All-electric.

IntElect.

Maximum Efficiency – Highest Precision



65,000 AND COUNTING...



The IntElect

Technology, competence and experience.

With more than 65,000 electric injection moulding machines delivered around the world, Sumitomo (SHI) Demag sets the benchmark in electrical machine engineering. Our goals are maximum dynamics, the highest level of efficiency and 100% production quality along with full mould safety. Being the only European manufacturer of electric injection moulding machines, we design and produce all the core electrical drive components in our company. This is the only way the IntElect can achieve maximum dynamics and precision with the highest level of efficiency. Try our technology, expertise and experience for yourself.



The IntElect

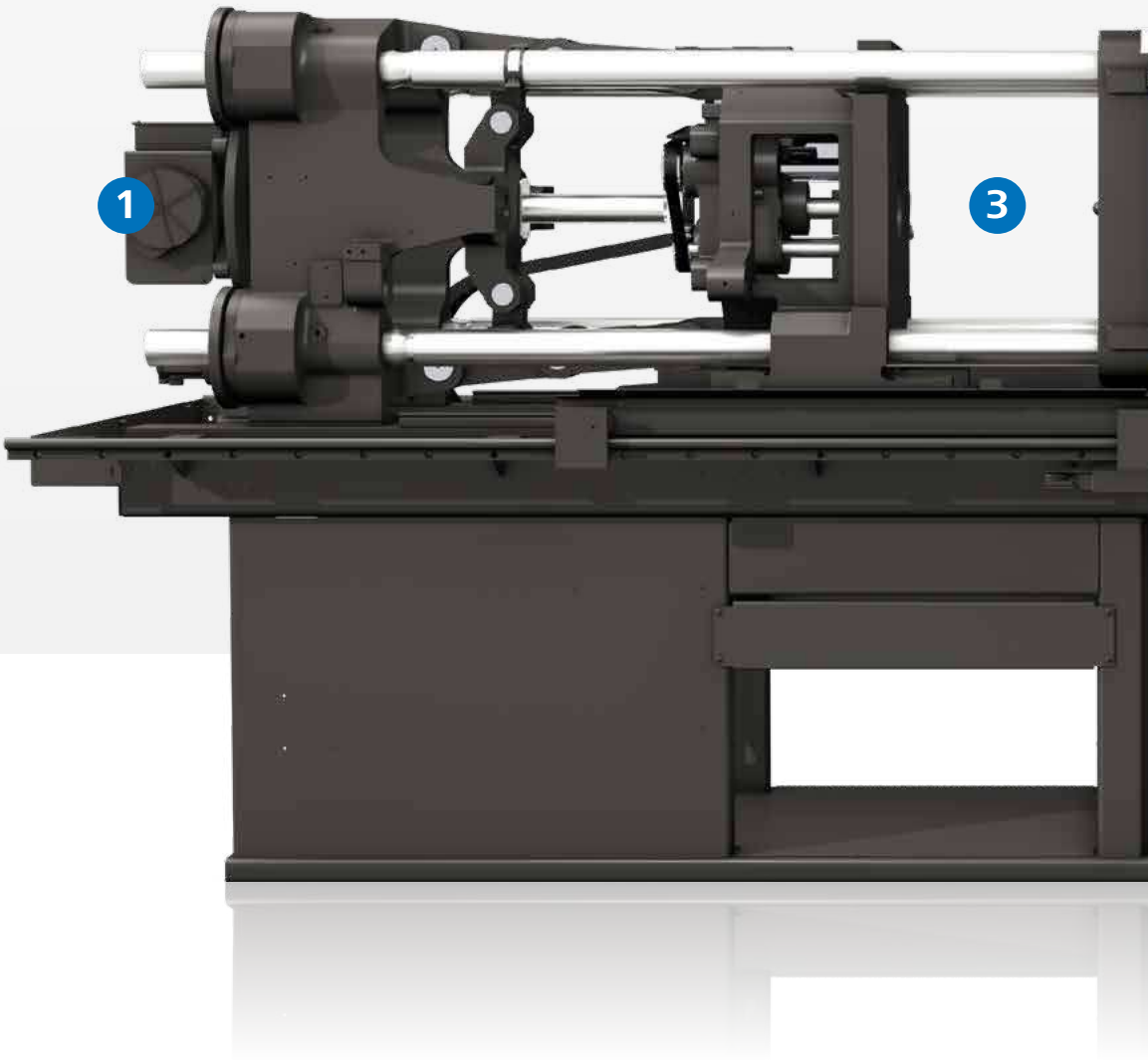
Your benefits at a glance.

1 – Company developed drive technology

In our in-house research & development centre we develop, manufacture and test our direct drives and converter technology as well as control system components all of which are designed to be used specifically in injection moulding machines. This allows the highest level of dynamics with maximum precision and efficiency and thus the highest repeatability.

2 – Intelligent machine design

Thanks to the high level of expertise in the field of electric drive technology, the complete control system of the machine can be integrated into the machine bed. This makes the machine more compact and provides more space for peripheral units. Another important feature of the design is clear and clean machine surfaces.



3 – Comprehensive mould safety

The new CentrePressPlaten have been designed using finite element analysis. This provides up to 20% more platen rigidity and, in combination with linear guides and other design components, guarantees a high degree of mould safety even with higher mould weights.

4 – Intuitive control

The intuitive control of the IntElect provides a variety of options for process monitoring and control. The intuitive and easily programmed control with predefined flexible machine sequences allows the user to fully utilise the IntElect's flexibility and efficiency.



Efficiency

Application-based motor design.

Up to 20% less energy consumption

The combination of company developed drive motors and frequency converters as well as the entire servomotor control system allows us to produce one of the most efficient injection moulding machines on the market. Compared to conventional full-electric injection moulding machines, the IntElect consumes up to 20% less energy.

Up to 10% more production capacity

Higher production capacity is possible due to an on average two percent higher machine availability which combined with dynamic, precise and parallel movements provides up to 10% more capacity. In addition, the high precision of the machine prevents the production of reject parts. In this way you can significantly increase your production capacity while optimising your production costs.



HIGHER PERFORMANCE.
LOWER CONSUMPTION.

In-house development for drive technology

In our in-house research and development centre we develop the best direct drives for injection moulding machines. Our research involves various topics, including magnetic flux analysis, thermal stress simulation, materials analysis and the overall production process, therefore we can provide drive motors which are specifically designed for the requirements of injection moulding machines. This level of dynamics, precision and efficiency cannot be achieved with standard drive motors. Since the direct drives as well as their controls are precisely matched and come from the same manufacturer, the IntElect has a response time of 0.1 ms. This is 20 times faster than conventional injection moulding machines and 1000 times faster than a blink of an eye.

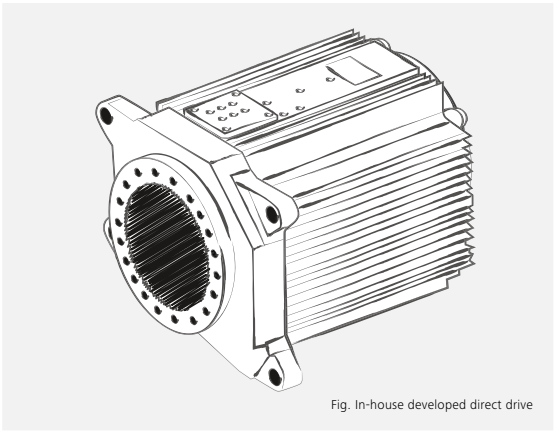


Fig. In-house developed direct drive

Application-based motor design.

- Enhanced heat dissipation due to specially developed casting materials
- Ability to operate under continuous load with a maximum torque of up to 40%
- Slim design for minimum mass inertia and maximum dynamic



Parts quality

Meeting the highest quality requirements.

The tightest process window

Due to the use of direct drives, mechanical tolerances are minimised. Compared to other drive technologies, significantly fewer components are within each other's force flux. In addition to the sophisticated control technology and additional efficiency components, this forms an important basis for achieving the highest precision.

Long-term production stability

Due to the longstanding experience in the construction of electric injection moulding machines in combination with the IntElect's individual drive concept, we are able to ensure a constant process control throughout the service life of the machine. This advantage is of particular importance when it comes to the compliance with validated process parameters.



MAXIMUM DYNAMICS.
100% QUALITY.

Dynamic injection movements

With the combination of high dynamics and speed, the IntElect allows process applications that cannot be achieved with other full-electric injection moulding machines. Due to the unconditional precision and repeatability, the IntElect will allow a wide range of demanding applications. Not only high accelerations, but also fast deceleration both are an essential prerequisite for high quality of parts. For instance, it is possible to consistently avoid burrs during injection by very rapid switching from injection pressure to holding pressure.

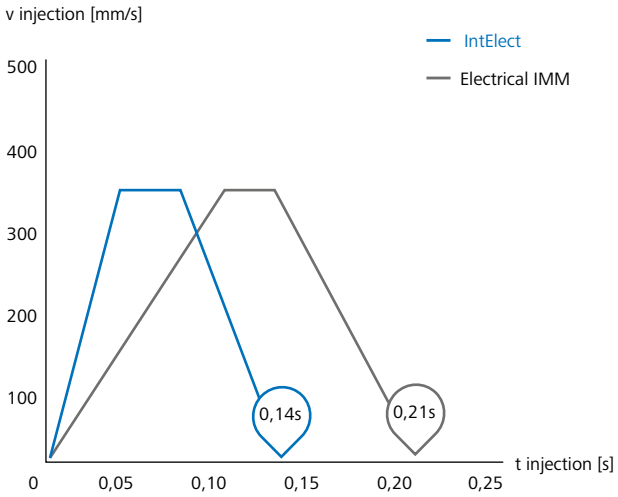


Diagram: Dynamics of the machine during the injection



Parts quality

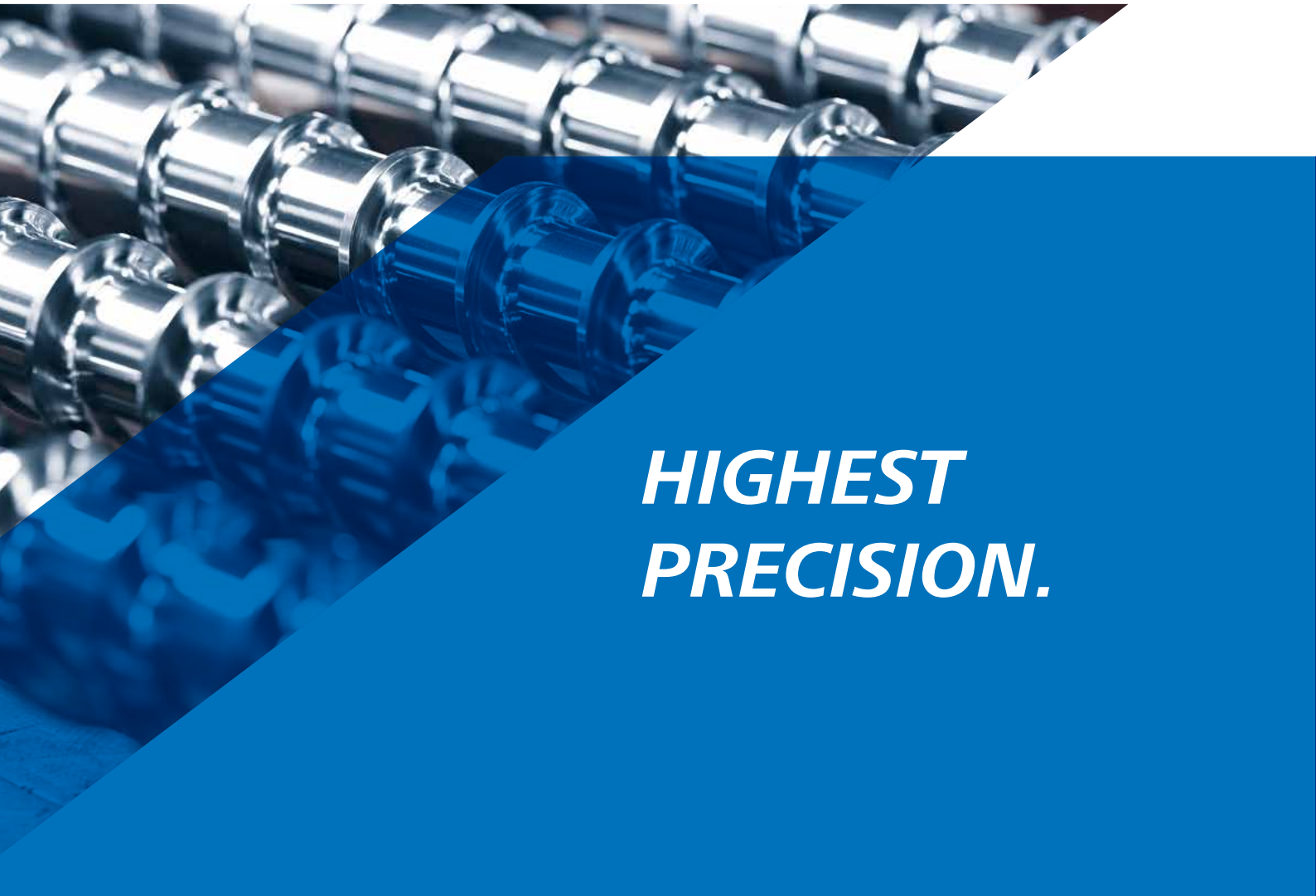
Additional efficiency components.

activeLock
Quality assurance

Due to our activeLock technology, it is possible to reduce shot weight fluctuations by up to 60%. The switchable non-return valve prevents the melt from flowing back into the plasticizing cylinder at the beginning of the injection phase. This ensures that your injection moulded parts can be produced with the highest quality.



Diagram: Shot weight distribution per cycle



HIGHEST PRECISION.

activeFlowBalance

Quality assurance

Due to our ActiveFlowBalance technology component, it is possible to balance filling fluctuations in injection moulds. In doing so, the negative effects of uneven mould filling are compensated for and a uniform moulding quality is achieved when multiple cavity moulds are used. This reduces the reject rate and increases the quality of your parts.

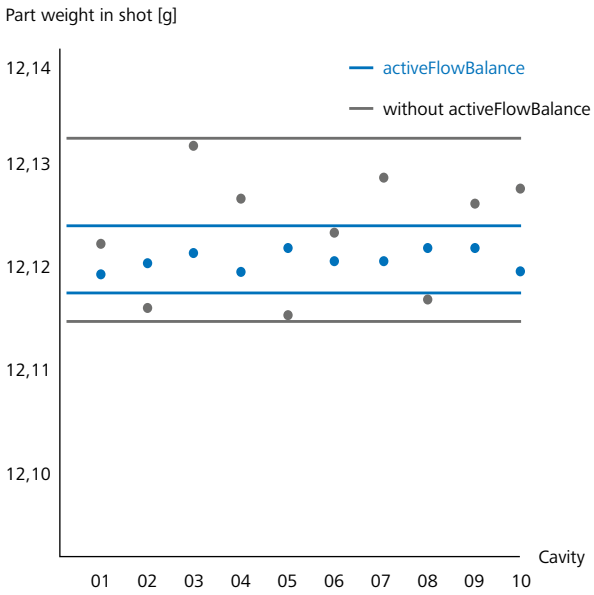


Diagram: Weight distribution in the individual cavities for an injection process



Fig. without activeFlowBalance



Fig. with activeFlowBalance

Mould safety

Quality with full safety.

Monitoring with profile

IntElect protects your investment in every respect. Our active mould protection system activeProtect uses a specially developed mould protection sensor and software which by means of an envelope curve monitors the force flux during the closing movement. This allows the machine to detect even the smallest objects and your mould is perfectly protected. Additionally, it is possible to monitor the force of the ejector and the injection pressure curve of the machine. This guarantees maximum protection even at full speed.

Maximum platen parallelism

Genorously dimensioned linear guides in combination with increased rigidity in the machine bed ensure maximum parallelism of the platens and thus minimise mould wear. In addition, the symmetrical force submission of the nozzle system prevents a deformation of the fixed platen. This ensures the highest parallelism of the platens on both sides.



MOULD PROTECTION.
MAXIMUM PARALLELISM.

Clamping plates with 20% higher rigidity

The new mould platens (CentrePressPlaten CPP) of the IntElect have been precisely optimised for the application by means of the finite element analysis. Conventional platens can deform during locking, depending on the type and shape of the mould. This deflection is transferred to the injection moulded parts by the mould. Our platens (CPP) intelligently distribute forces in the platen and thus offer up to 20% more rigidity than conventional clamping plates.

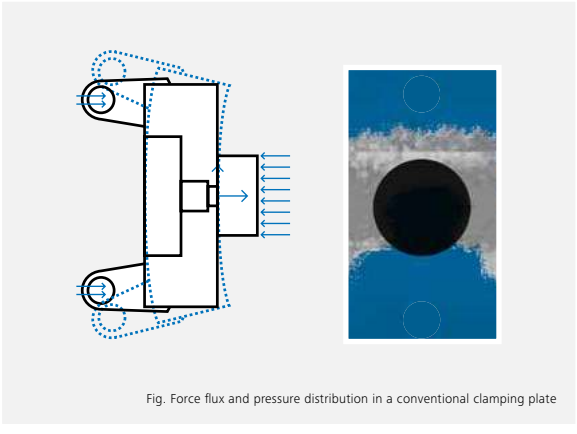


Fig. Force flux and pressure distribution in a conventional clamping plate

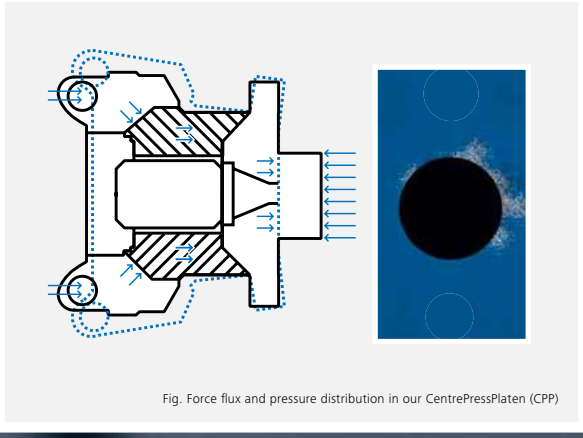


Fig. Force flux and pressure distribution in our CentrePressPlaten (CPP)



The IntElect S

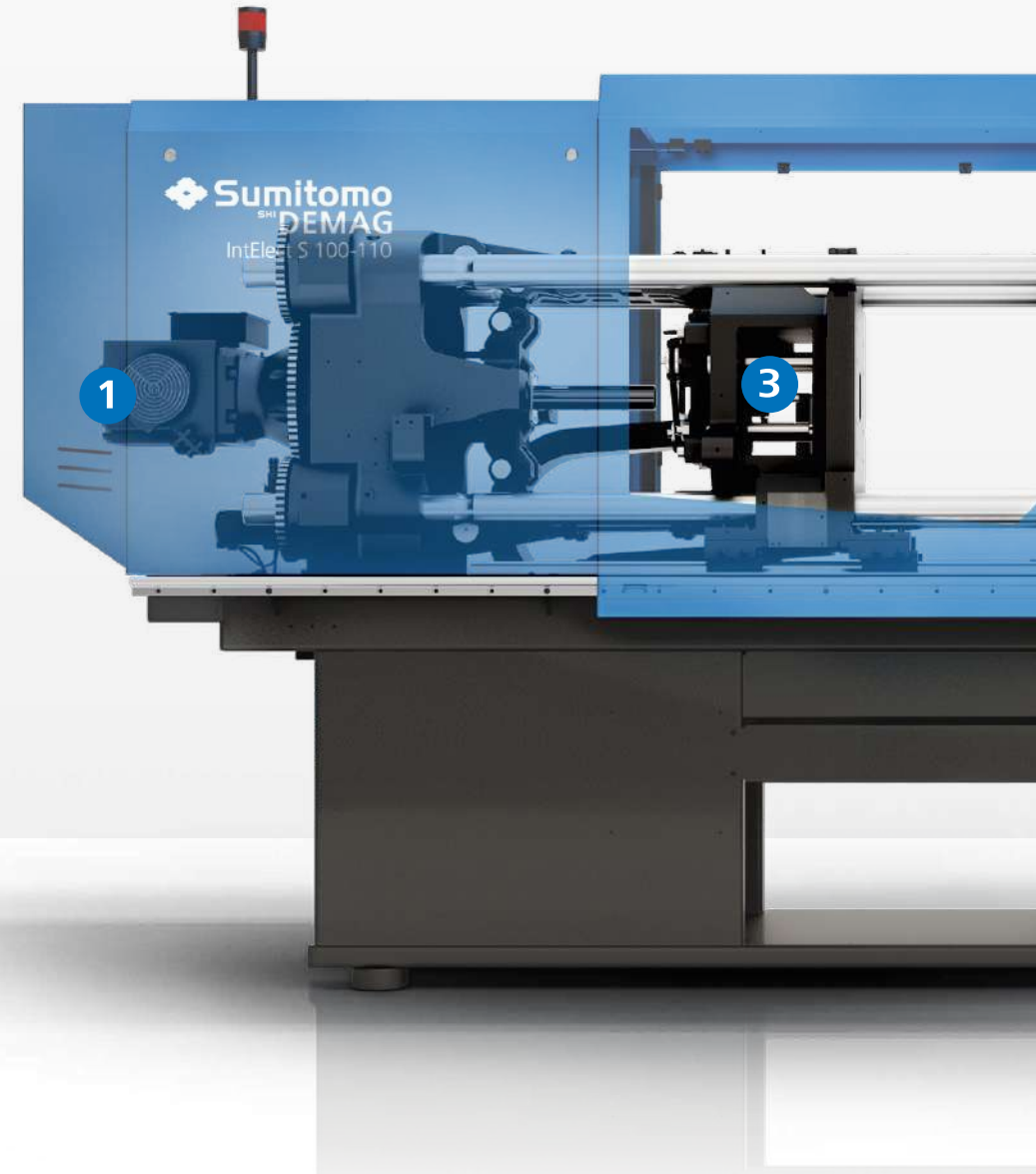
Increased performance for fast applications.

1 – Fast mould movements

Our direct drives are designed specifically for fast movements, to provide minimum dry cycle times. The increased performance of the IntElect S enables significant improvement of production output. The high performance drive spindles of the IntElect S guarantees the highest reliability over the life cycle of the machine.

2 – Highly dynamic injection

Injection speeds up to 500 mm/s combined with incredible dynamics are pushing the production boundaries in thin-wall components; increasing flexibility and ensuring the highest quality level.



3 – Dynamic ejector

Increased dynamics, speed and ejector force complete the overall performance of the IntElect S; ensuring optimised motion sequences and the fastest cycle times.

4 – Minimised energy consumption

Designed specifically for fast cycling applications, the highly optimised low inertia direct drives, combined with high performance ball spindles reduce the energy consumption to just what's needed to melt and transport the polymer, this guarantees high output and the lowest energy consumption.



Sumitomo SHI DEMAG

www.sumitomo-shi-demag.eu

All data and information provided in this brochure has been compiled and checked with due care and diligence. We believe the contents of this brochure to be accurate, but cannot guarantee its accuracy. The description in this brochure may differ from the machine's actual condition upon delivery. 05.2018