



COST-EFFICIENT. **SUSTAINABLE.** VISIONARY.

**PLASTIC
TECHNOLOGY
WITH VISION**

PIONEER IN SUSTAINABILITY

More than 25 years ago, Ferromatik Milacron responded to the increased demand for recycled products with the development of monosandwich technology. This simpler version of the multi-component technology allows up to 70% regenerated material to be worked into new plastic parts. It offers manufacturers the chance to use recycled material for the core and new material for the skin, in order to obtain parts with perfect, flawless surfaces. This can be particularly economical in the case of larger parts. Material cost reductions of 30% are quite possible here.

As a genuine pioneer in matters of sustainability, today Ferromatik Milacron also offers retrofit packages for this environmentally friendly technology, which can be implemented on both Milacron and machines from other manufacturers.

INNOVATIONS FOR GLOBAL MARKETS

Milacron (www.milacron.com) is a global industrial leader in the manufacturing and distribution of highly engineered and customized injection molding and extrusion solutions, and aftermarket parts and service for the plastics processing market.

The company's 1,900 associates worldwide collaborate to serve a diverse range of end-markets, such as automotive, construction, medical, telecommunications, material handling, packaging, and much more.

Molding and shaping its expertise in plastics for nearly 60 years, Milacron holds longstanding relationships with more than 27,000 customers around the world. The original equipment provider of plastics manufacturing solutions is the largest US-owned and globally served of its kind. Headquartered in Batavia, OH/USA, Milacron's global footprint is also serviced through regional offices in Asia, Europe, and South America.



AFTERMARKET

**PRESERVING VALUE – CREATING ADDED VALUE
RELIABILITY AS A YARDSTICK IN CUSTOMER SERVICE**



SPARE PARTS

Expert and precise consulting from our experienced spare parts team, tried-and-tested Milacron quality at fair prices as well as fast shipping from our modern logistics centre are the foundations for the supply with spare parts for all Milacron machines. Additionally, we offer individual, customised spare parts packages in order to ensure even higher machine availability.

SCREW SELECTION FOR HIGH OUTPUT

To increase the plasticising capacity, extensive screws with non-return valves and barrels are available as spare parts. Additionally, we offer adaptations for screw barrels of smaller diameter, in order to make your machine even more flexible for a wide variety of applications. There is thus the opportunity to expand the number of different screw diameters without major investment and long machine downtime due to elaborate reconstruction.

RETROFITTING

Whether interfaces, special programmes, core pullers, control conversions, rotary tables or conversion to a 2C machine; our qualified team supports you in implementing your project-related requirements and thus ensures an efficient and targeted realisation.

TRAINING

Setting up the machine, process optimisations and monitoring, whether Mosaic, Endura-Touch or IQT: a large number of training options can be planned and implemented on a customised basis for individuals or alternatively for groups.

DIVERSE SERVICE AGREEMENTS

Service agreements are available for both new and existing machines and can be shaped individually according to the production requirements. They ensure higher availability and a longer lifespan of your machine.

HOTLINE + SERVICE

With continuously trained service technicians with many years of experience, challenges related to the machine are met quickly, efficiently and professionally.

Our technicians and the service hotline are competent and flexible contacts for repairs, technical customer support, conversions, as well as for retrofitting and thus round off our product portfolio in the aftermarket segment.



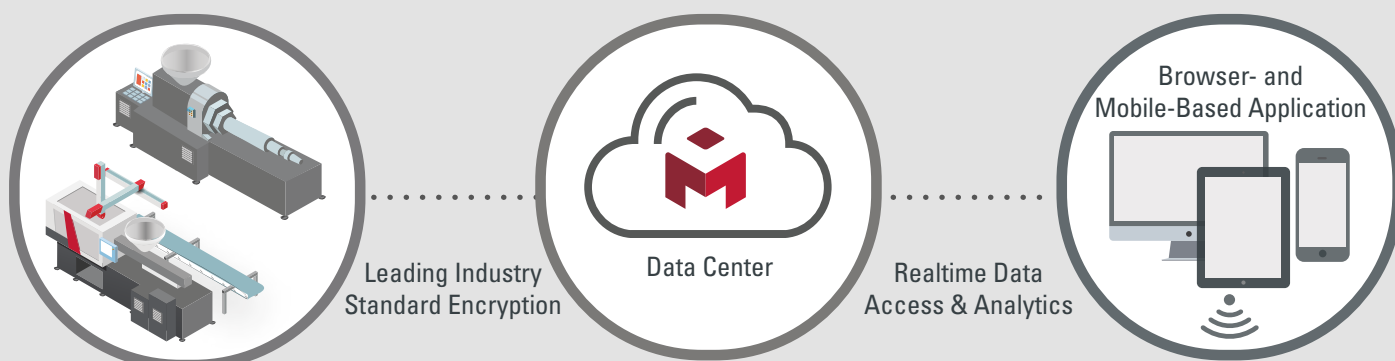
M-POWERED

LEADING THE PLASTICS INDUSTRY IN DIGITAL TRANSFORMATION

M-Powered is a portfolio of easy-to-use observational, analytical and support services that gives customers a competitive advantage. Leveraging Industrial Internet of Things (IIoT) technology, M-Powered runs sophisticated algorithms that utilize real-time machine learning to monitor machine operations and alert before potential issues.



END-TO-END MONITORING & PROTECTION



LEVERAGE M-POWERED TO MAXIMIZE YOUR MACHINE'S PERFORMANCE, REDUCE DOWNTIME AND BETTER PREDICT FAILURES



DIGITAL SOLUTIONS

- Asset & Workcell monitoring
- Automated OEE delivering a reliable truth system
- Customizable maintenance, downtime and process monitoring applications



PREDICTIVE INSIGHTS

- Real time recommendations on a growing number of machine components
- Gain actionable insights quickly leveraging a global fleet
- Lifetime monitoring of assets



REMOTE ASSIST

- Instant access to experienced technicians
- Reduce downtime durations
- Resolve hydraulic, electrical and control issues



THE TOUGHNESS TO TAKE ON GLASS-FILLED AND OTHER ABRASIVE AND CORROSIVE RESINS

That's what you need in high-wear applications. And that's what you can count on from Milacron Aftermarket. The WEARSTAR package from Milacron Aftermarket is a very high wear-resistant plasticizing kit: ultra-wear resistant screw, barrel and tip assembly, all in one turn-key super-molding package.



**MAXIMUM PROTECTION
AND PERFORMANCE.**

BACKED BY A 3-YEAR GUARANTEE

Choose from two unprecedented wear-resistant guarantees covering all components.

**FOR ANY MAKE. ANY MODEL.
OLD OR NEW.**

With WEARSTAR, Milacron's expertise and resources have made it possible for any machine to stand up to the harshest of processing environments.

THE eQ-SERIES

RELIABILITY AND REPEATABILITY FOR HIGH-PRECISION ELECTRIC INJECTION MOULDING

The eQ-SERIES gives you the flexibility of handling more applications. The movements of the eQ-SERIES are controlled completely by servo drives. This not only leads to maximum acceleration, but also ensures the highest accuracy and exceptional reliability across all processes as well as high-precision movement, position and pressure control.

THE CLOSING UNIT

- Improved kinematics of the toggle joint combined with steering of the closing force into the tool centre
- Chrome-plated, contactless tie-bars for a grease-free tool space
- Wide tie-bar spacing for more flexibility
- Linear guides for precise guiding of the mould platens

FLEXIBLE AND STABLE

- Robust machine bed with minimum warpage
- Powerful and long-lasting rubber mountings



BRILLIANT TOOL SECURITY

- Optimised tool security
- Optimised protection of the tool ejector mechanics
- Ejector motor with mechanical brake for holding the position in the case of spring-actuated tool ejectors

MOSAIC CONTROL

- 15-inch colour touchscreen with ergonomic tilt, rotatable and swiveling
- Real-time energy display
- Internal memory for up to 500 tool data records
- Freely adjustable core pull movements
- Process monitoring with graphical display of minimum, maximum and average values
- Overview of the last 3,000 alarms with date and time display
- Display of the last 3,000 setpoint changes (change log)
- Freely configurable inputs and outputs for integration of peripheral devices

HIGHEST PERFORMANCE, PRECISION AND FLEXIBILITY

- Closing forces of 500 kN to 6,500 kN
- Screw diameter of 18 - 90 mm
- Latest Milacron control generation MOSAIC
- Maximum energy efficiency thanks to regenerative servo drive technology
- Very low maintenance costs
- Cycle time saving
- Unsurpassed repeat accuracy

THE INJECTION UNIT

- Latest servo drive technology for increased efficiency throughout the entire injection process
- Fastest and precise measurement and regulation of all relevant pressures
- Linear guides and a reinforced design allow equal and precise speeds



MILACRON M-POWERED

- Developed for complete use of all online options of our M-Powered application
- Increases machine availability and overall equipment effectiveness (OEE)
- Remote monitoring option

ENERGY-EFFICIENT

- Low energy consumption thanks to regenerative servo drive technology
- Trend-setting control technology for fast and precise speeds

STATE-OF-THE-ART DRIVE TECHNOLOGY AND SAFETY EQUIPMENT

- Series-standard overvoltage protection device
- Integrated line filter and chokes to reduce harmonic waves

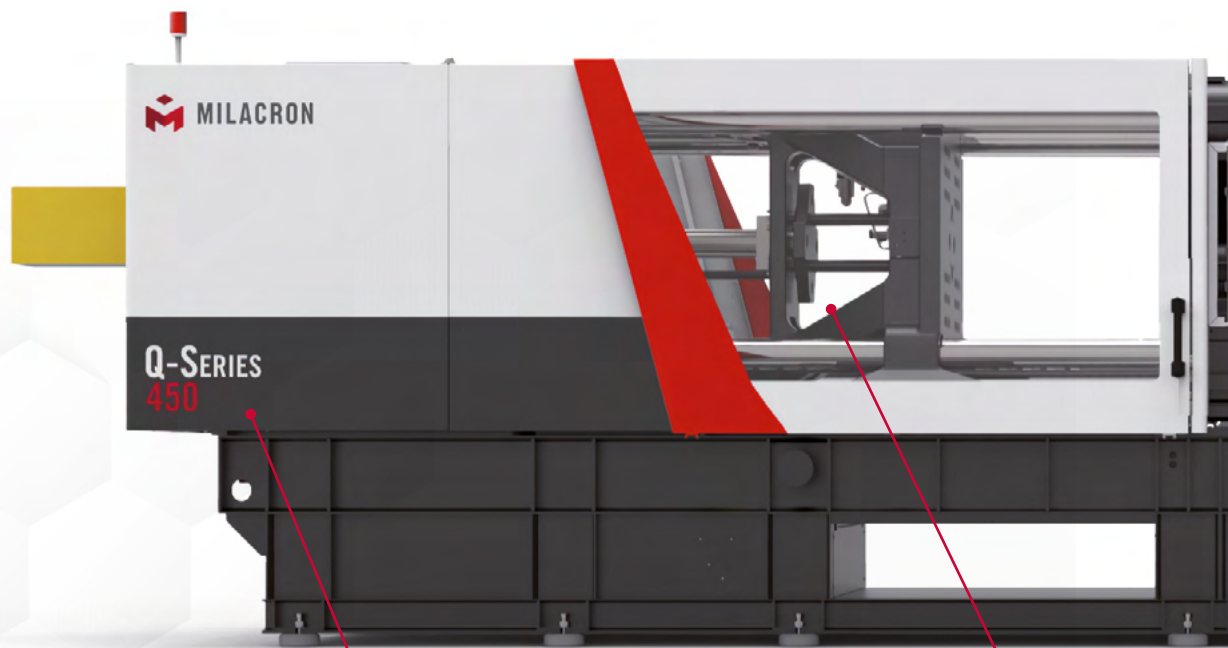
THE Q-SERIES

HIGH PART QUALITY AND FASTEST CYCLE TIMES WITH MINIMUM ENERGY USE

The Q-Series is Milacron's latest and globally available servohydraulic injection moulding machine. With a closing force range of 1,100 to 5,500 kN, the Q-Series is designed for a wide range of applications and configurations. Based on the highly praised, reliable and sought-after machines of the Magna Toggle and F-Series, the Q-Series is a true highlight in terms of efficiency, resilience and globally developed technology.

OUTSTANDING PROPERTIES

- The outstanding toggle kinematics provide for fast clamp velocities and a smooth velocity profile
- The innovative design of the tool mounting-platens ensures an even load distribution over the tool.
- Grease-free tool area thanks to precise linear guides and contactless tie-bars
- Parallel injection cylinders ensure an even load distribution across the screw centreline



TOOL INSTALLATION HEIGHT ADJUSTMENT

- Repeat-accurate and precise adjustment by means of position measuring system
- Simple operation via the screen
- Robust adjustment mechanics ensure precise tool position during production

EJECTOR

- Ejector stroke- and force-optimised
- Euromap ejector hole pattern
- Multi-stage speed and pressure profile adjustable including multiple stroke

LATEST SERVOHYDRAULICS

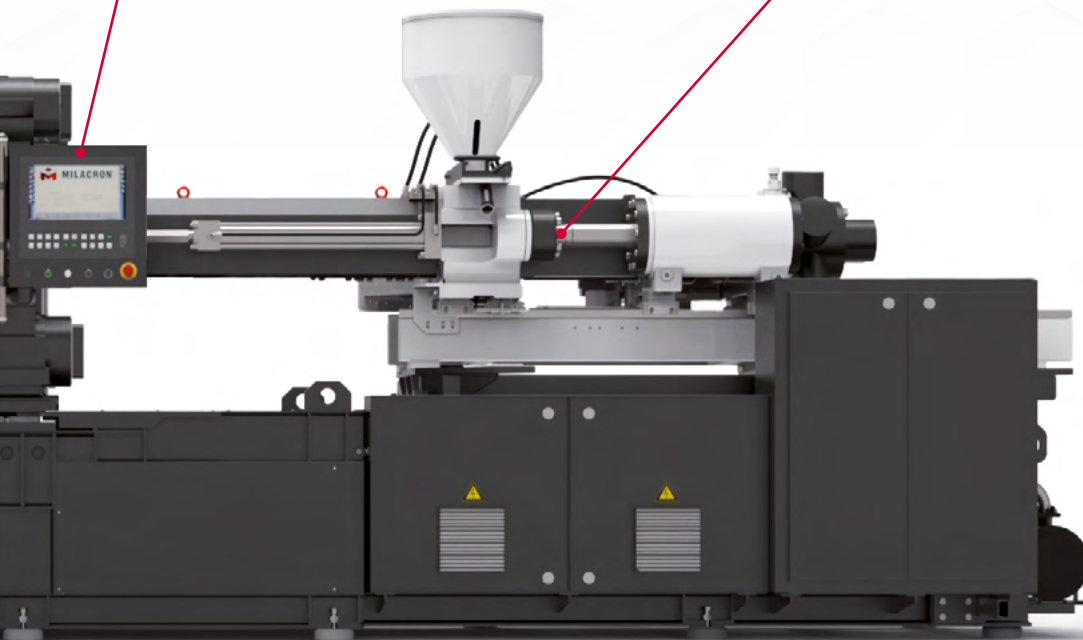
- Precise and constant cycle times thanks to optimal control technology
- Large servomotor speed range between 0 and 3,000 r.p.m.
- Low-maintenance access to the drive system
- Low energy consumption
- Maximum accuracy and precision thanks to rotary encoder accurate to a fraction of a degree

MOSAIC G3 CONTROL

- 15 inch colour display
- Real-time energy display
- Internal storage up to 500 tool datasets
- Freely adjustable core puller movements
- Ergonomic design, swivelling and height-adjustable
- Process monitoring in table and chart form
- Robot interface according to EUROMAP 67 option
- Configurable inputs and outputs

INJECTION UNIT WITH PARALLEL LYING INJECTION CYLINDERS

- Uniform load distribution across screw centreline
- Swivelling injection unit for fast screw change
- Precise linear guides for optimally aligned screw and barrel
- Compact piping of the injection unit hydraulics to reduce the floor space required
- Longlife ceramic insulated heater bands



INCREASED TOOL LIFESPAN

The rigid design of machine bed and closing unit ensure:

- Mounting of large and heavy tools
- Optimal platen parallelism

MILACRON M-POWERED

- Developed for complete use of all online options of our M-Powered application
- Increases machine availability and overall equipment effectiveness (OEE)
- Remote monitoring option

THE M-SERIES

THE ALL-ROUNDER IN THE MEDIUM CLAMPING FORCE RANGE

With the introduction of the new M-Series, Milacron is expanding its two-platen technology product line in the medium clamping force range from 4,500kN to 11,000 kN.

The energy-efficient hydraulic system is driven by Fanuc servo motors, the gold standard for reliability. The new M-Series has been developed to exceed the global requirements of various industries. In particular, the increase in maximum mold weights, faster clamping speeds and compact footprint make the M-Series a guarantee for almost endless possibilities.

COMPACT 2 PLATEN TECHNOLOGY

- Minimal platen deflection
- Chrome plated strain rods
- Decreased nut lock operating time
- Grease-free mold area

NEXT GENERATION TONNAGE ASSEMBLY

- Increased seal life due to fully supported strain rods in the stationary platen
- Chrome plated strain rods
- Equal distribution of tonnage load on the threads, due to the conical design tonnage piston
- Synchronized tonnage & pancake cylinder
- Precise and short tonnage build up time
- Higher breakaway force available as standard



CLAMP ON LM GUIDES

- Frictionless movement
- Enhanced platen parallelism & squareness – increase mold life
- Contactless strain rods

MOSAIC +

- 21-inch multi-touchscreen with configurable “PLUS” area
- Integrated auxiliary equipment screens
- Integrated remote camera interface provides
- an additional set of eyes monitoring the entire machine (optional)

THE MOST VERSATILE POWERHOUSE IN TERMS OF RELIABILITY, PERFORMANCE AND FEATURES

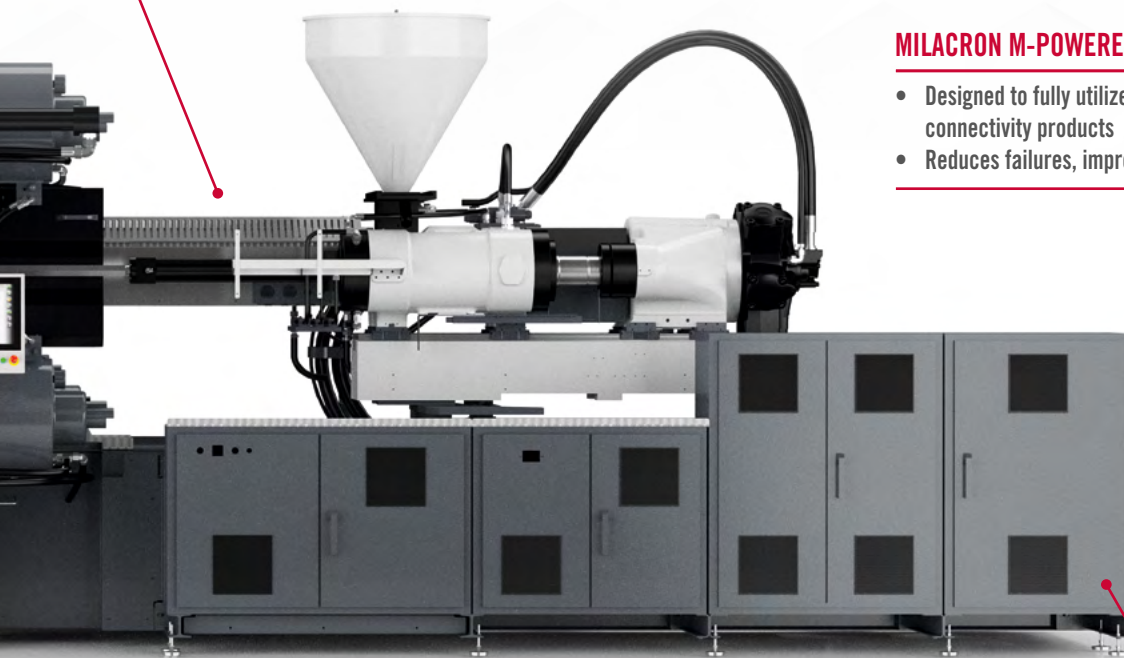
- Highly efficient servo system with energy recovery
- High accuracy and precision
- Mosaic+ control system with intuitive operation via 21" HD touchscreen
- Robust and synchronized half-shell closing system with improved reliability and repeatability
- Precise injection movement through linear guides

MULTIPLE STANDARD INJECTION FRAMES

- A'-A-B barrel combination for application flexibility
- Twin cylinder injection unit distributes the force evenly across the screw centerline
- Precision linear guides for accurate screw and barrel alignment
- Standard injection unit swivel for ease of maintenance

MILACRON M-POWERED

- Designed to fully utilize our M-powered suite of connectivity products
- Reduces failures, improves uptime and OEE



INTEGRATED HOT RUNNER CONTROLLER (OPTIONAL)

- Seamless Integration
- Reduced mold interface complexity
- Virtual Network Control (VNC) controlled via Mosaic control screen
- Widest selection of interchangeable control cards

HIGHLY RELIABLE SERVO DRIVEN PERFORMANCE

- Compact size servo motor
- High dynamics
- Low inertia
- Higher power density - high torque with lower current
- EMI filters included for better noise suppression & life of other electronic components
- Suitable for all applications

THE C-SERIES

THE NEXT GENERATION OF MILACRON INNOVATION

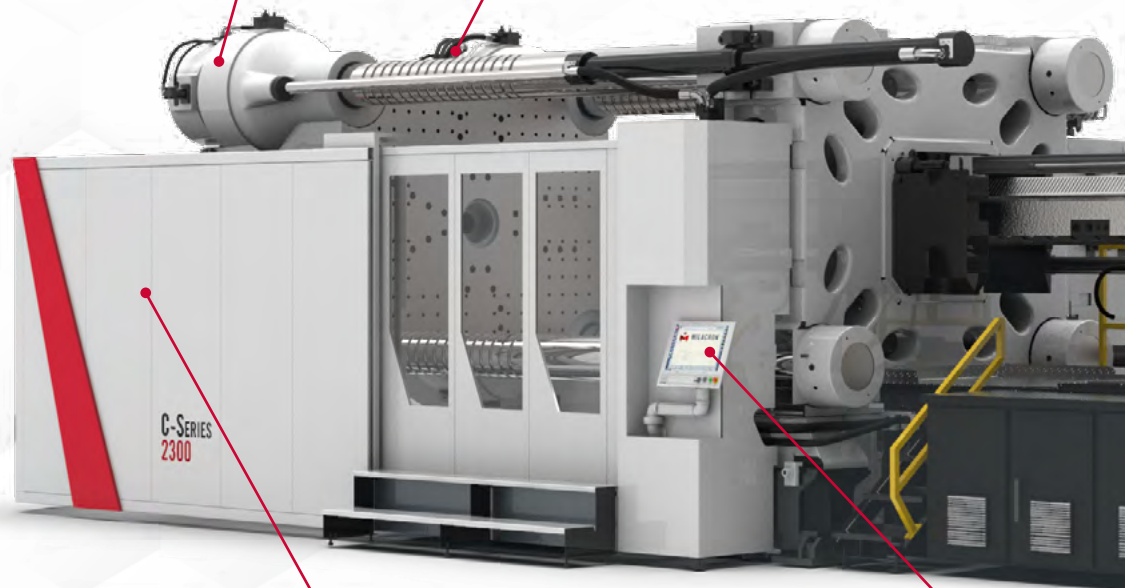
The C-Series expands the leading large machine technology from Milacron thanks to a two-platen injection moulding machine with a large closing force range driven by an energy-efficient servomotor hydraulic system. It is aligned towards versatility and globally it surpasses the requirements of automotive, household appliance, pallet and other large formed components. Driven and controlled by the energy-efficient and extremely reliable servomotor unit, the improved machine specifications and performances of the C-Series offer higher reliability, higher maximum tool weights, faster closing speeds and compact use of space.

INTEGRATED LOCKING/CLOSING SYSTEM

- Trend-setting control and increased speed
- Uniform closing force distribution
- Guided tie-bars
- Reduced tool wear

COMPACT 2-PLATEN TECHNOLOGY

- Rigid platen design comparable to centrally applied locking force systems
- Compact space use
- Increased maximum tool weights
- Improved performance and reduced Euromap 6 dry run times



COMPLETE SPI EJECTOR SYSTEM AS STANDARD

- Complete SPI ejector at closing forces of 13,000 kN - 23,000 kN, optionally 27,000 kN and greater
- Improved ejector access to reduce the retrofitting time

MOSAIC +

- 21-inch multi-touchscreen with configurable "PLUS" area
- Integrated auxiliary equipment screens
- Integrated remote camera interface provides
- an additional set of eyes monitoring the entire machine (optional)

PERFORMANCE & RELIABILITY FOR MANY APPLICATIONS

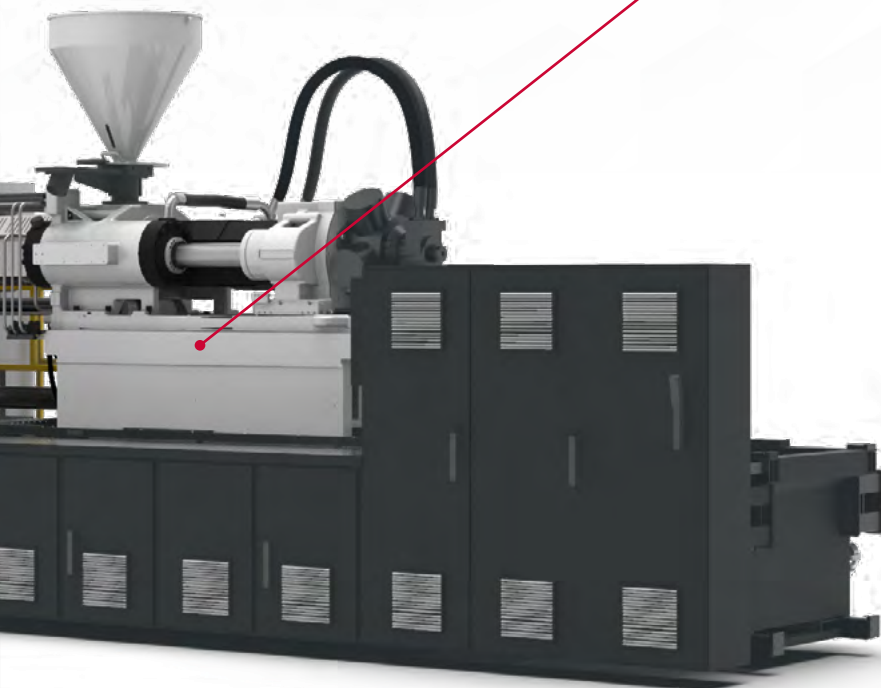
- Energy-efficient hybrid machine, driven by industry-leading servomotors
- Higher performance with application-based machine configuration (3 standard performance packages available)
- Expanded application possibilities: multi-component technology, stack moulds and larger injection units
- Developed for faster tool change with improved tool and ejector access

OPTIONALLY INTEGRATABLE HOT RUNNER REGULATOR

- Seamless integration
- Reduced complexity of the tool interface
- Virtual network control (VNC) via the Mosaic+ screen
- Largest selection of replaceable control cards

SEVERAL STANDARD INJECTION UNIT VERSIONS

- A⁺-, A-, B-cylinder combination for application flexibility
- Parallel-cylinder injection unit distributes the force evenly across the screw centreline
- Precision linear guide ways for the exact screw and barrel alignment
- As-standard swivelling injection unit for simple maintenance



SERVOMOTOR AND DRIVE PACKAGE

- Servo-driven drive units with outstanding reliability
- Energy saving of up to 70%
- Digital regulation of pressure and throughflow by means of servo system
- Tool shaft and injection axis regulated
- Gear pumps for improved reliability
- Quiet machine operation
- Offers a high acceleration rate and uses highly efficient and powerful neodymium permanent magnets

MILACRON M-POWERED

- Developed for complete use of all online options of our M-Powered application
- Increases machine availability and overall equipment effectiveness (OEE)
- Remote monitoring option

THE **BOLT-ON** INJECTION UNIT

HIGH-PRECISION FULLY ELECTRIC INJECTION MOULDING

The bolt-on injection unit is suitable for nearly all applications. The injection and plasticising movements of the bolt-on injection unit are regulated by servo drives. This not only leads to maximum acceleration, but also ensures the highest accuracy and exceptional reliability of the injection processes as well as high-precision speed, position and pressure control.

MAXIMUM FLEXIBILITY:

- Both vertical and horizontal mounting options
- Injection unit sizes of 55 to 1,540; screw diameters of 18 to 70 mm
- Compatible with injection moulding machines and vertical presses of all manufacturers
- Optionally with own hydraulic package or with oil supply by means of your injection moulding machine, for additional hydraulic functions
- With own visualisation or by VNC using the screen of your injection moulding machine

SIMPLE CONVERSION TO 2 C MACHINE

Simply turn your single-component injection moulding machine into a two-component injection moulding machine

RELIABILITY AND REPEATABILITY

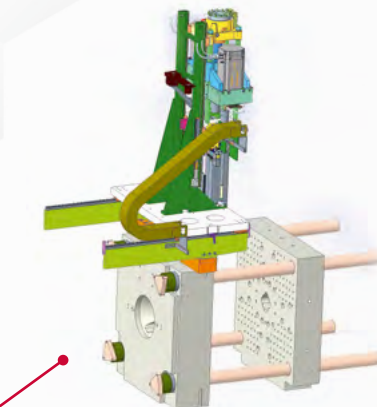
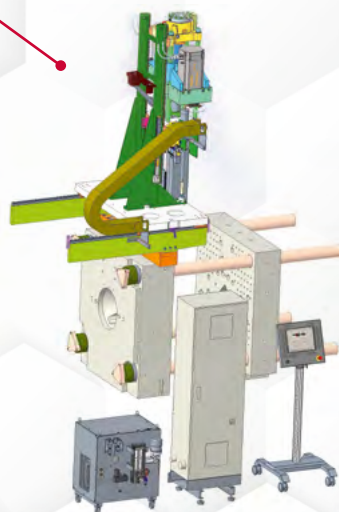
The latest generation servo drives are designed for handling fast accelerations and short-term current peaks.

THE HYDRAULIC UNIT FOR ALL STANDARDS: POWERFUL, FAST, EFFICIENT

The hydraulic unit with its 10l accumulator supplies the bolt-on injection unit dynamically and with sufficient pressure for a generous nozzle contact force. Additionally, the optional NG6 core pullers ensure the activation of the actuators in your tool.

1

FULLY AUTONOMOUS SOLUTION FOR FME MACHINES AND OTHER BRANDS



2

FULLY INTEGRATED SOLUTION FOR FME MACHINES WITH MOSAIC CONTROL AND X20 PLC ONLY

MONOSANDWICH

REDUCE COSTS – CONSERVE RESOURCES EFFICIENTLY AND SUSTAINABLY

The MonoSandWich (MSW) Technology developed by Milacron, is a simpler version of Multi-Component technology. It is designed to significantly reduce the manufacturing costs as compared to conventional sandwich moulding technologies. MSW uses only 1 injection stroke thereby eliminating any chances of error arising when switching from skin to core. This also makes changing colors faster than conventional technologies.

It is the combination of skin and core material that gives the parts their special characteristics and offers manufacturers cost reductions along with greater scope for producing functionally complex parts. The MSW technology provides the option of using recycled materials for the core and virgin material for the skin for parts with perfect, unblemished surfaces. For larger parts, this can be particularly economical. Material cost reductions of 30 % are entirely possible here.

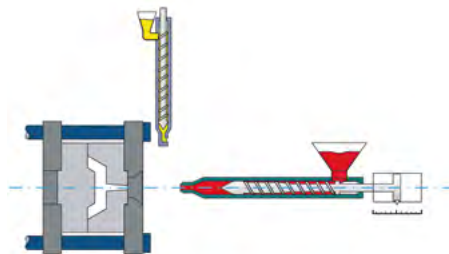
THE MONOSANDWICH PROCESS

- 1** The main injection unit moves forward onto the mould
- 2** Both materials are forced into the mould in the injection process one after the other
- 3** The following second component creates the plastic core of the moulded part

1

PLASTICISING OF THE CORE COMPONENT

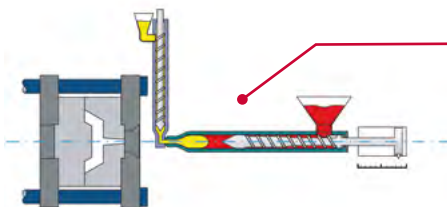
- A standard injection moulding machine is equipped with a second unit, the side extruder
- The core component is in the main injection unit (red), the skin component in the side extruder (yellow)



2

PLASTICISING OF THE SKIN COMPONENT

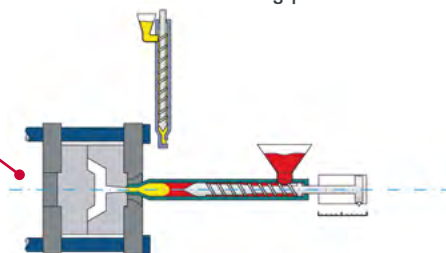
- The side extruder moves down and the material will be plasticised into the main injection unit
- The core component that is already plasticised in the main injection unit, is pushed backwards in the process
- The side extruder moves back into its waiting position



3

START OF INJECTION

- Injection is carried out as on a standard Ferromatik Milacron injection moulding machine





Do you have questions about the product portfolio and our worldwide locations?

Sales

Telephone +49 7644 92322 50
fm-sales-eu@milacron.com



Do you require technical support by telephone or a technician on site?

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Service international

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fm-service-eu@milacron.com

Hotline

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Do you require spare parts, would like a retrofit or need information on preventative measures?

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