

The image shows a Bühler Ecoline DS 90 die casting machine. It features a large white cabinet with a teal-colored door and a teal-colored die head assembly. Two large white cylindrical reservoirs are mounted on the left side, connected to the machine by black hoses. The machine is mounted on a grey metal base. The background is a light grey wall with a teal and yellow circular graphic overlay.

Bühler Ecoline DS

**Efficient solutions  
for high-quality  
die-casting  
products**

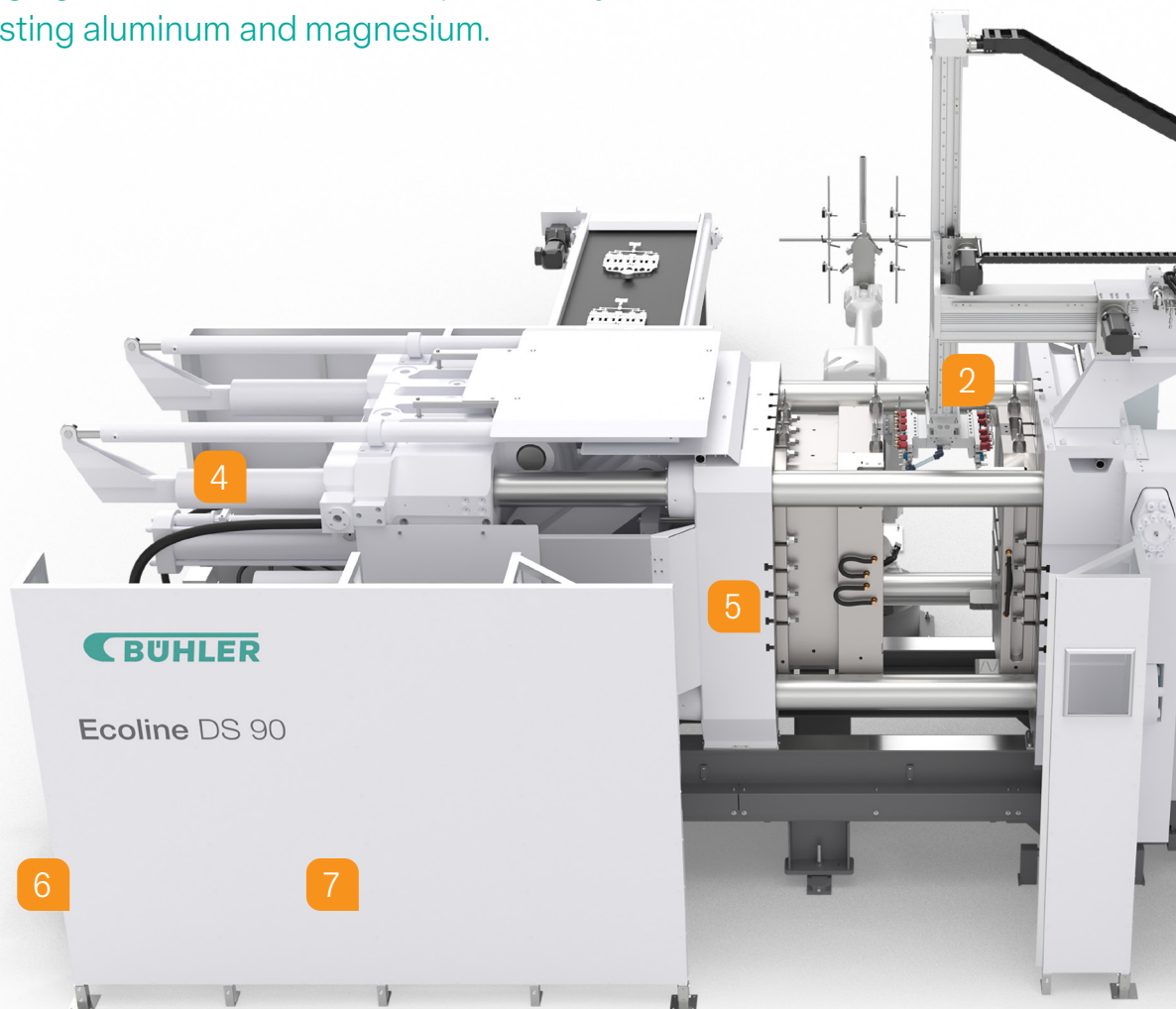
**BUHLER**

Ecoline DS 90

# Efficient solutions for high-quality products

## Die Casting with confidence

The Ecoline DS is a cold-chamber die-casting machine with locking forces ranging from 3,400 to 9,000 kN, particularly well-suited for casting aluminum and magnesium.



7

### Robust hydraulic system

- Reliable and proven hydraulic system
- Inline gear pump with energy-efficient drive
- Suction and return filters increase lifetime of hydraulic components
- 210 bar system pressure

6

### Integrated control cabinet

- State-of-the-art interfaces for a wide range of peripherals
- Proven WAGO terminals
- Latest KEBA hardware
- Pre-wired cabinet for reduced installation time

1

## Easy-to-use control panel

- Up to 5% faster programming with object-oriented graphical user interface
- Outstanding diagnostics for fast troubleshooting and data analysis
- Up to six months data traceability
- Data sharing with OPC and external networks
- On-screen maintenance hints enable easy troubleshooting and process optimization

2

## Peripheral integration for total cell control

- Fully-integrated peripherals optimize production and enable shorter cycle times
- Pre-saved die programs speed up production start-up and die changes

3

## Powerful injection unit for up to 5% less scrap

- 210 bar hydraulic pressure increases system dynamic
- Real-time shot control ensures high repeatability
- Integrated intensifier reduces pressure build-up time
- Multi-step injection curve including braking function increases die lifetime and reduces flash
- Fill test delivers exact injection curve setup

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## Automatic tie bar withdrawal for easy die change

- Completely retractable tie bars
- Automatic operation, monitored by the control system

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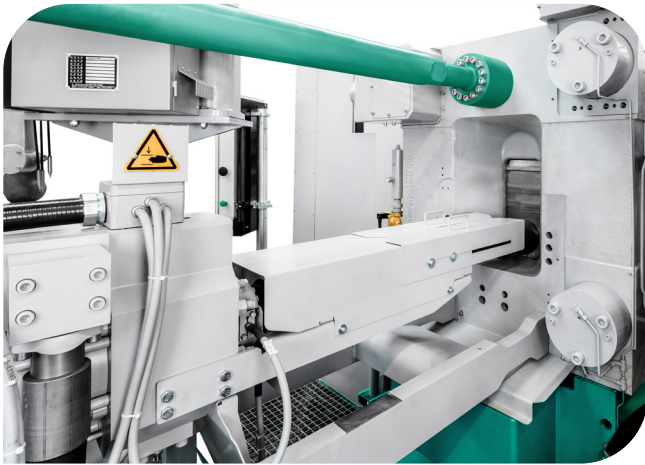
## Reliable closing unit

- 3-platen toggle system proven across 3,000+ installations
- Powerful hydraulic double-cylinder ejector for parallel ejection of parts
- Core pull on movable and fixed platen provides ultimate flexibility



# Reliable and precise for consistent results

## State-of-the-art technology



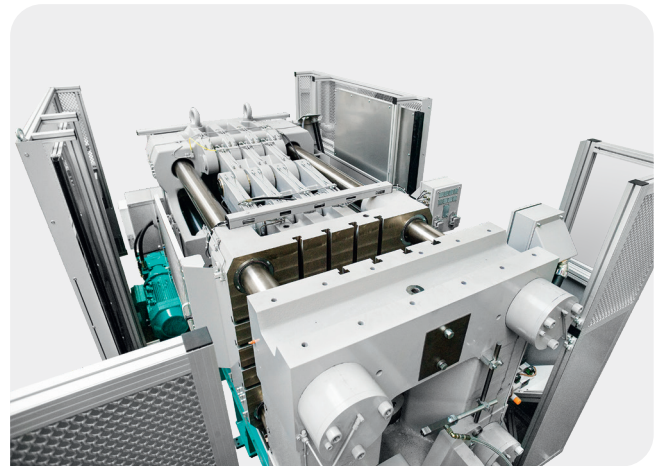
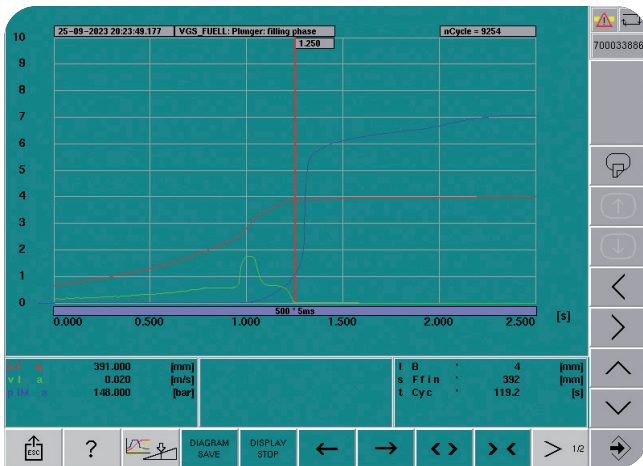
### High-performance injection unit

Die-filling at high speed and extreme pressure is a foundational requirement for today's complex die castings. With Ecoline DS, state-of-the-art proportional technology controls the high-power injection unit during the second phase to overcome process variations and deliver high quality for your produced parts. First phase optimization algorithms minimize air entrapment and regenerative hydraulics saves energy at the same time.



### Easy-to-use control system

Bühler die-casting machines combine leading-edge technology with excellent automation solutions. Hardware and software simplify the die-casting process, so operation is easier than ever. The integrated touchscreen operator terminal connects the user to the casting process through intuitive screens for setup and monitoring. The graphical user interface is customized for your precise requirements and provides helpful functions throughout the entire production process.



## Decades of know-how in assistance systems

Assistance systems make it possible to fill dies with minimal air entrapment. This increases productivity by as much as five percent. In addition, the system determines the best pre-filling profile at the touch of a button, eliminating the need for complicated injection curve optimization. Your operators can still adjust the filling profile as they wish with Bühler's Multi-step technology. Digital recording of the plunger movement allows precise monitoring and control of the casting process. Finally, closed loop control on the Ecoline DS brings you consistent results – from cycle to cycle.

Up to  
**5%**

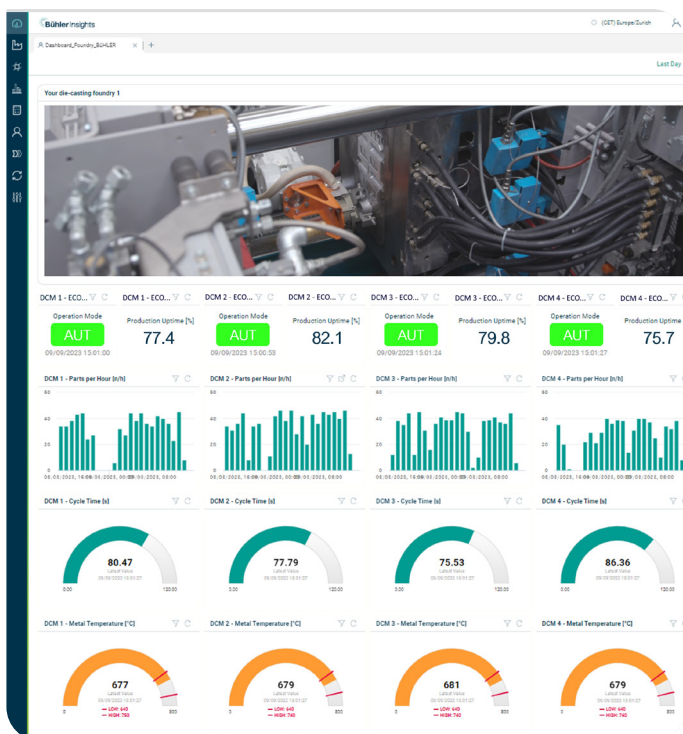
Increased productivity due to optimized first phase

## Proven toggle system

The 3-platen locking system on the Ecoline DS has already proven itself in over 3,000 die-casting applications worldwide. The toggle system ensures fast movements with an evenly distributed locking force. The tie-bars with special Bühler thread design allow for consistent production with minimum downtime and low maintenance.

# Expertise you can rely on Bühler Die Casting services

Your Bühler die-casting solution comes with digital services tailored to your precise needs, ensuring you get maximum efficiency from your cell.

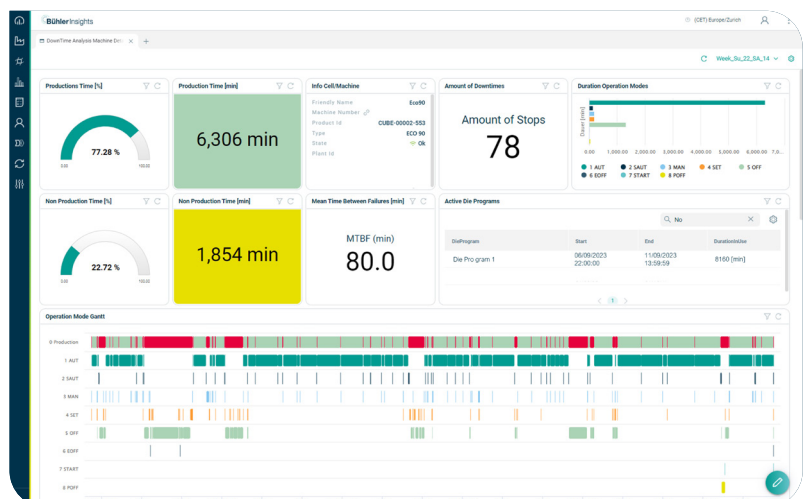


## Die Casting dashboard

The Ecoline DS displays real-time data, enabling you to keep an eye on your die-casting machine, the whole cell and even the entire foundry.

## Downtime analysis

Downtime analysis helps you to determine the cause of interruptions in your die-casting process and gives you the information you need to continuously improve production.





## Global setup

With over 100 service stations worldwide, Bühler is never far away, supporting you from installation to production, as well as fast spare and wear parts delivery and local service availability.

## myBühler

The instantly available myBühler digital overview provides useful information, including essential documents such as user manuals and 3D spare parts catalogs, as well as easy spare parts ordering.

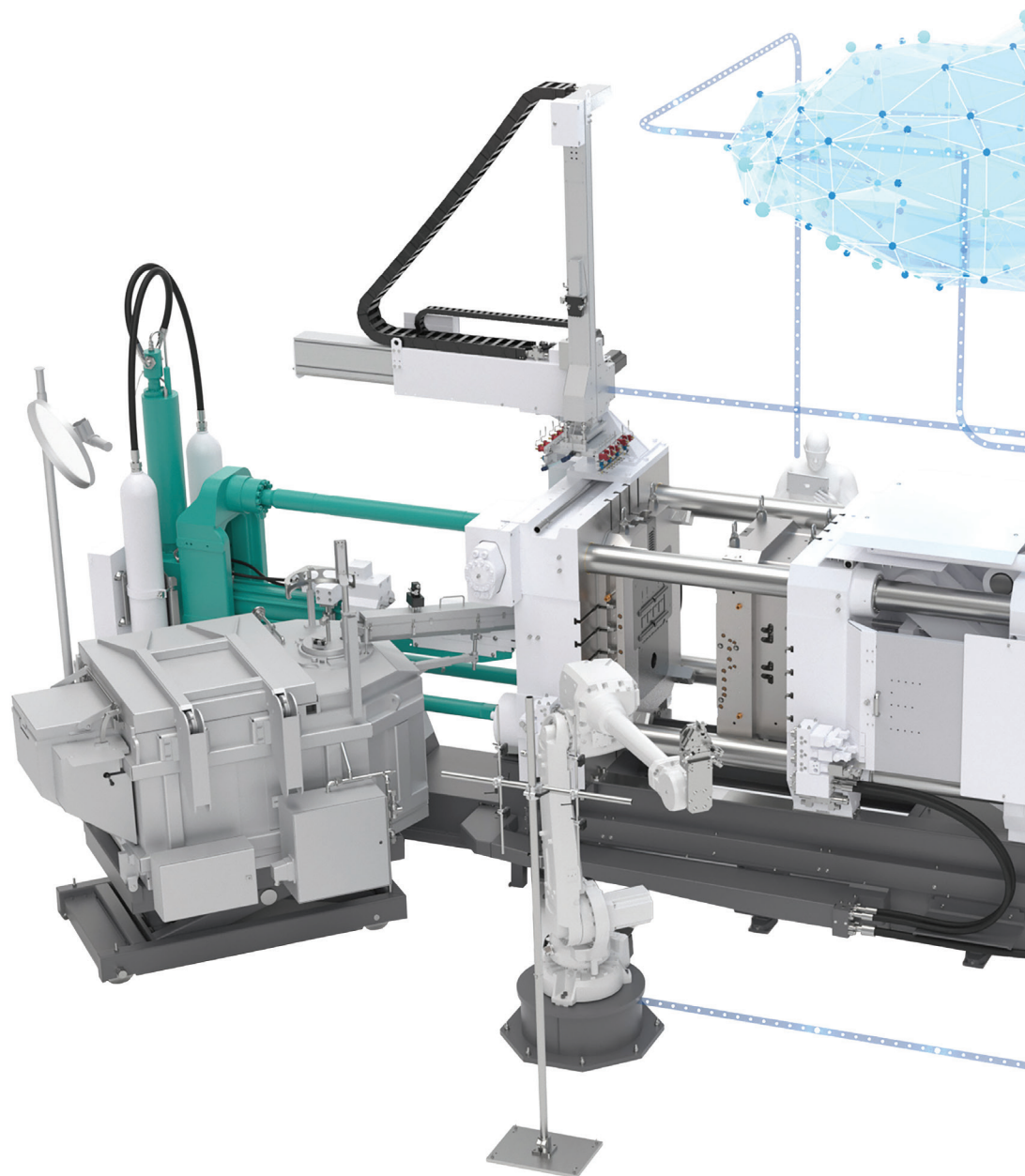


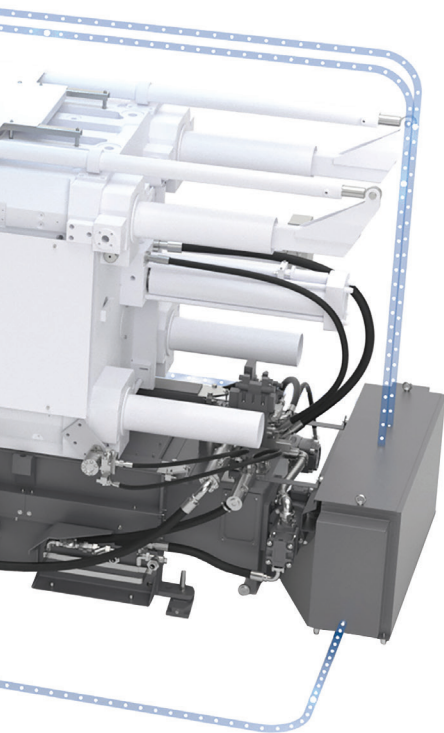
## Application technology and education

Our highly qualified staff can help you to get the most from your investment and optimize performance, with:

- A wide choice of training courses every year – at dedicated centers, online, or directly at your site
- Process optimization support to help drive up your OEE, from production start-up to fine-tuning during operation
- Consulting to help you troubleshoot issues, consider future strategies, and embrace industry trends

# For maximum productivity **Integrated cell solutions**





## Central automation solution

The die-casting machine, sprayer, ladler, and extractor are centrally operated and monitored. With all the peripheral movements perfectly in sequence with the die-casting machine, cycle time can be optimized and the uptime increased.

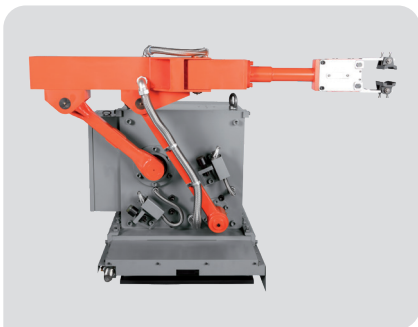
There is no need for complicated interfaces. Your cell can be programmed and operated by the machine control system. All settings are stored within the die program, reducing downtime for your production changes. It also ensures stable quality of your casted parts and delivers a predictable productivity level.

# Thought through and aligned Integrated peripherals for optimal results



## Consistent ladling

The BRL Servo metal ladle offers quick movements to minimize your cycle time and provide precise positioning for accurate dosing. Meticulous control of the ladle function ensures stable production. Robust, low-maintenance mechanical systems form the basis for continuous operation.



## Reliable extraction

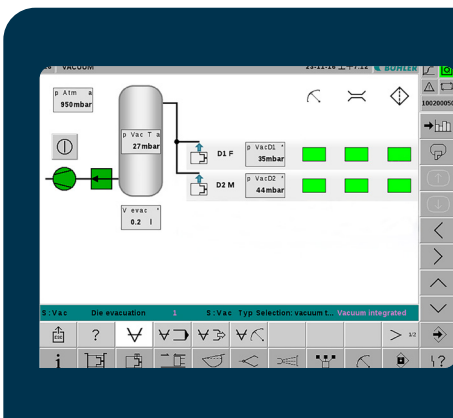
The BE-C Servo extractor grips the castings with pinpoint accuracy and carefully sets them down. The servo drive technology allows quick movements and freely programmable waiting positions prior to extraction, saving valuable cycle time.

The integrated parts inspection provides additional transparency to the process and helps to avoid un-scheduled interruptions of your production.



## Optimum spraying

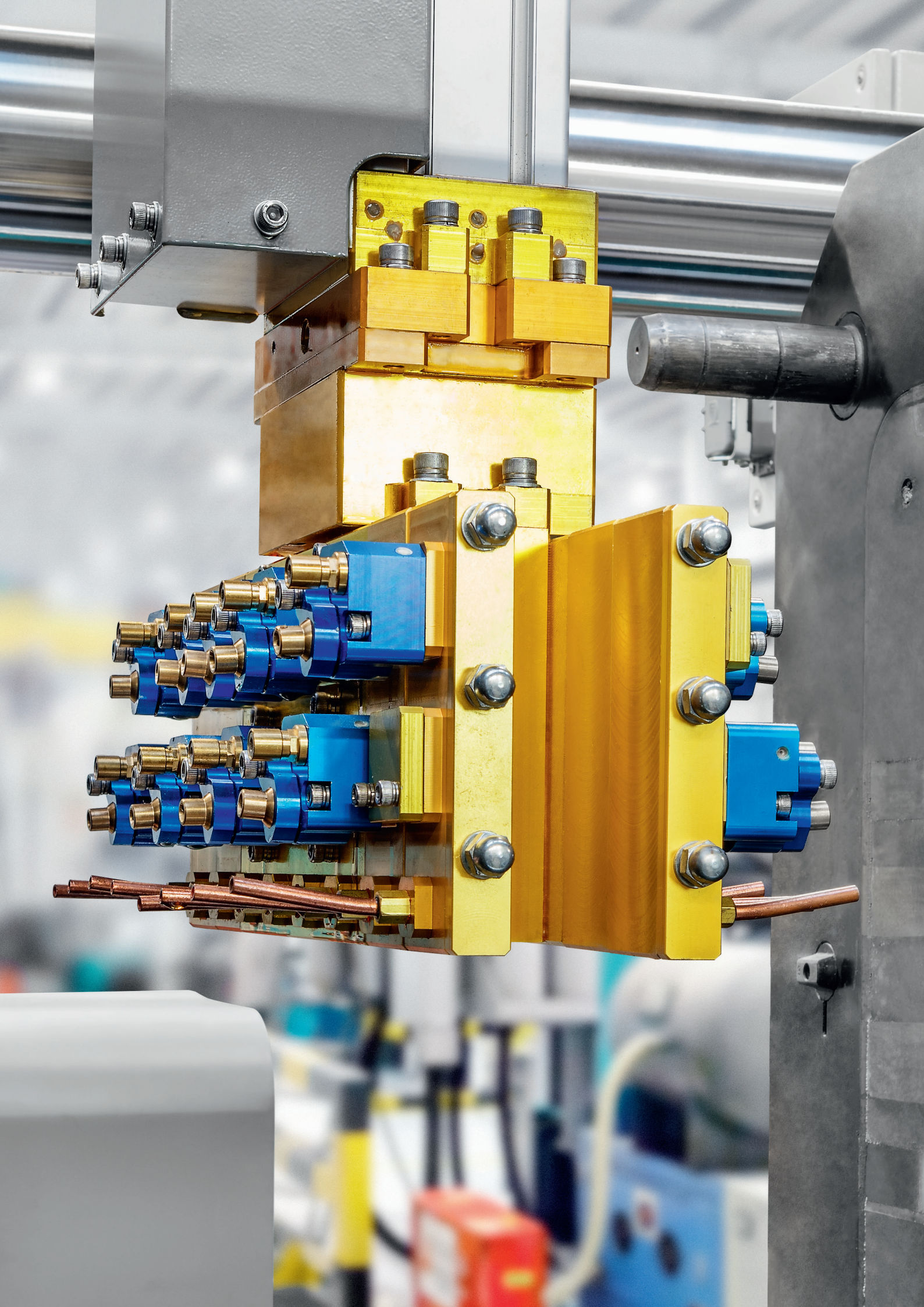
Even your most complex casting shapes can be completely sprayed out with the BP-XL Servo sprayer. This is made possible by four spray-blow circuits as well as two independent high pressure blowing circuits. The dynamics of the Servo drive technology ensure that cycle times are kept to a minimum.



## SmartVac – vacuum system with higher process transparency

The SmartVac vacuum system is integrated seamlessly into the die-casting system, controlled centrally from your Ecoline DS control unit. All relevant vacuum parameters are measured, monitored, and assigned to the process directly – for comprehensive process transparency and optimum quality of your components. The SmartVac standard version allows the use of thermally self-locking valves, so called chill blocks, at a maximum of two suction points – one at the fixed and one at the movable side.

As an option, you can also control other commercially available valves.



# Ecoline DS

## Technical data/dimensions

		Type 34	Type 53	Type 66	Type 84	Type 90
<b>Injection unit</b>						
Injection force dynamic	kN	137	192	288	288	288
Injection force intensified	kN	377	526	771	771	771
Plunger stroke	mm	500	600	700	700	700
Max. plunger speed ~	m/s	8.5	8.5	8.5	8.5	8.5
Shot position	mm	0 – -210	0 – -250	0 – -300	0 – -300	0 – -300
<b>Production data</b>						
Plunger diameter	mm	50 – 80	60 – 100	70 – 120	70 – 120	70 – 120
Max. casting volume	cm <sup>3</sup>	654 – 1676	1131 – 3142	1796 – 5278	1796 – 5278	1796 – 5278
Max. casting weight, filling rate 60% (Al)	kg	1.6 – 4.2	2.8 – 7.8	4.5 – 13.2	4.5 – 13.2	4.5 – 13.2
Max. metal pressure	bar	1921 – 750	1861 – 670	2004 – 682	2004 – 682	2004 – 682
Max. projected area	cm <sup>2</sup>	175 – 448	282 – 784	330 – 970	420 – 1230	450 – 1317
<b>Closing unit</b>						
Max. locking force	kN	3400	5300	6600	8400	8400
Distance between tie bars	mm	650	720	780	900	900
Die height (min./max.)	mm	300 / 700	330 / 810	360 / 900	400 / 1000	400 / 1000
Die opening stroke	mm	510	640	800	800	800
Smallest permissible die dimensions	mm	450 × 450	560 × 560	620 × 620	720 × 720	720 × 720
Ejector force	kN	100	150	225	225	225
Ejector stroke	mm	120	145	175	175	175
<b>Further characteristics</b>						
Installed load at 400 V/50 Hz	kW	22	30	37	37	37
Max. system pressure	bar	210	210	210	210	210
Hydraulic fluid filling quantity	l	650	1000	1180	1180	1180
Machine weight (ready for production)	kg	13500	18500	28000	34500	34500

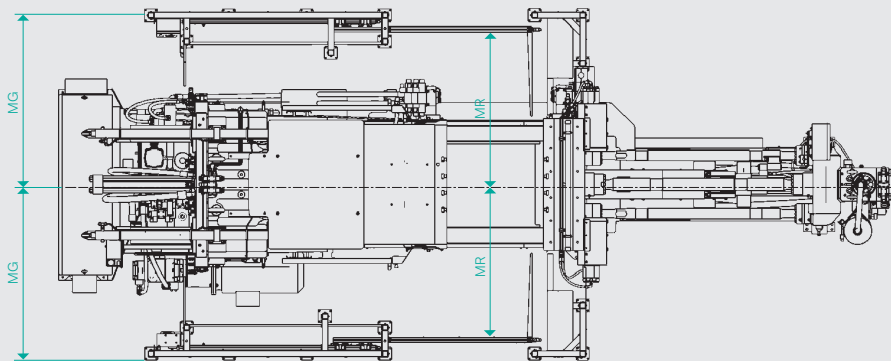
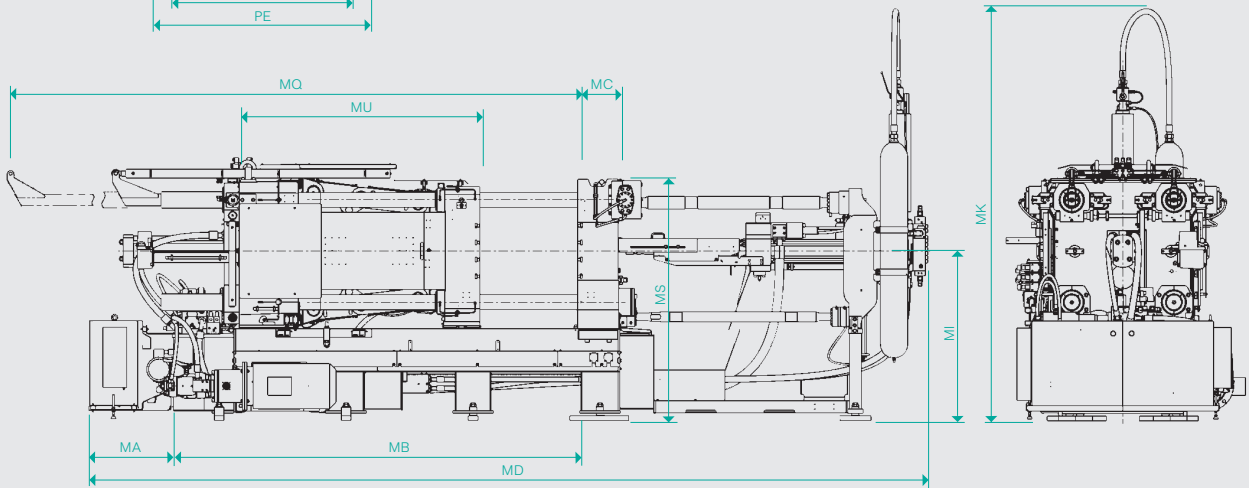
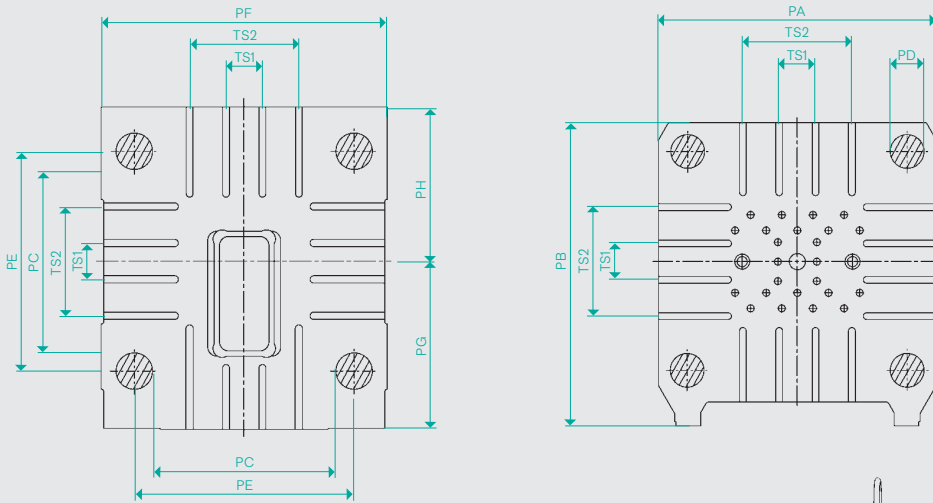
	PA	PB	PC	PD	PE	PF	PG	PH	TS1	TS2
<b>Type 34</b>	970	1035	650	100	750	990	564.5	535.5	140	420
<b>Type 53</b>	1075	1167.5	720	125	845	1100	642	593	140	420
<b>Type 66</b>	1215	1368	780	150	930	1270	774.5	679.5	140	420
<b>Type 84</b>	1385	1516	900	170	1070	1430	837.5	769.5	140	420
<b>Type 90</b>	1385	1516	900	170	1070	1430	837.5	769.5	140	420

Units in mm

	MA	MB	MC	MD	MG	MI	MK <sub>max</sub>	MQ	MR	MS	MU
<b>Type 34</b>	920	2900	295	6434	1125	1309.5	3192	5070	1000	1845	1605
<b>Type 53</b>	920	3370	340	7188	1395	1402	3406	5800	1270	1995	1990
<b>Type 66</b>	920	4000	360	8195	1515	1539.5	3615	6985	1390	2219	2353
<b>Type 84</b>	945	3975	410	8195	1775	1602.5	3678	7100	1600	2372	2428
<b>Type 90</b>	945	3975	410	8195	1775	1602.5	3678	7100	1600	2372	2428

Units in mm

Subject to change without notice.



Subject to change without notice.

# Integrated peripherals

## Technical data/dimensions

### Dosing device BRL Servo

		BRL-3	BRL-4
Application		Ecoline 34 and 53	Ecoline 66, 84 and 90
Dosing size/cycle	kg (Al)	1- 6	2-12
Travel path horizontal	mm	1876	2260
Bath level descent	mm	350	450
Connected power	kW	1.5	2.5
Dimensions of ladling unit (L×W×H)	mm	1198 × 604 × 1300	1306 × 604 × 1375
Weight of ladling unit	kg	260	310

### Spraying device BP-XL Servo

		BP-XL2	BP-XL3	BP-XL4
Application		Ecoline 34	Ecoline 53	Ecoline 66, 84 and 90
Vertical stroke	mm	800	1100	1200
Horizontal stroke	mm	750	900	1100
Number of spray-blow circuits		4	4	4
Number of release agents		1	1	1
Number of high-pressure blow circuits		2	2	2
Drive type		AC-Servo	AC-Servo	AC-Servo
Connected power	kW	4	4	4
Dimensions of sprayer (L×W×H)	mm	1365 × (700) × 1900	1515 × (700) × 2200	1715 × (700) × 2300
Weight of spray unit	kg	355	380	400
Weight of spray head max.	kg	35	33	32

**Extraction device BE-C Servo**

		<b>BE-C3</b>	<b>BE-C4</b>
Application		Ecoline 34 and 53	Ecoline 66, 84 and 90
Number of axes		3	3
Handling weight	kg	6	10
Maximum range	mm	1160	1271
Drive type		electrical, pneumatic	electrical, pneumatic
Connected power	kW	3	4
Interference contour of extractor (without gripper and load) (L×W×H)	mm	920 × 900 × 1200	1030 × 1095 × 1350
Biscuit diameter	mm	60 – 90	70 – 100
Weight of extractor	kg	680	680

**SmartVac Ecoline**

		<b>200/63</b>	<b>300/63</b>
Application		Ecoline 34 and 53	Ecoline 66, 84 and 90
Volumetric capacity of the vacuum tank	l	200	300
Vacuum pump	m <sup>3</sup> /h	63	63
Installed power	kW	2.0	2.0

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