# POWERPAK

440, 550, 750, 935 and 1125

## A New Standard In High Performance Electric Technology

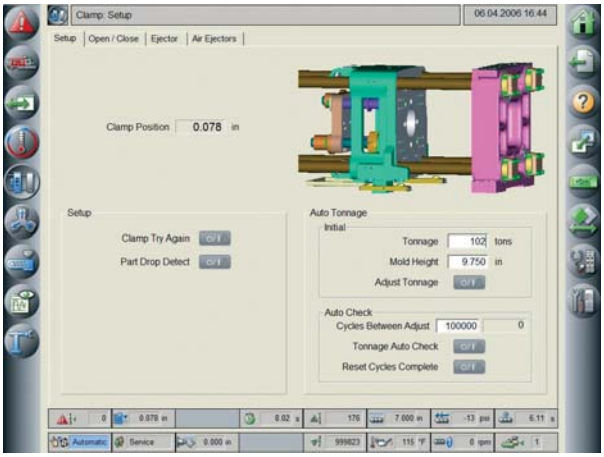

Next Generation All – Electric Injection Molding Machines

CINCINNATI MILACRON

## The Future Is Here

The PowerPAK is the latest generation in all-electric injection molding, offering speed, repeatability, cleanliness, economy, productivity – and processing profitability. PowerPAK features a rugged, durable, fully-mechanical power train – and all-electric operation.

PowerPAK offers clean, quiet, environmentally friendly injection molding—with up to 10% increase in tonnage over comparable models,12% reduction in floor space, 12% increase in the bar spacing— and up to 80% savings in overall energy usage.





## All-Electric Injection Molding Machines

– High-speed ultra-precision rack-and-pinion clamp.

– -Mosaic 2.0. Low inertia motors increase response

– Advanced digital motor-drive-control interface.

– Low inertia motors increased response.

– interchangeable screw/barrel combinations and screw torque/speed selections for full process versatility.

– Efficient, precise and rugged injection and ejection roller-screw operation designed specifically for injection molding applications.

– Precision ground linear bearing injection unit carriage for smooth, reliable sled movement and nozzle alignment.

– Controlled-stress tie rods.

– Box design, FEA optimized moving platen ensures minimum deflection for maximum control and toggle linkage durability.

– Durable, balanced fully mechanical powertrain–the product of five generations of Milacron toggle advances.

– Tri-directional part removal base design.

– Double-tubular-steel base for maximum rigidity.

– Independent operation of each axis (clamp, inject, eject and extruder) to reduce cycle time.

– Fewer components. Higher performing components. Computer-technology replacements for all hydraulics. Help create the ***simpler*** all-electric machine.

– ISO 9000 certified.

## PowerPAK Exclusive Features

– MOSAIC 2.0. True PC-based open-architecture WINDOWS-environment control. Taking your process control to new levels of capability.

– SIDEWINDER Two-stage Injection Unit. Standard on POWERPAK 440 models and up. Total shot weights up to 220 ounces.

– MOLDGUARD full-stroke mold protection at maximum clamp speed. Protecting your mold, your parts and your bottom line.

# Standard Features

## Clamp

– Simultaneous operation of clamp and plasticizing functions

– Rack and pinion drive

– Rigid cast platens designed using FEA (Finite Element Analysis)

– Hardened steel chromed toggle pins and reduced lubrication bushings

– 750–1125 Adjustable moving platen supports

– Ejector retract override for faster cycles

– SPI knockout pattern with drilled ejector plate

– Low pressure mold protect with try-again circuit

– Automated adjustable clamp tonnage set-up

– Pulsating eject

– Ejector forward dwell timer

– Eject on the fly

– Third Plate pick-up provides additional clamp speeds when needed

– Long clamp strokes and large maximum die height

– Industry leader in minimum mold height for complete molding versatility

– Pre-Injection

– Linear bearings, greaseless tiebars, and walk up base design for 330-550

– Stack mold capable

## Injection

– Independent operation of extruder during clamp operation

– Flexible internal profile with many different set points

– True closed loop profiled injection velocities

– 5-stage back pressure control

– 5-stage screw RPM

– Injection unit swivel (reciprocating screw injection unit only; not applicable with 2-stage unit)

– One time nozzle alignment

– Auto-tune PID temperature control of nozzle and barrel

– Extruder start time delay for safety

– Slide shutoff on hopper

– Cold screw start protection

– Injection transfer on position, pressure or time

– A'-A-B-C screw and barrel combinations

– Ballcheck or slider screw tip (reciprocating screw injection unit only; not needed with 2-stage unit)

– Up to 36,000 psi injection pressure

– Manual mold purge

– Semi-auto purge

– Sprue break

– Decompression before and/or after extruder injection run

# Standard Features

## Precision Control Technology for All Applications

The MOSAIC Control is the high performance control system that controls and communicates all POWERPAK machine functions and parts producing processes. MOSAIC Control provides reliability, performance, and user-friendliness to keep your process in control.

– Individual forward and retract manual movement keys for each axis.

– Factory programmable buttons for added options.

– Logical grouping and separation of the machine function and manual operator keys.

– Sturdy industrial swing-arm mount can be optimally positioned for each operator, allowing for an unobstructed view of the mold area.

## Mosaic Control Features

– 15 Inch Diagonal Screen

– TFT Flat Panel

– Touch Screen (Analog, Resistive)

– Dual Intel Processors

– Two USB 2.0 Ports

– Ethernet port - TCP/IP and FTP protocols

– All-digital feedback for accuracy

– Built-in Web Server

– Freely Configurable I/O


– Direct Menu Access

– Machine History Notepad

– Setpoint Overview

– Enhanced Operator ID

– Alarm Log and Change Log

– Process Monitor

– Statistical Process Control (SPC)

– Advanced Plotting Graphics

– Volume/Position/Pressure Injection Setpoints

– Choice of Language and Units of Measurement

## Available Options

– Hopper magnet

– Hydraulic core pull unit

– Leveling pads

– Bimetallic barrel (Standard with 2-stage injection unit. Optional on other models).

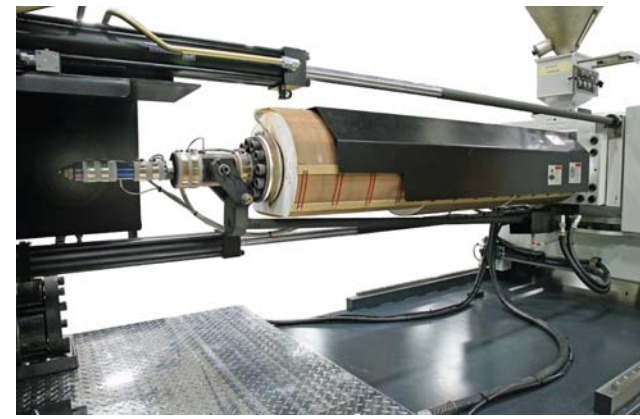
– Hardened injection screws

– Mixing screws

– Nozzle shutoff valve

– High flow air circuits & valves

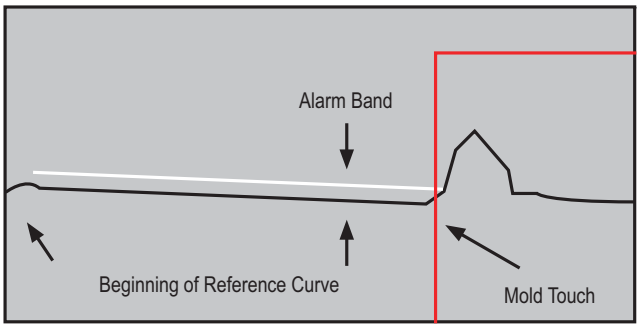
– Enhanced water package systems for packaging applications



# Mold Guard Full Stroke Mold Protection

MOLDGUARD advanced protection software is a Milacron exclusive and comes as part of the MOSAIC Control package, standard with all POWERPAK machines. MOLDGUARD software measures the force required to close the clamp and compares this force to a “reference curve” from the previous cycle. During the first clamp-close cycle, force is stored as a reference curve. A new baseline is recorded whenever the clamp set points change. During the cycle when a “new reference curve” is being collected, MOLDGUARD is not active. However, Mold Protect (with a pressure and timer) is always active, so even during a “new reference” cycle there is mold protection.

**Full Stroke Mold Guard**




An Alarm Band set by the user is added to the reference curve force values. When the next clamp-close cycle is running, the current clamp position force is compared to the stored values from the reference cycle. Since it is more difficult to push through plastic than through air, the force value will be greater when a part is stuck. When the force required to close the clamp is greater than the reference curve plus alarm band, an alarm sounds and the clamp retracts. The Max Force Deviation display box on the control screen is used to help the operator determine what value to put into the alarm band in order to run with a tight band but avoid false alarms. The value displayed in this box is the maximum force difference from the reference curve to the current cycle’s curve.

– Selectable ON/OFF.
– Adjustable alarm band for ultra fine sensitivity.
– Operator adjustable start position. Can be set for entire machine stroke.
– Actual force readout.
– Maximum force deviation displayed with associated position to assist in setup.
– Automatically adjusts for changes in friction (mold and/or machine) and temperature.
– Standard mold protect remains active serving as a high limit.
– Protects mold from damage.
– Protects mold from premature and excessive wear.
– Helps deliver more cycles, more quality parts.
– Helps protect processor’s largest single parts-producing investment next to machine itself.