

# THE ELEKTRA SERIES

300 to 3,000 kN



*Global Partners in Plastics*

# ELEKTRA

## All-Electric - Perfected

There are years of experience and innovation inside every ELEKTRA from Ferromatik Milacron. The ELEKTRA was the first European all-electric injection molding machine. Today, matured to perfection, this versatile technology is powering plastics manufacturing around the world.

ELEKTRA is economical: it offers significant energy and water savings and parallel movements for extra short cycle times. The advantages of all-electric technology:

- **Economy**  
50% to 70% savings in energy and water requirements
- **Dynamics**  
Parallel movements for shorter cycle times
- **Precision**  
Exceptional part quality with optimal mold protection thanks to axis precision of 0.01 mm

- **Productivity**  
Maximum availability and repeatability ensure minimum scrap rates
- **Ergonomics**  
Full access to all machine functions via user-friendly interface
- **Versatility**  
Suitable for all injection molding applications and special processes
- **Clean**  
For ideal production conditions
- **Quiet**  
Almost silent operations – ideal for personnel-intensive production and assembly areas

### Energy Savings

With energy prices rising, going all-electric makes more sense than ever. Depending on the application, manufacturers will realize electricity and water savings of up to 70% versus conventional hydraulic machines.

ELEKTRA 30 · 50 · 75 · 110 · 155 · 180 · 230 · 300



### Typical Applications

#### Medical

Syringes · Contact lenses · Hearing aids · Inhalers · Catheters

#### Electrical & Telecommunication

Switches · Batteries · MP3 players · Mobile phones · Telephones

#### Packaging

Closures · Containers · Food packaging

#### Consumer Goods

Razors · Toothbrushes · Fashion accessories

#### Housewares

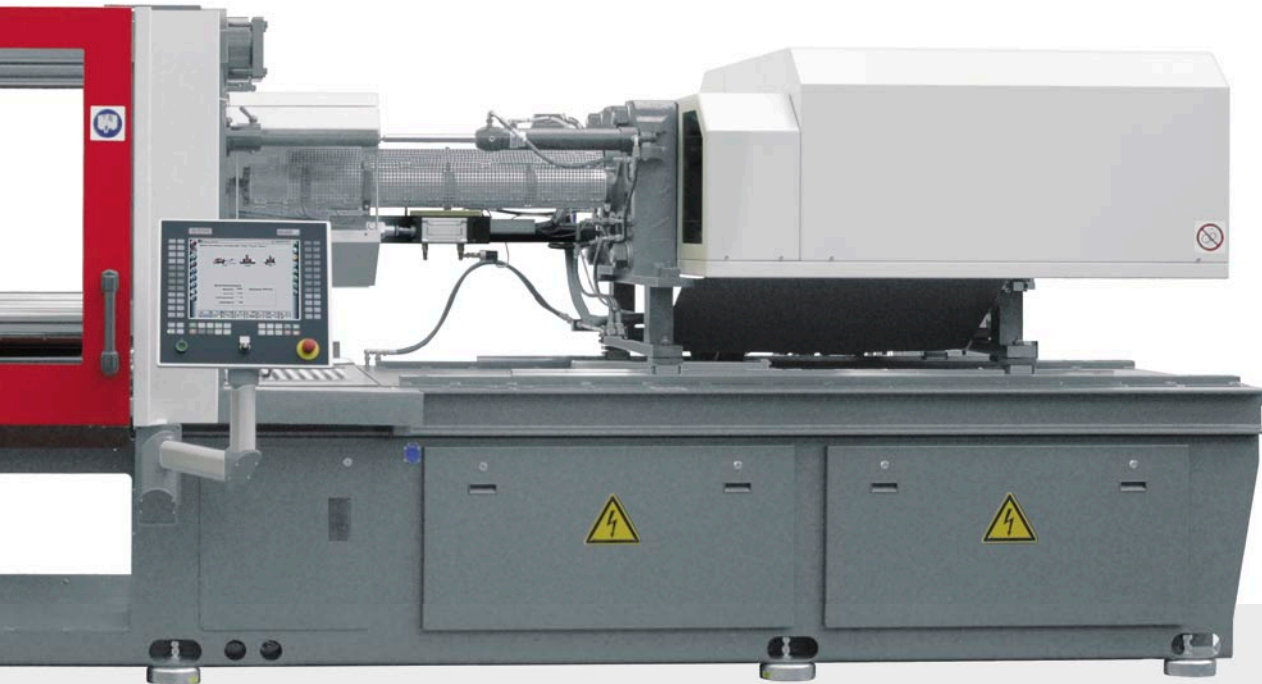
Cutlery · Tableware · Storage boxes

#### Appliances

Mixers · Hair dryers · Vacuum cleaners

#### Automotive & Transport

Interiors · Exteriors · Lighting



### Ferromatik Milacron – Part of the Milacron Team

Plastics make our lives better: more convenient, safer, and more colorful. For over 50 years Ferromatik Milacron has been building injection molding machines for plastics manufacturers at our facility in Malterdingen, Germany. With a workforce of 500 and offices in 50 countries, Ferromatik Milacron machines are sold worldwide. As part of the Milacron group, founded in 1884, Ferromatik Milacron enjoys the backing of a global company with 3,500 employees.



Main facility in Malterdingen



Flexible production system

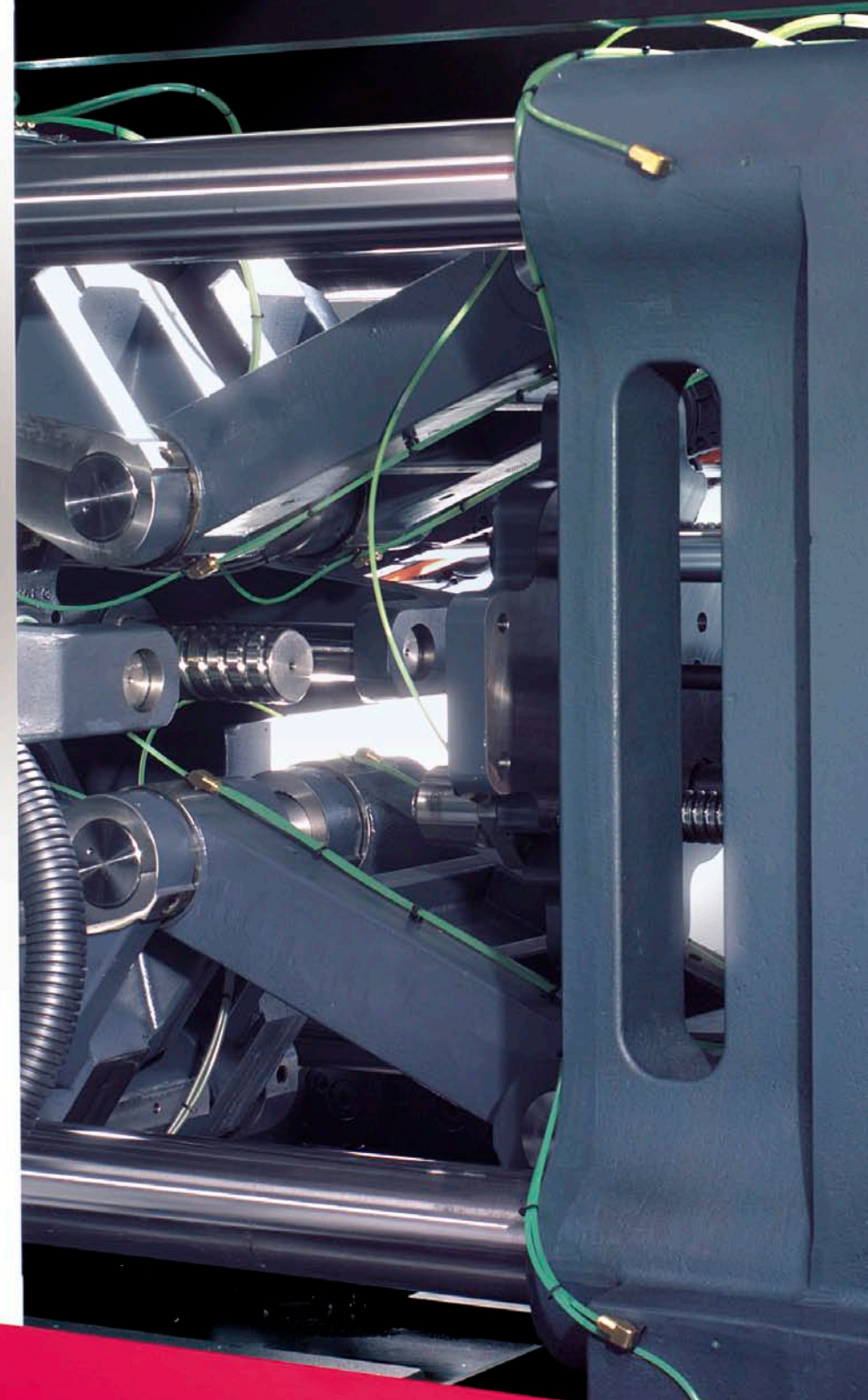


ELEKTRA assembly

**ROMATIK  
LACRON**

*Europe*

**ELEKTRA 180**  
*evolution*





# REDEFINING PRECISION

## Absolute Stroke Measurement for Consistent Quality

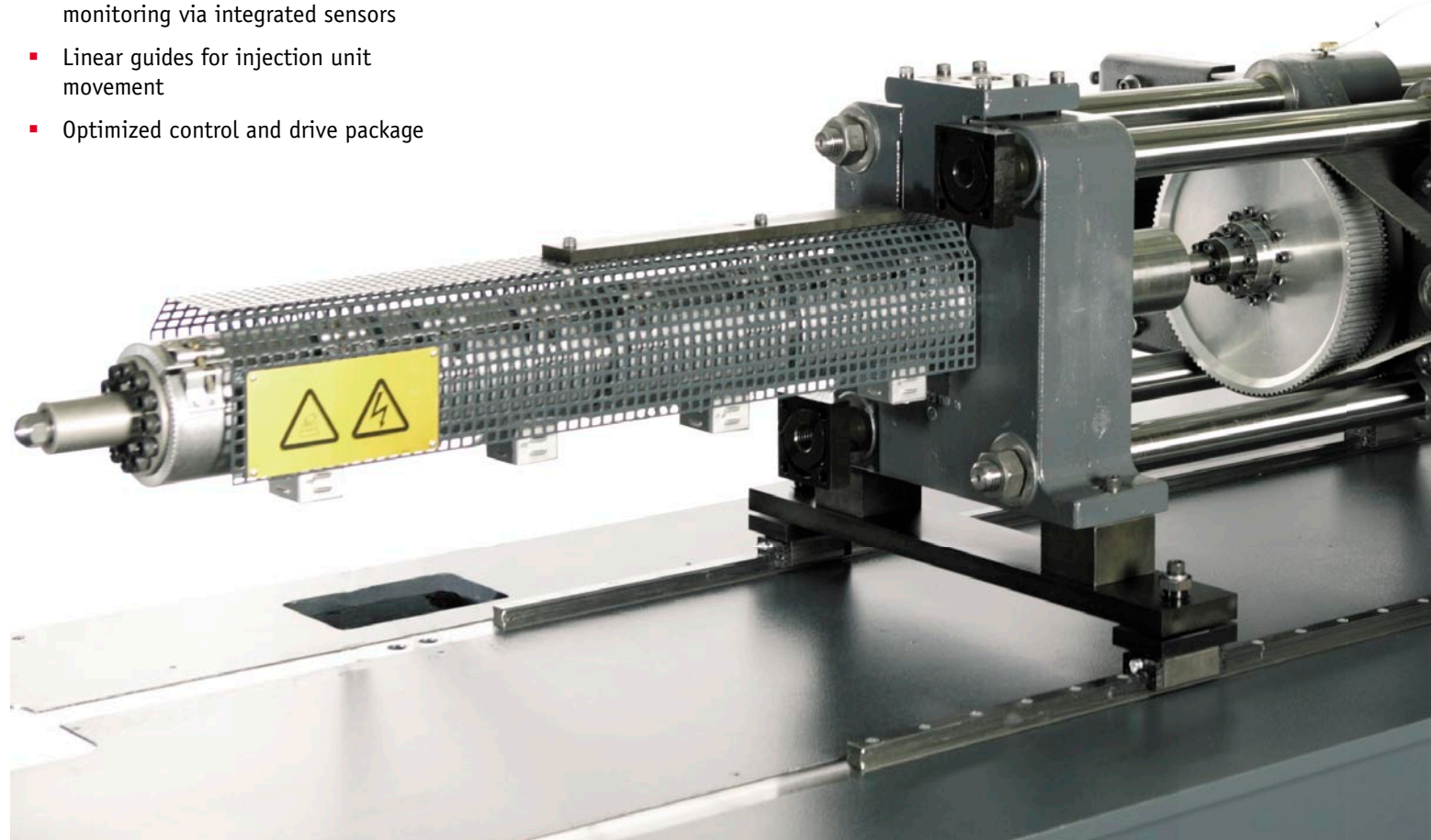
For machine movement repeatability, all-electric machines have no equal. Even with the most demanding applications this means consistent part quality for the long term. Direct control paths for individually driven machine axes keep shot weight deviations under 0.01%.

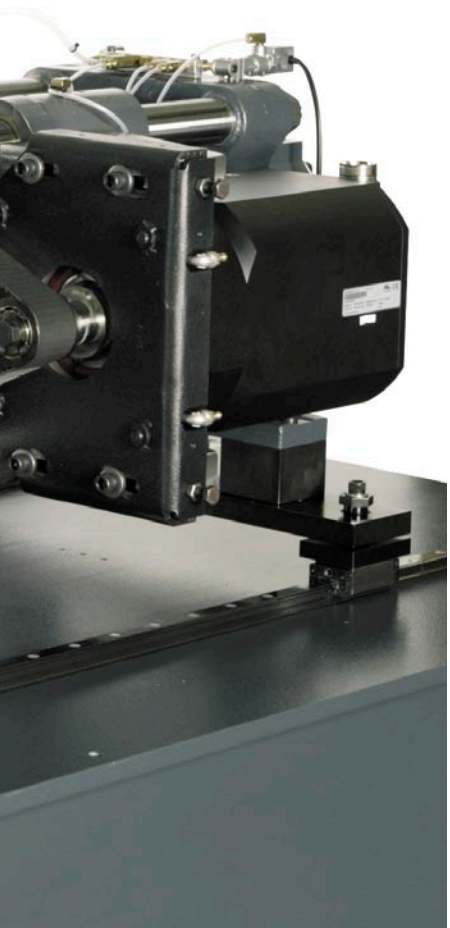
The stroke precision of servo-driven axes is significantly greater than even the best hydraulic systems can provide. ELEKTRA's electro-mechanical drive components and robust construction guarantee exceptional reliability and make ELEKTRA ideal for precision production of parts with the tightest tolerances.

Superior precision thanks to:

- Absolute stroke measurement of all servo-driven machine axes
- Stroke measurement resolution of less than 0.01 mm

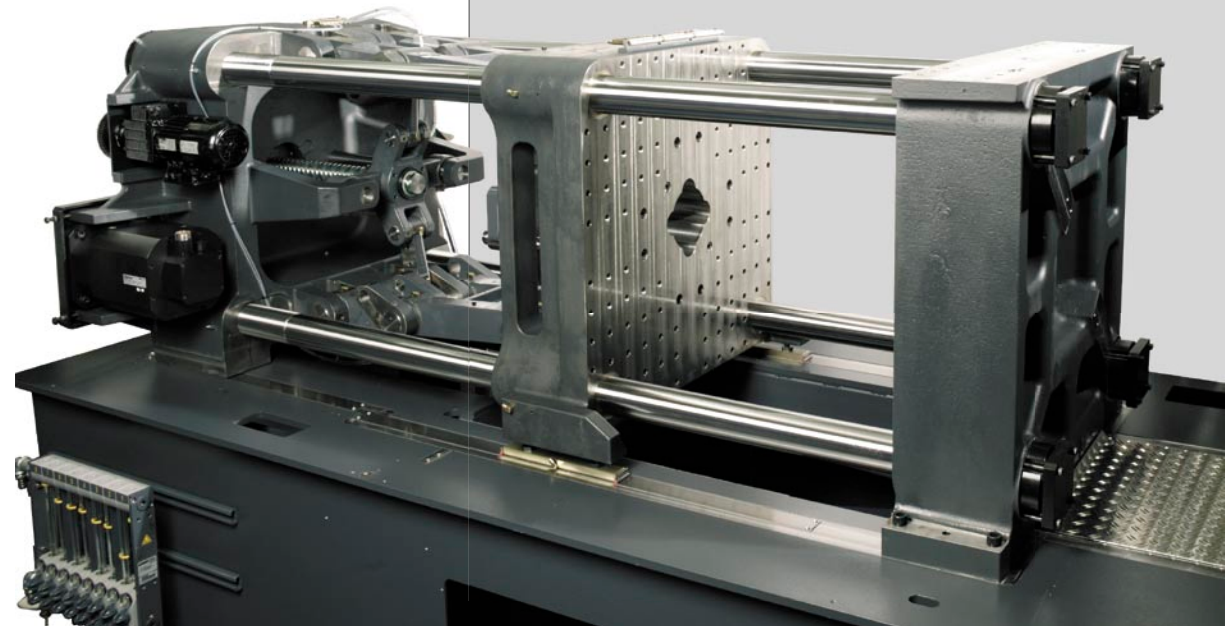
- Outstanding injection pressure monitoring via integrated sensors
- Linear guides for injection unit movement
- Optimized control and drive package





Clearly laid out components based on proven designs ensure long machine life. For molders this means long maintenance intervals and easy access to all parts of the machine. In every detail, the ELEKTRA is designed for molding.

- Machine axes feature servomotors, belt drives, and ball screw drives
- Injection unit movement and nozzle holding force via two traversing cylinders with symmetrical load application for minimal mold wear
- Automatic central lubrication
- Electrical cabinet integrated into machine base, logical design with separate areas for controls and power components with room for numerous options



### Super Responsive Mold Safety

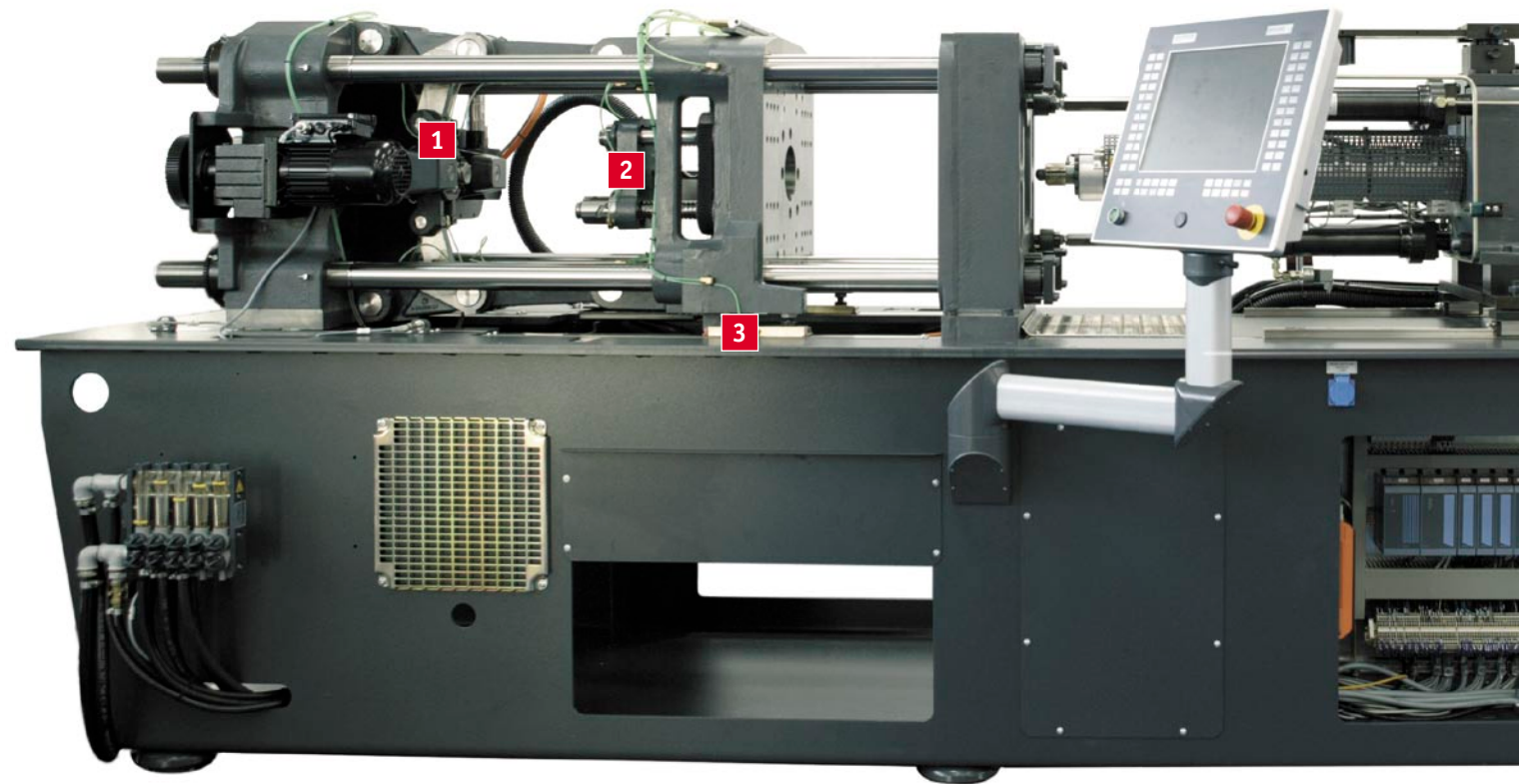
Generous tie-bar spacing with stiff platen and high-sensitive mold safety: ELEKTRA uses a torque-reference curve for the mold closing movement. Any deviation from an operator-defined tolerance curve is recognized within 2 ms bringing the machine to a dead stop within 50 ms. Unnecessary mold wear is avoided entirely.

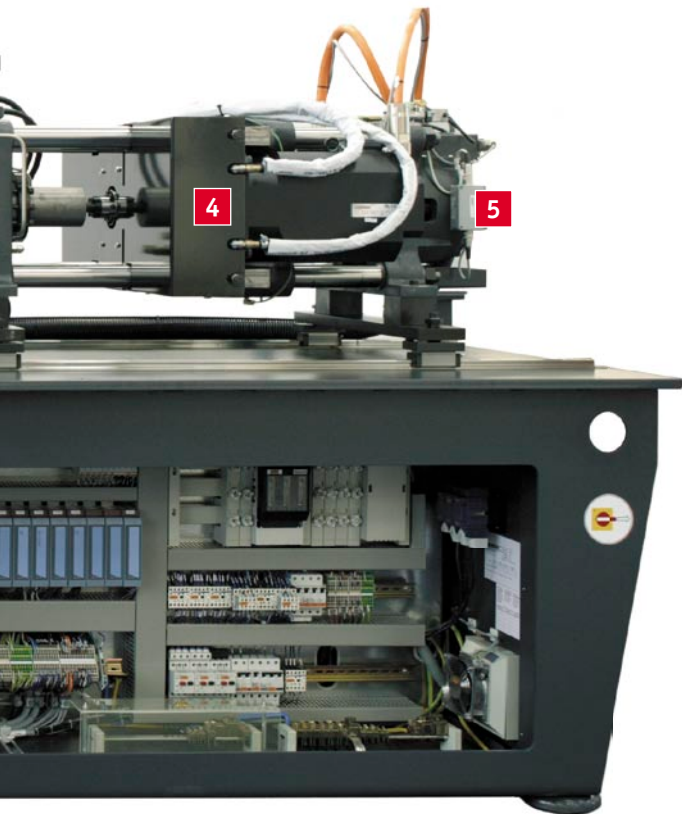
# DYNAMIC PERFORMANCE

## Short Cycle Times

As with accumulator-driven hydraulic machines, all-electric models offer parallel machine movements standard. This is the secret to ELEKTRA's exceptional dynamics.

- All axes can operate in parallel standard on all machines
- FEM-optimized construction of all moving and stressed parts
- Ethernet Powerlink network guarantees fast and reliable communications between the motor, amplifier, and machine controls





**1 5-Point Toggle System**

Power and acceleration-optimized toggle system movement features a compact design and large mold opening strokes

**2 Ejector**

Fast and precise positioning via electromechanical drive system with ball screw drives

**3 Platen Guides**

Designed for high-speed operation while maintaining perfect platen parallelism, even with heavy molds

**4 Injection Unit**

Exceptional part-quality thanks to fast, repeatable injection movements and parallel independent plasticizing – injection can start during clamping force build-up

**5 Injection Pressure Controls**

Direct, precise, and repeatable monitoring of the injection and holding pressure via high-sensitive measurement cell

**High-Performance Option Packages**

“HI” High Injection Speed with up to 50% faster injection speeds in comparison with standard models, ideal for thin-wall parts in the packaging industries



“HT” High Torque offers higher torque for plasticizing, perfect for demanding technical polymers



“H0” High Hold Pressure provides increased, non-time-limited holding pressure, the right choice for thick-walled parts



# MOSAIC

## User-Friendly Controls

The intuitive and ergonomic MOSAIC control panel was developed to provide support for all operating tasks from the simplest production routines to the most complex machine setups and optimization. A Wizard guides the operator step-by-step through the setup and programming modes. The controls use advanced networking technologies for fast and reliable communications with the machine. All processes and functions are represented graphically in the user interface, simplifying optimization. MOSAIC offers:

- Intuitive controls via large 15" touch screen terminal mounted on an adjustable swing arm for stress-free operations and natural movement
- Graphic menu controls
- Every page just one or two clicks away
- Online help for parameter optimization
- On-screen function buttons
- Freely editable mold sequence
- Detailed process monitoring with tolerances, minimum and maximum values, average, and standard deviation
- Real-time graphical representation of molding process and production cycle controls
- Easy data storage and guided machine setup
- Ethernet interface
- USB memory key for storing mold data, screenshots, and for exporting report data
- Password protected access levels ensure security
- Separate data sets for setup and optimization during machine operation

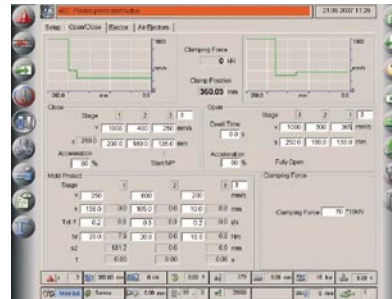




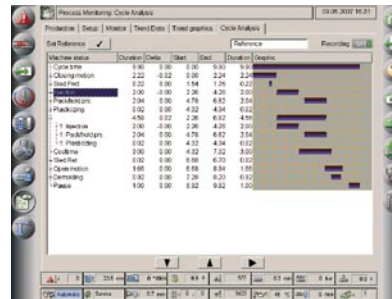
### It's Magic: The Wizard

Like having an assistant by their side, the Wizard helps operators set all relevant parameters both in setup and programming mode. This simplifies tasks and greatly reduces the chances of entering incorrect settings. Wizard-based support is available for the following areas:

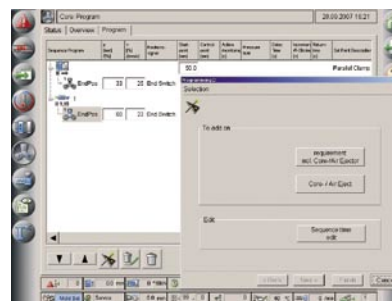
- Mold installation height settings
- Mold cavity pressure sensor
- Stack-turning technology, cube molds, and twin cube molds
- Editable core-pull movement and mold sequence



*Intuitive machine setup: access to all functions in just one or two clicks*



*Cycle and trend analysis for fast process optimization*

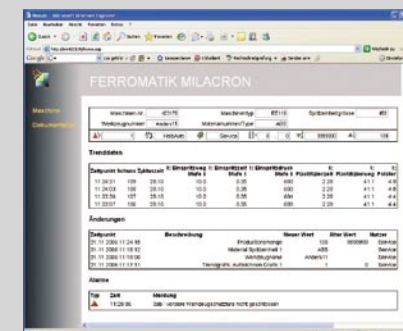


*Simple programming of core-pull movements with help from the Wizard*

### Remote Monitoring

Thanks to the standard Ethernet interface, the machine can be monitored from any location with internet access. The following parameters can be monitored:

- Machine number and type and injection unit size
- Mold number and the type of material being processed
- Number of error messages and alarm logbook
- Current operator and operating mode
- SPS status indicator
- Shot counter
- Configurable trend data indicators
- Logbook for operator notes



*Standard in all machines: remote monitoring access*

# MAXIMUM FLEXIBILITY

## Innovative Process and Mold Technologies

Special processes and mold technologies – in all their permutations and combinations – open up a whole new world of possibilities for innovative manufacturing solutions. These may either maximize productivity or add value to the product – while reducing production costs.

### Multi-Component Technology

With multi-component technology parts multiple colors, materials, and even functions can be produced on a single machine. Many of these parts would be uneconomical – or even impossible – to produce using conventional technologies.

With the standard multi-component process, a substrate is overmolded at a second station. This step is repeated until the part is complete.

Multi-component technology requires a specially configured machine including:

- Core-pull controls for opening secondary cavity
- Activation of mold-integrated index platen for transfer of substrate

- Robotic transfer of substrate
- Integration of turntable with clamping unit

### Monosandwich

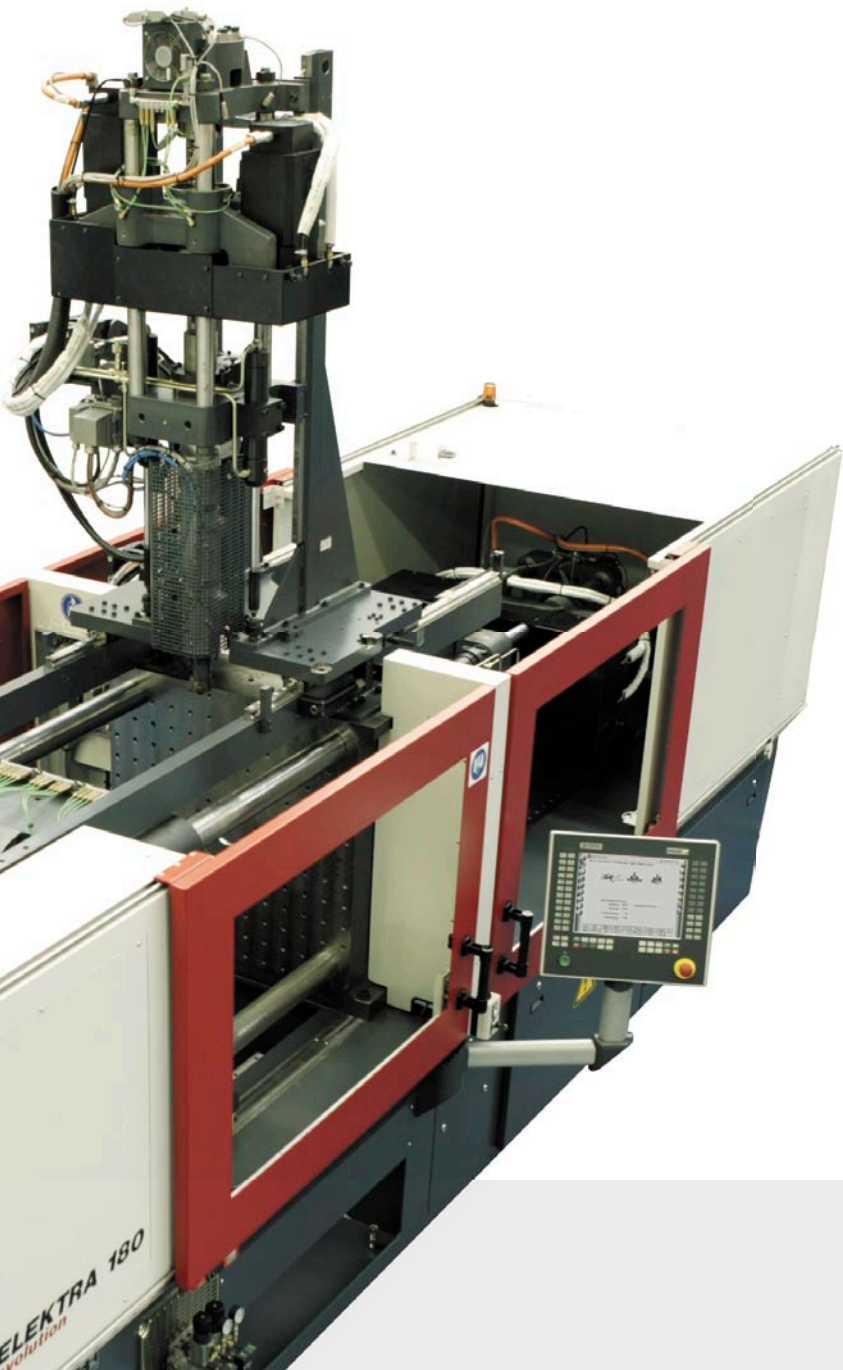
The sandwich process is a simpler variant of multi-component technology. With this solution the part has a layered structure where the core material is covered with a different skin material. While conventional sandwich technologies require an additional injection unit, Ferromatik Milacron's patented monosandwich process only requires a secondary extruder, a much more economical solution.

The advantages of this technology are:

- Simple process setup
- Superior part quality thanks to exceptional repeatability and precision
- Uses existing single component molds
- Faster material and color changes

- Reduced material costs through use of economical core materials including regrind
- Perfect surface even with foamed or reinforced core materials
- Creative design solutions through innovative material combinations





### Tandem Technology

Tandem technology uses a mold with two parting lines. The cavities of the two parting lines are filled alternately. While the machine opens to remove the part from the first, a locking mechanism keeps the second parting line closed. Thus cooling time is utilized within the injection process.

For slower, thick-walled part production with long cooling times, this approach effectively doubles output. With faster production tasks and short cycles, tandem technology can still achieve productivity increases of up to 30%. The advantages:

- Reduced production costs due to increased output
- Lower capital investment through use of smaller machine sizes

### Micro-Injection Technology

The ELEKTRA can be outfitted with a 14 mm screw and optimized screw geometry for processing standard granulate to produce micro-injection molded parts. This configuration would allow for the precision production of minute parts with shot weights of less than one gram.

### Clean Room Technology

The ELEKTRA's design allows for clean room manufacturing to the standards required for medical parts production. A variety of configurations are available:

- Integrated clean room cell: simple and cost-effective enclosure for the mold installation area with laminar airflow
- Clean room tent: enclosure with laminar airflow for the clamping unit
- Separate clean room: modified injection molding machine for operation within clean room environment

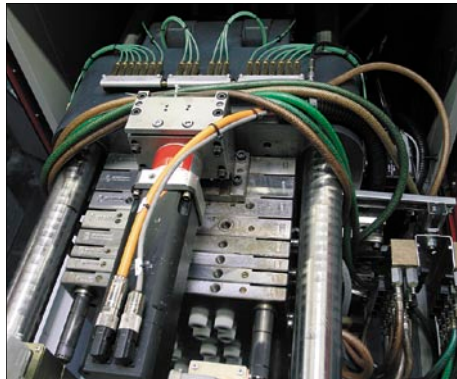


*The economical laminar airflow enclosure offers a reduced scrap rate through absence of contamination.*

# A WORLD OF CHOICES

## Custom Solutions Made Easy

The versatile ELEKTRA is easily configured for a wide variety of option packages for advanced technologies or special applications.



*Electrical unscrewing unit*

- High Precision Molding (Hi-PM)
- Injection compression
- Liquid silicon molding (LSR / LIM)
- Wax molding
- Fluid injection technology: Airpress and Aquapress
- Special screw geometries and design
- Electrical unscrewing unit
- Integrated hydraulics packages for freely editable core-pulls
- Integrated quick mold-clamping system
- Sockets and electrical interface packages
- Media supply directly to mold platens
- Special safety enclosures



*Service side of machine with sockets, electrical interface, and integrated hydraulics option packages*

# APPLICATIONS & SYSTEMS

## From Idea to Finished Product

The Business Unit Applications & Systems team is ready with advice and service when you need it:

### Consultations

Our experts can visit your facility to provide process and technology advice for your specific production needs. In the face of rising electricity costs, we offer comprehensive support for implementing energy saving programs.

### Injection Molding Trials

Our state-of-the-art Technology Center includes a variety of injection molding machines for trials. You can use your own molds and even run pre-productions.

### Acceptance Test

At the time of the purchase, we would be happy to include an acceptance test in our factory to insure that the machine meets the requirements of your application.

### Process Service

If process problems arise, our trained technicians will come to your facility to identify and correct any issue and get you up and running again with minimum interruption.

### Production Designs

We would be happy to develop individual solutions for your production needs. These extend from the choice and configuration of the machine to the right technologies, screw, mold, and auxiliary equipment. Our calculation tools allow us to provide comparative part costs for different solutions.



*The Technology Center in Malterdingen*

### System Solutions

Depending on your requirements, we work with industry-leading partners to provide full turnkey production systems including the machine, the mold, and auxiliary equipment.

### Research and Development

Our engineers are continually at work developing innovative new solutions and the technologies of tomorrow.

### Training

We offer various courses year-round in machine setup, process optimization, maintenance, and repairs at our Training Center. We also provide training programs in your facility.

# SERVTEK

Now under the SERVTEK name, the specialists at Ferromatik Milacron are setting new standards in customer service:

### Flexible Service Contracts

Service contracts are available for both new and existing machines and can be tailored to your specific requirements. Service contracts assure maximum availability and long machine life.

### Adapting Single-Component Machines for Multi-Component Molding

Existing machines can be upgraded with the addition of a stand-alone injection unit for multi-component molding. This can also be done with machines built by other manufacturers.

### New Life for Old Production Cells

Overhauling and modernizing older machines is routine for our professionals.

### Optimum Screw Selection for High Output

Depending on the application and the material, a variety of screw designs, screw tip assemblies, and barrels are available for improving plasticizing performance.

### Phone Support Around the Clock

Extended phone support is available for fast answers to technical questions.

### Replacement Parts within Hours

In addition to our central facility in Germany, we have local parts warehouses around Europe, Asia, and the US so that all available parts will be at your location within 24 hours.



*Global Partners in Plastics*

