air and medium guide
- Optional preventive maintenance - Industry 4.0
- Operation through the die casting machine or by means of a tablet or cell phone



The ESM series is the trend-setting new development of the previous PSM spraying machines.

Technical data	ESM 2	ESM 3	ESMT 3	ESM 4	ESMT 4
DCM range (kN)	1.600 - 10.000	5.600 - 20.000	5.600 - 20.000	20.000 - 62.000	20.000 - 62.000
Drive system	AC-Servo	AC-Servo	AC-Servo	AC-Servo	AC-Servo
Vertical stroke (mm)	800/1000/1300	1300/1600/2000	1300/1600/2000 (Telescope)	2000/2500	2200/2800 (Telescope)
Horizontal stroke (mm)	800/1000/1200/Assembly stand	1000/1200/1600/2000	1000/1200/1600/2000	2000/2500	2000/2500
Controllers	PC3	PC3/PC84	PC3/PC84	PC3/PC84	PC3/PC84
Spraying circuits single & combined, can be switched on & off	4 spraying circuits	6 spraying circuits	6 spraying circuits	8 spraying circuits	8 spraying circuits
Afterblowing circuits single & combined, can be switched on & off	4 afterblowing circuits	6 afterblowing circuits	6 afterblowing circuits	8 afterblowing circuits	8 afterblowing circuits
High pressure circuits	2 high-pressure circuits	2 high-pressure circuits	2 high-pressure circuits	2 high-pressure circuits	2 high-pressure blowing circuits
Compressed air connection	2" on ESM 2 x 1" spray air 2 x 1" blow air	2" on ESM 1 x 1,5" spray air 1 x 1,5" blow air	2" on ESM 1 x 1,5" spray air 1 x 1,5" blow air	2" on ESM (option 3") 1 x 1,5" spray air 1 x 1,5" blow air	2" on ESM (option 3") 1 x 1,5" spray air 1 x 1,5" blow air
Separating agent connection	1/2" for mixture 3/8" for concentrate	1" for mixture 3/8" for concentrate	1" for mixture 3/8" for concentrate	1" for mixture 3/8" for concentrate	1" for mixture 3/8" for concentrate
Separating agent pressure	2 - 8 bar	2 - 8 bar	2 - 8 bar	2 - 8 bar	2 - 8 bar
Spray and afterblow air (controlled)	2 - 8 bar	2 - 8 bar	2 - 8 bar	2 - 8 bar	4 - 8 bar
High pressure blow circuit (net pressure)	4 - 8 bar	4 - 8 bar	4 - 8 bar	4 - 8 bar	4 - 8 bar
Separating agent flow rate	10 l/min at 6 bar	10 l/min at 6 bar	10 l/min at 6 bar	50 l/min at 6 bar	50 l/min at 6 bar
Air flow rate	700 Nm³/h	2000 Nm³/h	2000 Nm³/h	2500 Nm³/h	2500 Nm³/h
Spraying head weight	45 kg	100 kg	130 kg	200 kg	280 kg



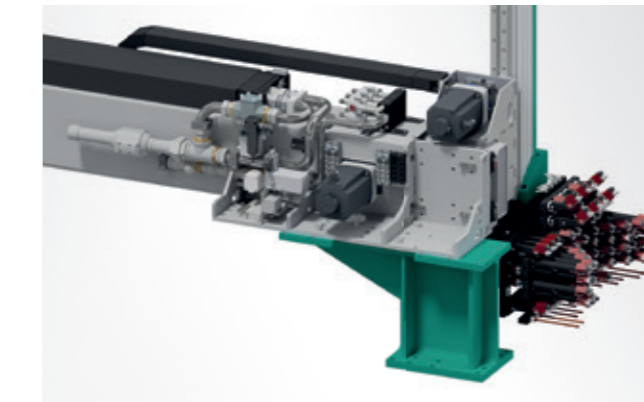
MOLD SPRAYING MACHINES ESM

Technical execution	ESM 2	ESM 3	ESMT 3	ESM 4	ESMT 4
Power transmission	Via rack and pinion for both axes. Robust, low-maintenance planetary gear units with high output torque and high efficiency. Maintenance-free Siemens AC servo drives guarantee highly dynamic motion sequences, short cycle times, high availability, low maintenance costs.				
Guides	Stainless machine tool guides. Wipers on both sides and side seals on the bearing blocks keep out dirt and contain grease lubricant. Guide elements are large dimensioned to ensure long service life at maximum stroke.				
Lubrication of bearings and guideways	Automatic progressive central lubrication with electric pump, reservoir and monitoring for the drive and guide elements of both axes.				
Pressure control unit	Spray air pressures can be continuously programmed via the control system. Option: SL control with pressure boosting (ECO)				
Painting	Mold spraying machine: RAL 7035 - Hoods water blue (turquoise) RAL 5021 - Control cabinet and accessories: RAL 7035 light grey				

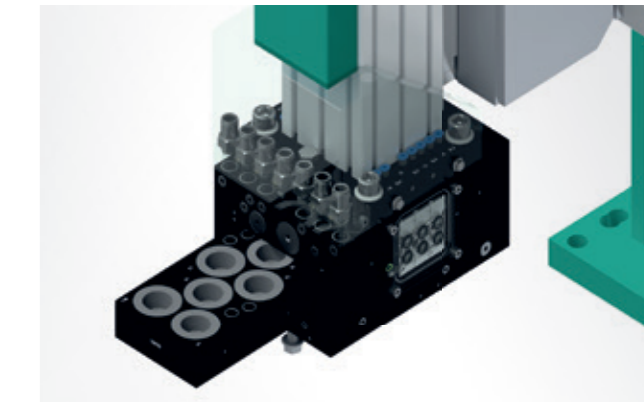
Axis data	ESM 2	ESM 3	ESMT 3	ESM 4	ESMT 4
Speed	0,01 - 2,0 m/s freely programmable for both axes	0,01 - 2,2 m/s freely programmable for both axes	0,01 - 2,2 m/s freely programmable for both axes	0,01 - 2,0 m/s freely programmable for both axes	0,01 - 2,0 m/s freely programmable for both axes
Positioning accuracy	< +/- 0,5 mm	< +/- 0,5 mm	< +/- 0,5 mm	< +/- 0,5 mm	< +/- 0,5 mm
Repeat accuracy	< +/- 0,1 mm	< +/- 0,1 mm	< +/- 0,1 mm	< +/- 0,1 mm	< +/- 0,1 mm
Acceleration	2,0 m/s ²	2,0 m/s ²	2,0 m/s ²	2,0 m/s ²	2,0 m/s ²



New concept for medium and air flow.



Compact integration platform, the essential functions are located on the horizontal axis.



Easy replacement of wear elements due to drawer design.

Since the trend in die casting is towards resource-saving micro-spraying, the supply line for the release agent concentrate is already integrated in the machine. Thus, the upgrade to the Eco-Spray option and the use of metering nozzles are considerably simplified.



ESM1 LC

Advantages and innovations

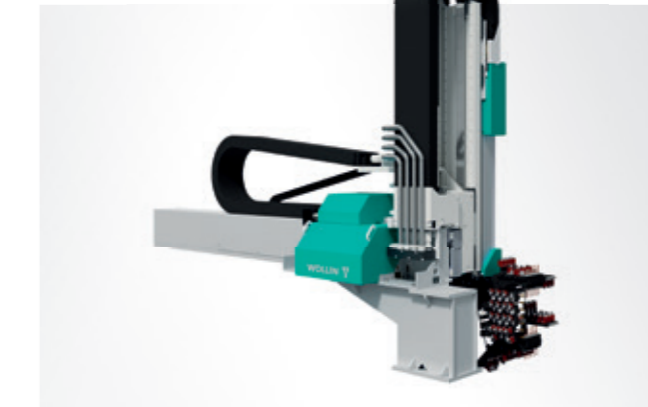
For hot chamber DCM

- Fast speed for faster cycle times
- For smaller moulded parts
- Spraying with positioning accuracy
- Additional features:
- Assembly stand
(horizontal shift, height adjustment, swivelling)

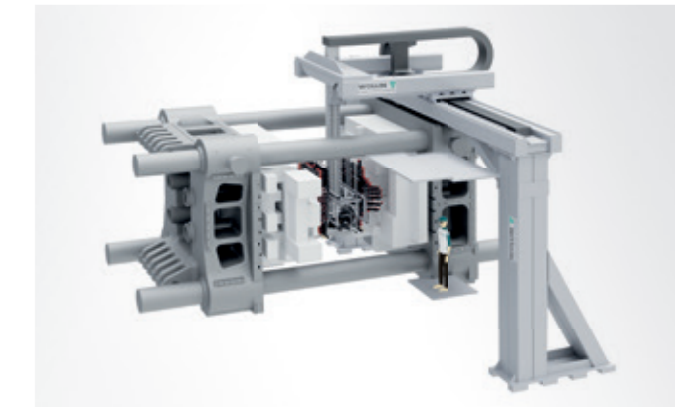
DCM range (kN)	from 800
Vertical stroke (mm)	600 - 800
Controllers	SC2 - S71500 (Siemens)
Spraying circuits	2
Drive system	Timing belt
Motor	Servo-Bevel gear motor (Stöber) Power: 1,48 kW, incl. giver
Connection	400 V AC
Speed	2,75 m/s
HMI	Siemens - 4" Touch-Screen at the Control cabinet (400 x 800 x 300 mm)
Interface	DISPO25
Spraying head weight	6 kg



ESM3



ESMT4



ESM8

Overview of the ESM variants

Size	DCM Range (kN)	Telescope	Portal	Gantry	Moving Unit	Slide	Mirrored	Low Cost	Fixed Plates	Stand Left / Stand Right	2 Stands
		T	P	G	M	S	Sp	LC	FP	SL/SR	2S
ESM1*	from 800						x	x			
ESM2	1.600 - 10.000						x				
ESM3	5.600 - 20.000	x					x				
ESM4	20.000 - 62.000	x					x				
ESM8	up to 90.000	x	x	x	x	x	x		x	x	x

*for hot chamber DCM

Process Control

Simple operation,
full control



The choice is yours:

The user interface of Wollin controls is tailored to the spraying application. The intuitive operating concept allows you to create spraying programs with predefined commands without programming knowledge. The easy learnability and the same user interfaces for spraying machines, metal dosing systems, release agent supply systems and gantries enable the user to achieve better results in a short time.

The display of process data, as well as the integrated Industry 4.0 capabilities allow networking with the die casting machine, as well as external access via remote maintenance (if requested by the customer).

Wollin controllers and operator panels are designed to withstand the rigors of everyday foundry use.

PC3 Process Control



Control system

- Further development of the proven PC2 with modern, HTML-based operating concept
- Platform-independent display in the browser for different screen sizes
- Spray programs still compatible with PC2, programs will work with predecessor systems
- Modern Beckhoff control hardware with Intel Dual-Core CPU and Windows10 IoT
→ Well equipped for future tasks

Drive concept

- New drive concept with Siemens drive controllers and extended diagnostic and evaluation options
- Integrated safety functions
- Mains recovery of braking energy for reduced power consumption
- Extended temperature range enables operation without cooling unit in almost all cases

Integration possibilities

- Multiple interfaces for interlinking with die casting machine (standard Profi net)
- Interface for data integration and Industry 4.0 applications (Ethernet, OPC UA) as standard also enables simple integration and remote control in other operating concepts
- Extensive data collection (optional) and diagnostic features available
- Optional secured remote maintenance access



PCS1 Process Control



The CNC control from SIEMENS

- SINUMERIK ONE
- Real contouring control
- Absolute positioning
- DIN programming or Dialog-supported programming switchable
- Data backup via network and USB possible



CONTROLLERS

Controller	PC3 Process Control	PCS1 Process Control
Controller principle	PC controller with bus system (Beckhoff company) installed in the switch cabinet	Sinumerik One NCU1740 CNC with S7-1500 PLC and Sinamics S120 Drives. Working memory 4 Gbyte DRAM. The Sinumerik One control combines CNC, PLC and communication tasks CNC, PLC and communication tasks. Sinumerik Safety Integrated is available for safety functions. Power supply module and motor modules are connected with the NCU module via Drive-Cliq.
Processor	Intel Celeron 1 GHz	
Memory	128 MB Compact Flash Program memory	User program memory CNC 10 MB, optionally expandable. PLC programme memory 1.5 Mbyte / PLC data memory 5 Mbyte. NCU system software on SD card. Data exchange via USB stick.
Operating device	Ketop C155 10,1" TFT Display (16:10) LED-Backlight WXGA 1280x800	Handheld Terminal HT8 IP 65 enclosure with 10" multitouch display 1280 x 800 pixels, override rotary switch. Emergency stop button and enabling button. Easy plugging in or unplugging during operation (hot plug and play), without triggering of emergency stop in conjunction with the PN-Plus connection box.
User interface	Windows 10 IoT Enterprise Touchscreen: capacitive	
Option Operation in switch cabinet		OP010 with TCU and machine control panel MCP483 IE OP010: Membrane keyboard, screen fully graphics capable, 10.4", STN, colour display, 640x480 (VGA), USB port on front panel TCU: SINUMERIK 840Dsl TCU 30.3 (Thin Client Unit)
Programming	Operator guidance through plain text and graphic display, simple creation and management of spraying programs Teach function or value input, programming in automatic mode	
Option	Offline programming on office PC	
Programming functions	Integrated basic position program, Mold limitation: horizontal and vertical individually programmable, integrated function Axial approach with mold open or two separate start signals, graphical selection of spraying circuits, help function via plain text	Integrated basic position programme, Shape limitation: horizontal and vertical individually programmable, integrated function Axial advance with form open or two separate start signals

Controller	PC3 Process Control	PCS1 Process Control
Process technology option	Programming of air and medium pressures, separating agent flow measurement with analysis features	Programming of air and medium pressures, Separating agent flow measurement with diagnostics
Visualization	Detailed status data of the machine and interlinking signals with plain text and graphics Detailed display of all current process status data Fault and warning messages with description of cause and troubleshooting	Personal and machine protection concept according to CE, Monitoring by two-channel hardware functions and ergonomically arranged enabling switches, Two-channel EMERGENCY STOP button, Programming interlock by password
Safety	Personnel and machine protection concept according to CE / UL Monitoring by two-channel hardware functions, 3-stage enabling switch Machine stop button	Personnel and machine protection concept according to CE, monitoring by two-channel hardware functions and ergonomically arranged enabling switches, EMERGENCY STOP button two-channel, programming interlock by password
Axis controller	2-axis controller with infinitely variable programmable speeds Interpolation of axis movements	Multi-axis path control for interpolation of axis movements, infinitely programmable speeds.
Interfaces to DCM	DISPO 20 (Hardware) DISPO 25 (Profibus or ProfiNet)	DISPO 20 (hardware) DISPO 25 (Profibus or ProfiNet)
Profibus/ProfiNet (option)	For partial integration with DCM and for extended controller function	
Data backup	Data storage on CF card in the controller Data exchange via USB stick	Via USB stick to HT10
Switch cabinet size	600 x 500 x 2000 mm (B x T x H) 800 x 600 x 2000 mm (B x T x H) for ESM 4	800 x 500 x 2000 mm (B x T x H) inkl. 200 mm plinth
Switch cabinet weight	170 kg	220 kg
Protection class	IP 54	IP 54
Operating device Dimensions: Weight: Protection class Length of connecting cable:	portable D = 250 mm 1250 g IP 65 10 m	SINUMERIK handheld terminal HT 10 Handheld terminal with 10" multi-touch display 327 mm x 102 mm x 232 mm (W x H x D) 1.5 kg IP 65 10 m highly flexible

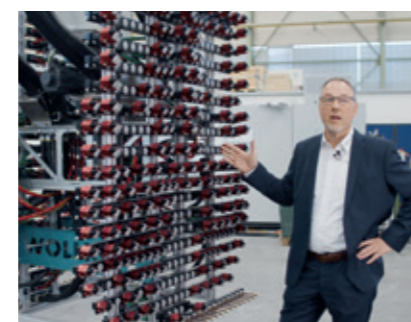
Spray portals

The path to the future is set

Freestanding gantry for vibration-independent assembly

The change in the automotive industry to e-mobility, as well as the appearance of new players, pose new challenges for die casting. The new machine generations are much larger. Here, various solutions for die casting machines >5,000 tons are possible and can be individually assembled according to requirements.

THINK BIG, SPRAY BIG!



**Shortest cycle times,
480 spray nozzles,
only 55 ml of release agent per cycle,
... a milestone**

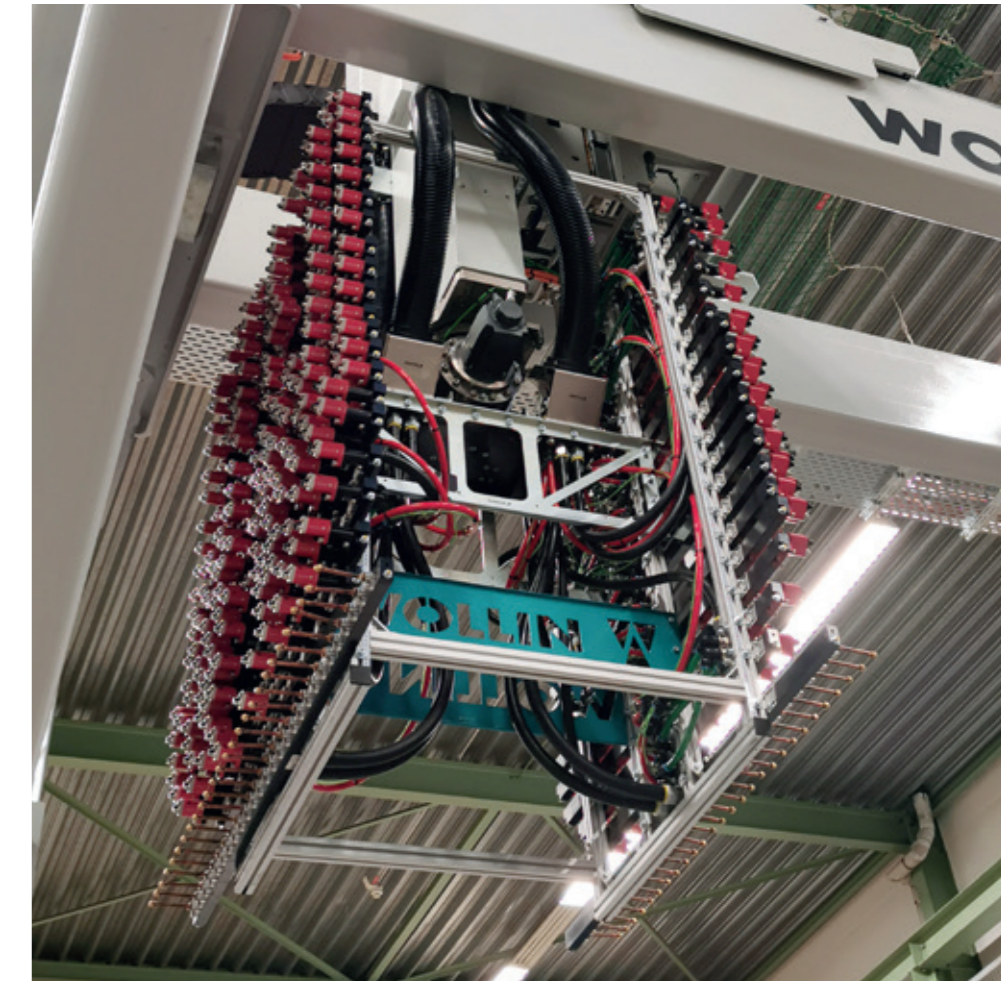
Martin Lutz, Sales Manager

Highly dynamic 3-axis heavy-duty gantry for large DCM

For spraying large molds, we have overcome one of the challenges: we have constructed the largest, highly performance spray gantry ever built. It has the shortest cycle times and improves the foundry's CO2 emissions by minimizing release agent consumption. There is virtually no energy loss due to spraying.

This spray tool has approximately 480 spray nozzles, consumes 55 ml of release agent per cycle and sets a new milestone in spraying technology.

DCM type	> 5.000 t	Max. Speed	3,5 m/s
Vertical stroke	3.500 mm	Acceleration	3,5 m/s ²
Horizontal stroke	3.300 mm	Rotation axis	270°
Portal stroke	8.000 mm	Swivel axis	180°
Payload	400 kg	Rotation speed	120°/s



Mask spray tool for battery case

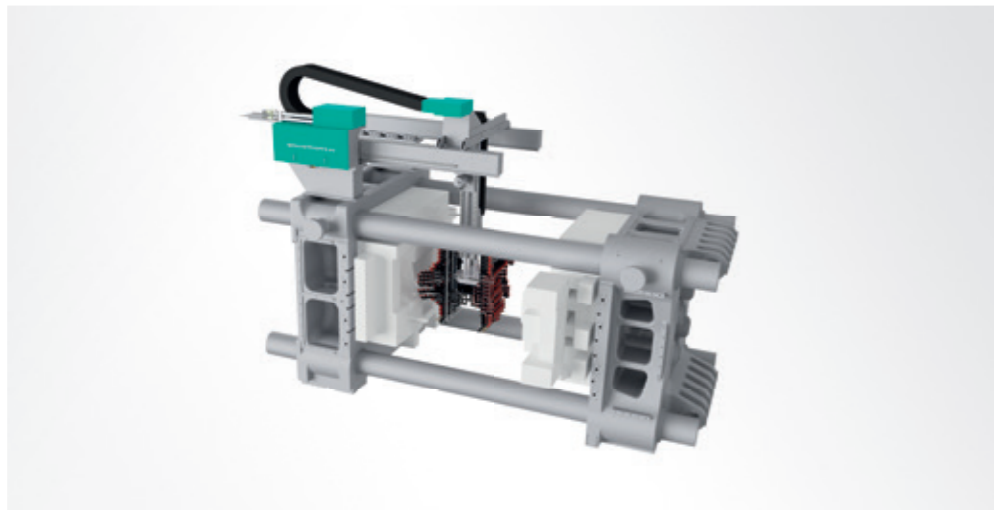
SPRAY SOLUTIONS FOR LARGE-SCALE DCM

Linear axis telescopic sprayer ESMT8 G

with doubled horizontal axis

- Short cycle time
- Heavy payload
- Economic solution

DCM type	up to 9.000 t
Portal stroke	-
Horizontal stroke	3.200 (more if needed)
Vertical stroke	3.200 (more if needed)
Spraying tool stroke	-
Extension	-
Circuits	16
Load capacity	600 kg

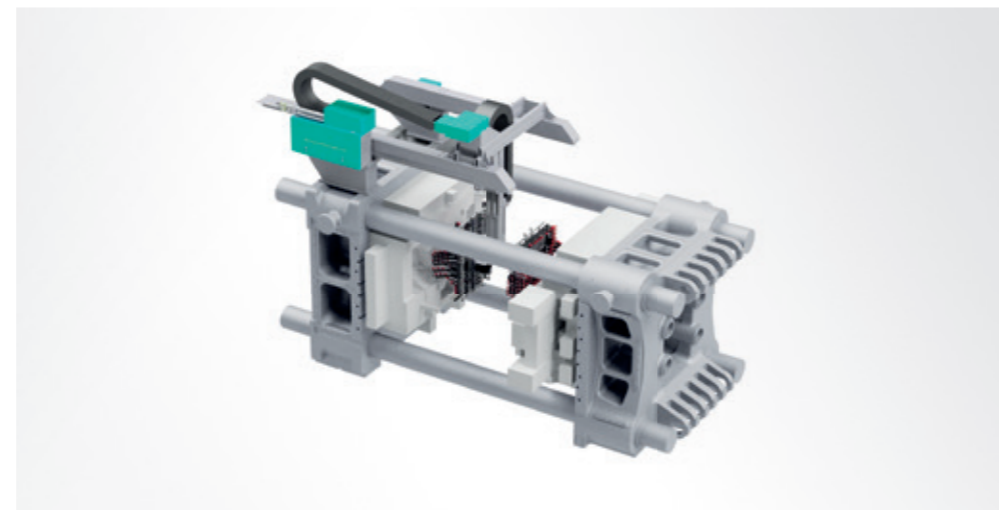


Linear axis telescopic sprayer with traversing unit ESMT8 GM

with doubled horizontal axis

- Short cycle time
- Heavy payload
- Economic solution
- Horizontal spraying tool traversing axis

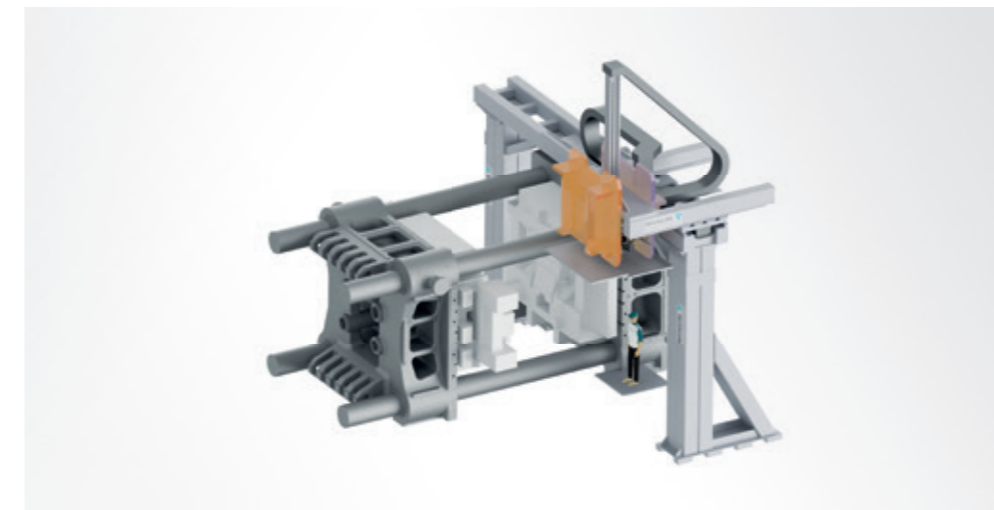
DCM type	up to 9.000 t
Portal stroke	-
Horizontal stroke	3.200 (more if needed)
Vertical stroke	3.200 (more if needed)
Spraying tool stroke	2x380
Extension	-
Circuits	16
Load capacity	2x300 kg



Portal with traversing & service axis ESM8 PGM

- Short cycle time
- Heavy payload
- Economic solution
- Horizontal spraying tool traversing axis
- Service axis for easy maintenance
- Vibration decoupled from the die casting machine

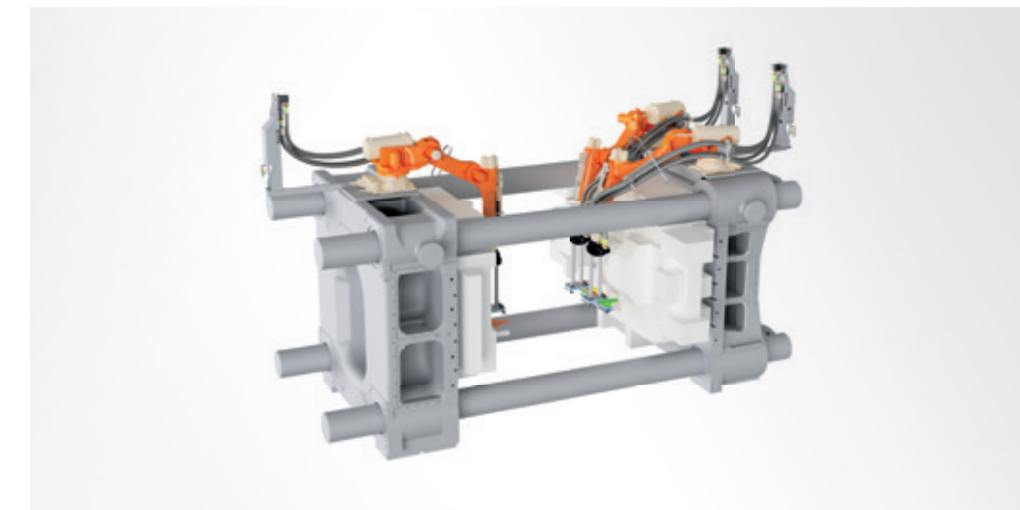
DCM type	up to 9.000 t
Portal stroke	3.500
Horizontal stroke	1.900
Vertical stroke	3.100
Spraying tool stroke	2x380
Extension	-
Circuits	16
Load capacity	2x300 kg



2 or 3 robot spraying system

- Highly flexible entry-level solution
- Modular available with 2 or 3 robots

DCM type	> 5.000 t
Vertical stroke	3.000 mm
Payload	135 - 190 kg



Efficient Spray Robot

Flexible processes for all applications

ESR 2/3/4 For mask spraying tools



- Assembly of universal spraying tools and mask spraying tools individually adapted to the mold
- Reduced spray cycles when using mask spraying tools
- Strong spraying and blow air
- Short set-up times
- Size of ESR depends on application and size of die casting machine
- All spraying tools equipped with 2 additional high-pressure blowing circuits to blow the mold dry and clean in the shortest possible time
- Large hose package in protective hose for supply to mask spraying tools

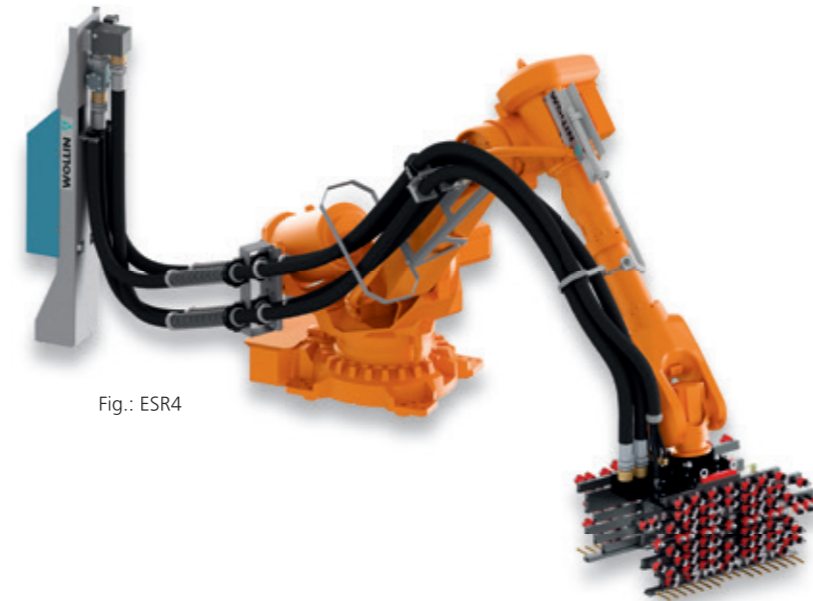
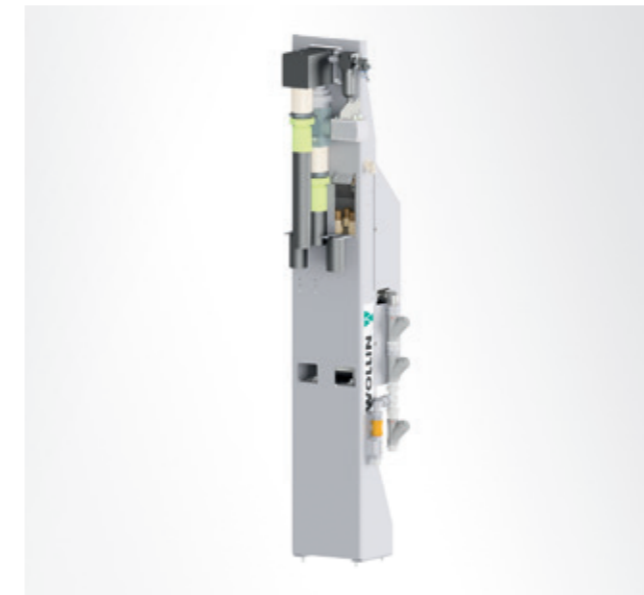


Fig.: ESR4

Model	Cycles	Separating agent	Blowing circuits	Spraying system	DCM-range (kN)
ESR2	4	2	2	PS16	1600 - 10000
ESR3	6	3	2	PS16	5600 - 20000
ESR4	8	4	2	PS25	16000 - 55000

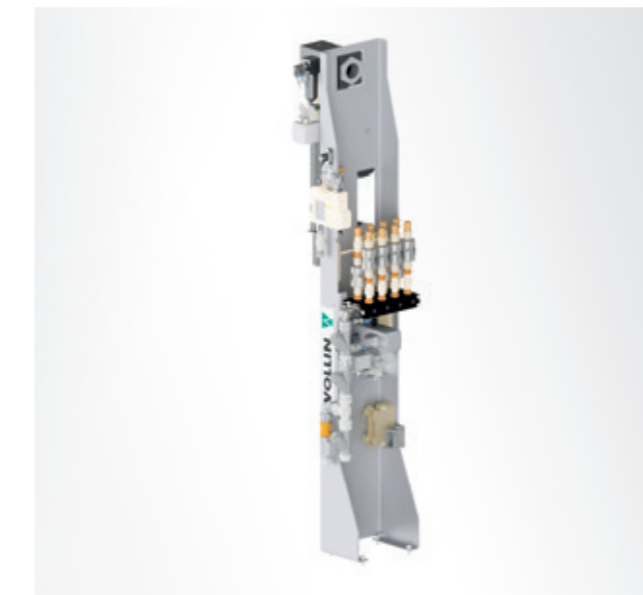
- Adapter with connecting flange for robot hand
- Adapter with connecting flange for robot hand
- Dirt filter system for the separating agent fuel line
- Pressure controller for spraying air is programmable via the robot control
- Robot user interface with WOLLIN spraying software

Innovations ESR



Interface ESR

- Separate air and blowing air
- Control air can be regulated if required



Interface ESR with options

- Options:
- Flow measurement concentrate
 - Flow measurement medium (8 circuits)
 - Control air regulation
 - Pressure boosting for DDV nozzles



Valve unit

Easy replacement of wear elements due to drawer design.

RELEASE AGENT SUPPLY

MDA or OSA

Always perfectly dosed

Fully automatic release agent dosing, mixing and supplying to the die spraying machine

- Extensive range of release agent supply systems
- Wollin has the right solution for every budget and application solution.
- From the version with pressure control to the high-end version for several DCM
- Constant spray parameters
- Special solutions available for centralized supplies.



The right die lube mixing and supply system for your application

	MDA20	MDA25	MDA40	MDA60	MDA65
Air connection	1/2"	1/2"	1/2"	1/2"	1/2"
Air pressure / bar max.	8	8	8	8	8
Water connection	1/2"	1/2"	1/2"	1/2"	1/2"
Water pressure / bar	2 - 8	2 - 8	2 - 8	2 - 8	2 - 8
Output separating agent	1"	1"	1"	1"	1"
Pressure separating agent / bar max.	8	8	8	8	8
Fill level concentrate / l min. - max.	20 - 100	30 - 125	20 - 100	20 - 100	30 - 125
Fill level mixture / l min. - max.	30 - 50	38 - 71	32 - 50	32 - 50	38 - 71
Mixing ratio / %	0.5 - 2.5	0.5 - 16	0.5 - 2.5	0.5 - 2.5	0.5 - 16
Separating agent consumption / l max. / cycle	10/ cycle	10/ cycle	60 l/min	60 l/min	60 l/min
Power connection / V	24 (chaining)	24 (chaining)	24 (chaining)	400	400



Separating agent mixing-dosing-installation with downstream pressure control.

- Proportional dosing pump, fine dosing, accuracy ± 5%
- Separating agent mixture supply by means of downstream pressure control
- Adjustable medium pressure 2-8 bar
- Automatically fresh mixture



Separating agent mixing and dosing system with electric peristaltic dosing pump and downstream pressure control.

- Electric peristaltic dosing pump, fine dosing, accuracy ± 1%
- Separating agent mixture supply by means of downstream pressure control
- Economical based on reliable mixing ratio settings thereby stabilizing the casting process with consistent release agent mixture.



Separating agent mixing and dosing system with downstream double diaphragm pump.

- Proportional peristaltic pump, fine dosing, accuracy ± 5%
- Separating agent mixture delivery by means of double-membrane pump and downstream pulse damper
- Adjustable medium pressure 2-8 bar



Separating agent mixing and dosing system with downstream submersible pump.

- Proportional dosing pump, fine dosing, accuracy ± 5%
- Separating agent-mixture delivery by submersible pump with pump drive
- Adjustable medium pressure 2-8 bar
- Automatically fresh mixture
- Medium pressure independent of system pressure



Separating agent mixing and dosing system with downstream submersible pump and electric peristaltic dosing pump.

- Electric peristaltic dosing pump, fine dosing, accuracy ± 1%
- Separating agent-mixture delivery by submersible pump with pump drive
- Medium pressure individually adjustable
- mixture is only produced when required, a fresh emulsion is continuously available.

MDA100-CE/UL

Separating agent mixing-dosing- installation with electronic concentrate dosing.

The mixing & dosing system generates the mixture of water and concentrate. A user-friendly touch interface allows mixing and pressure ratios to be adjusted as required.

- Mixture stored in storage tank
- Fresh mixture, when needed; Separation is prevented with stirring motor
- Mixing ratio and pressure are programmable
- Visualization of the operating parameters on touch screen
- Can be used for several machines
- Measurement of flow rate and pressure
- Electronic dosing pump
- High-pressure inline pump with pressure control for mixture supply
- Optional: Turbidity sensor, indicator light, level column, purging cycle, double-membrane pump (concentrate)

Operating pressure / bar adjustable	3 - 8
Mixing ratio	1:20 - 1:200
Flow rate max. l / min	100
Dosing accuracy / %	1 - 2
Output separating agent	G 1"
Water connection	G 1"
Concentrate connection	G 1"
Controller	Siemens S7-1500
Connection power / kW	7,5
Weight / kg (unfilled)	290



OSA1-50-2

Concentrate spraying unit for EcoSpray technology.

- Pneumatically pressurized
- 50 litres capacity
- Stainless steel
- Incl. 10 m air hose
- Incl. 10 m Cable
- Medium pressure adjustable between 0.15-7 bar
- Continuous fill level detection
- Fine pressure regulator for separating agent pressure
- Pressure relief valve to protect against excessive pressures
- Mobile
- Manual filling
- Strainer in center duct, mesh size = 0.25 mm
- Leakage monitoring
- Siemens controller with status lights
- Button for error acknowledgment
- Interface with fault message and cycle stop
- Connection for flushing/rinsing line to ESM/PSR/tool

Container capacity / l	50
Container capacity effective / l	35
Operating pressure / bar max.	7
Compressed air connection	1/4"
Output separating agent	1/2"
Water connection (flushing line)	1/2"
Power connection / V	24
Weight / kg (unfilled)	30



OSA2-15-C

Concentrate spraying unit for EcoSpray technology.

- Release agent supply analogous to OSA2-15 (properties unchanged).
- New practical features:
 - Control cabinet protecting against contamination and other influences
 - Signal lights on the control cabinet
 - Integrated rinsing line: Rinsing of the machine (ESM, PSR) with water using a 3-way ball valve
 - Optional: Profinet interface for reading out & acknowledging error messages and process values
 - Optional: Flow Control

Tank capacity / l per container	15
Fill level min.- max. / l	2 - 15
Compressed air supply / bar max.	3
Compressed air connection	1/8"
Output separating agent	3/8"
Water connection (flushing line)	1/2"
Power connection / V	24
Weight / kg (unfilled)	185



OSA2-15

Concentrate spraying unit for EcoSpray technology.

- Pneumatically pressurized
- Container with 2x15 litre capacity
- Stainless steel
- Incl. 10 m air hose NW6,3
- Incl. 10 m Cable 2W1.4
- Fine pressure regulator for separating agent pressure 0.15-3 bar
- Double-membrane pump for alternating filling of the containers, thus uninterrupted production
- Electrical sensor for level monitoring
- Indicator light lack of separating agent
- Leakage monitoring
- Optional: Flow Control

Tank capacity / l per container	15
Fill level min.- max. / l	2 - 15
Compressed air supply / bar max.	3
Compressed air connection	1/8"
Output separating agent	3/8"
Power connection / V	24
Weight / kg (unfilled)	70



FlowControl

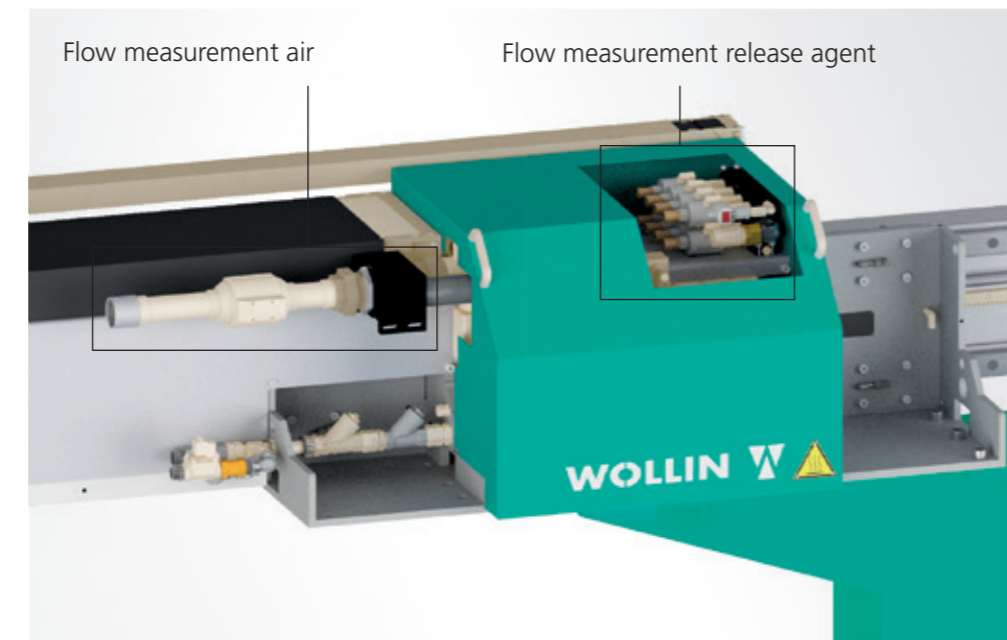
Makes process accurate - worldwide

Flow measurement of the release agent quantity

- Automatic flow measurement per cycle
- Target / actual comparison of flow rate values
- Message in case of deviation above the permissible value
- Signal cycle stop in case of deviation
- Visualization of process data with storage for quality statistics
- Non-contact flow sensors (magnetic inductive)

ESM: Flow Sensor Flow Control for Air & Release Agent (Optional)

On the new ESM machines, the flow sensor is installed directly on the machine horizontal unit (optional).

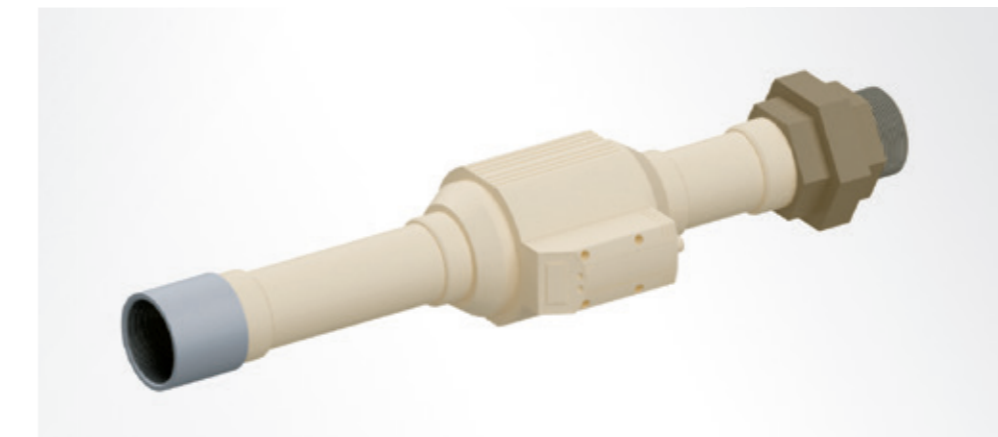


ESM4 Horizontal unit configured with optional air and lube measurement meters

Total air flow measurement (all spray circuits)

Compressed air consumption monitoring for total volume used per cycle. Process values are shown on the display of the flow sensor and on the PC3 control.

Measuring range	3...700 m³/h
Accuracy (within measuring range)	± (3 % MW + 0,3 % MEW)
Repeatability [% of measured value]	± 1,5 % MEW
Compressive strength	16 bar

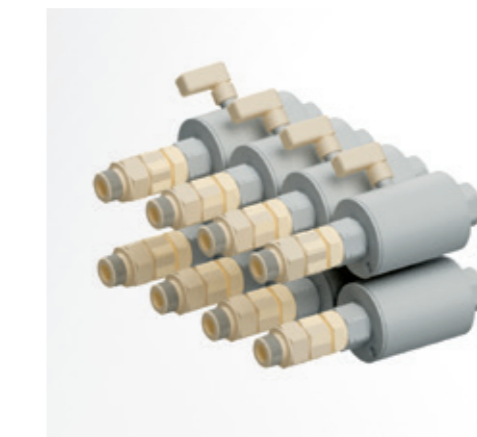


Flow measurement air

Flow measurement of release agent per spray circuit

Each spray circuit can be measured individually.

Measuring range	0,1...25 l/min
Accuracy (within measuring range)	± (0,8 % MW + 0,5 % MEW)
Repeatability [% of measured value]	± 0,2% MEW
Compressive strength	16 bar



Flow measurement release agent

Flow measurement per spray circuit for machines with PC3 control system

- 4/6/8 circuits
- Minimum and maximum quantity in liters can be defined for each circuit



Control flow measurement

Stand-alone device with flow measurement

up to 5 sensors with control S7

- 1-4 sensors for release agent
1 sensor for concentrate
- Serves for measuring point monitoring
- Minimum and maximum limits are adjustable
- Display of the flow rate
- 2000 values can be stored per channel
- Non-contact flow sensors (magnetic inductive)
- Visualization of process data with storage for quality statistics
- Optional:
 - Flow meter with reducer
 - With pressure switch for display of actual pressure

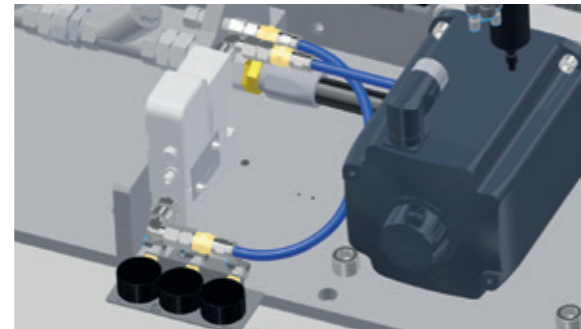


Measuring range	0,1...50 l/min
Accuracy (within measuring range)	± (0,8 % MW + 0,5 % MEW)
Repeatability [% of measured value]	± 0,2% MEW
Compressive strength	16 bar

Concentrate flow measurement

We use a flow meter that determines the flow volume of liquids.

- Non-contact measurement
- Measurement of conductive and non-conductive liquids
- IP65, fully potted



Flow meter for ESM4

Measuring range	8-3000 ml/min
Accuracy (within measuring range)	≤ ± 1% MW ± 0,15% MEW
Repeatability [% of measured value]	≤ 0,5% MEW
Compressive strength	7 bar



Flow meter on ESM

OPC UA

Communication via OPC UA

In the digital production world, machines from different manufacturers must be able to communicate with each other using uniform standards. For this purpose, universal protocols such as OPC Unified Architecture (UA) will be used in industry in the future. This represents a standard for platform and manufacturer-independent data exchange with a service-oriented architecture. The protocols commonly used in the IT world such as TCP, http(s) or, in the future, new protocols used in cloud applications such as MQTT are used as the transport layer.

In order for the systems of a casting cell to understand each other across manufacturers, additional standards are required, the so-called OPC UA Companion Specifications. These are currently being developed in international working groups.

In the future, this will open up new networking possibilities:

- For the integration of our equipment and measuring systems into the die casting cell, an OPC-based interface will be created in addition to the established field-bus solutions, which will enable a deeper integration of all components into the die casting machine control system or into the cell control system. The aim here is to achieve the most extensive plug-and-play networking possible and to be able to operate the entire cell from a single location.



- The acquisition of machine and process data from all components for the purpose of process control and optimization, quality assurance and predictive maintenance.

Wollin's machine controllers already offer these capabilities, and we are constantly developing the functionalities further.

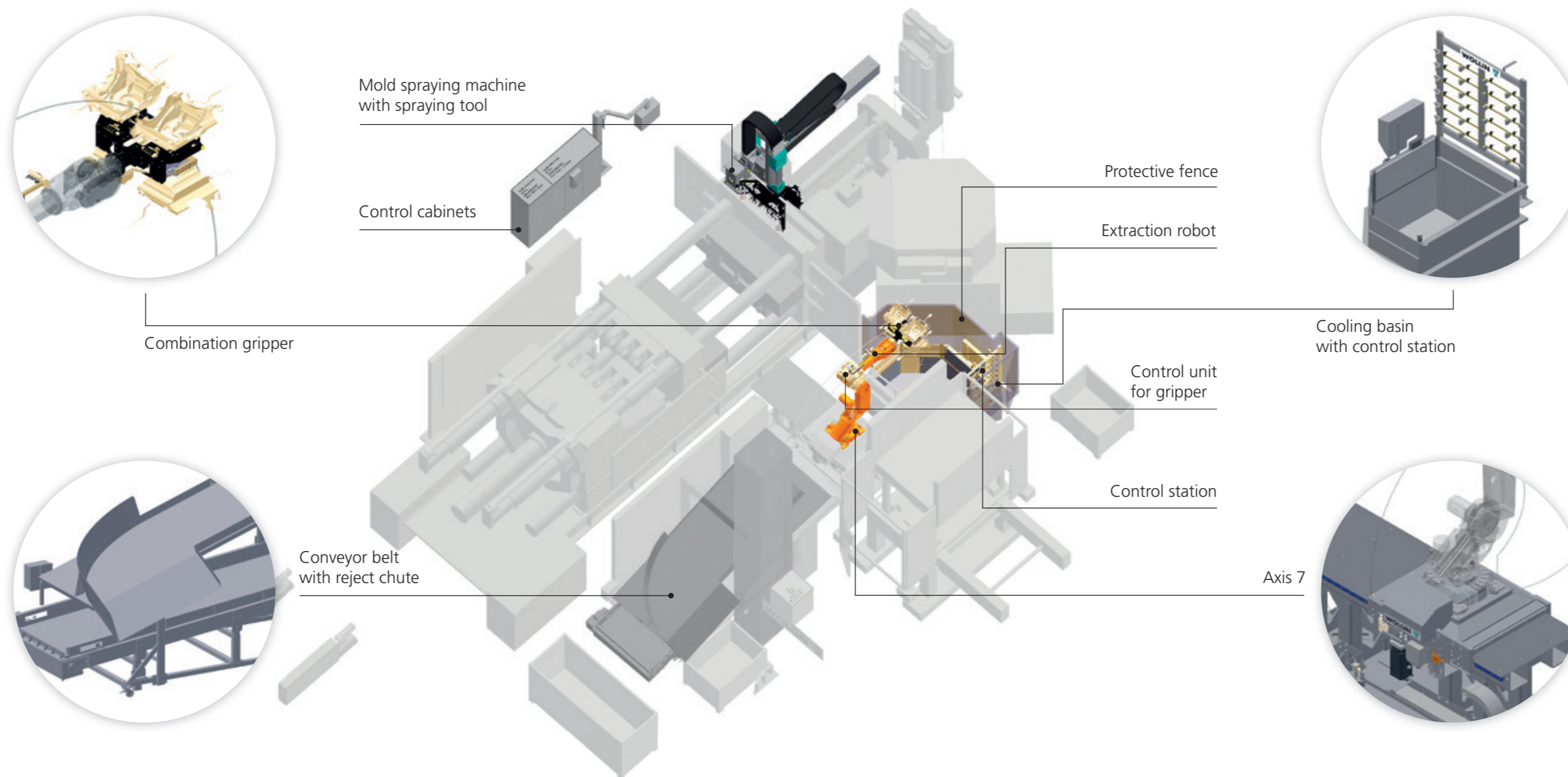
Special solutions

The right solution for every need.

From individual units to complete cells.

Perfect interaction

With our automation components, we can build up your productivity efficiently and reliably. Our qualified employees in the design department will be happy to create a concept that fits your requirements.

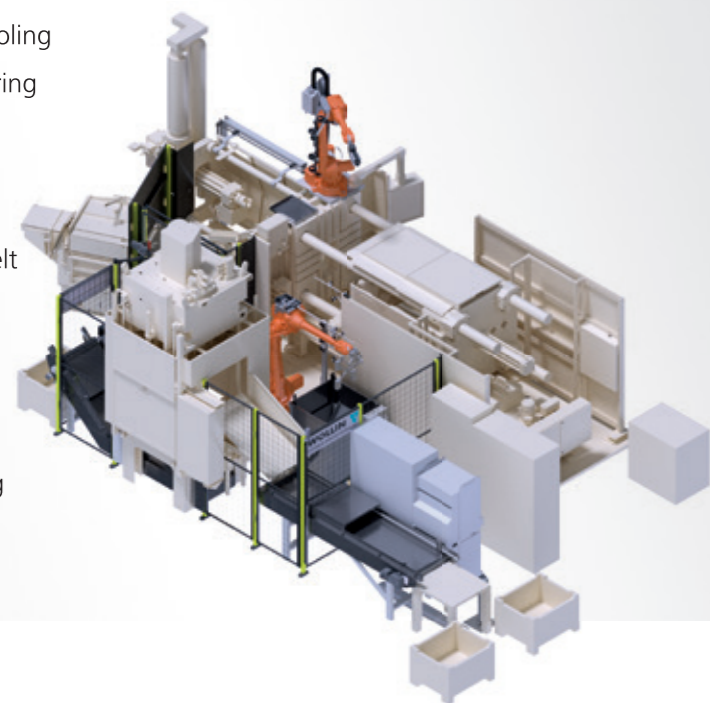


Have you not yet discovered the perfect machine for your needs in our portfolio?

No problem. In the area of special designs, we design and manufacture the mold spraying machine tailored to your very special application. Our special solution for your special requirement. With additional horizontal/vertical stroke. Your requirement, our incentive.

Removal automation

- Removal
- Insert - part feeding
- Check for completeness/preliminary check
- Cooling - water/air/spray cooling
- Preliminary deburring
- Deburring
- Marking
- Discharging - chute/conveyor belt
- Palletising
- Safety guard
- Engineering
- Scribe-/Stylus- and Laser marking



Spray cooling

- Cooling of the castings by finely sprayed water, thus homogeneous cooling
- Water evaporates on the casting and is not carried with the part
- Targeted cooling of hotspots/ heat pockets/ biscuit



Metal dosing unit



The Wollin metal dosing units **WL 1 - 4** were specially developed for automatic metal feeding of die casting machines and for gravity die casting machines up to 80 kg scoop weight. The space-saving design of the devices is achieved through an assembly stand, thereby eliminating the need for modifications to the die casting and mold spraying machine.

- The vertical axis is tiltable, providing easier access to the filler opening in the machine plate
- Maintenance free ladling system
- Universal flange for all common ladling devices

Type	Vertical lift	Maximum scoop weight
WL1	1200 mm	5 kg
WL2	1500 mm	15 kg
WL3	1800 mm	35 kg
WL4	2200 mm	80 kg

For the optimization of your casting cell, our experienced process engineers are at your disposal



Customer service

Contact the technical office service for support by e-mail / telephone 07:00 - 16:00. On-site service by our service technicians and representatives can be requested too. We offer individual user training for newcomers and experienced foundry personnel in the areas of machine maintenance, machine operation and process optimization by our service and process engineers.



Maintenance and remote servicing

The high availability of our machines is well known. Consistent maintenance will extend the life of the equipment. We offer maintenance contracts to assist you with properly servicing and maintaining your equipment. We also provide remote maintenance that is used to check the machine control, error analysis and software.



Repairs

If you choose a system from our company, you can rely on our repair service. We provide a cost estimate and repair timing so you can plan around the repair time. Depending on availability, a replacement unit can be provided to minimize downtime.



Assembly

Assembly of the machines by our service technicians and our representatives gives you the confidence that the machine is installed according to Wollin standards. Without the proper assembly at your site by our experienced service technicians the quality „Made by Wollin“ can not be guaranteed. We offer this service worldwide through our representative.



Commissioning

Commissioning of the machines by our service technicians and our representatives reassures you that the machine is working properly. Wollin spraying machines are an integral part of a complex system. „Commissioning“ of the machine confirms it is working with the rest of the equipment. This means fine-tuning to your satisfaction.



General overhauls

Many components of our machines are very robust - others require a general overhaul after decades of use. All moving parts are inspected and either refurbished or replaced. On request, we can repaint any equipment to make it look new again. Offers are made in advance to let you make that decision.



Process optimization

Those who can optimize the process increase profitability. Saving energy, shortening production processes, increasing quality. This is where our comprehensive process consulting and die casting process optimization with a focus on spraying will benefit you. We see ourselves as a development partner for spray technology innovations and visions.



Process technology

Innovation is entering the die casting industry with great strides. To keep up with the changes, we offer our customers training courses on the subject of spray process technology (spraying in die casting and of metal permanent molds in general). Because only those who keep pace will continue being successful.

THERE FOR YOU WORLDWIDE

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