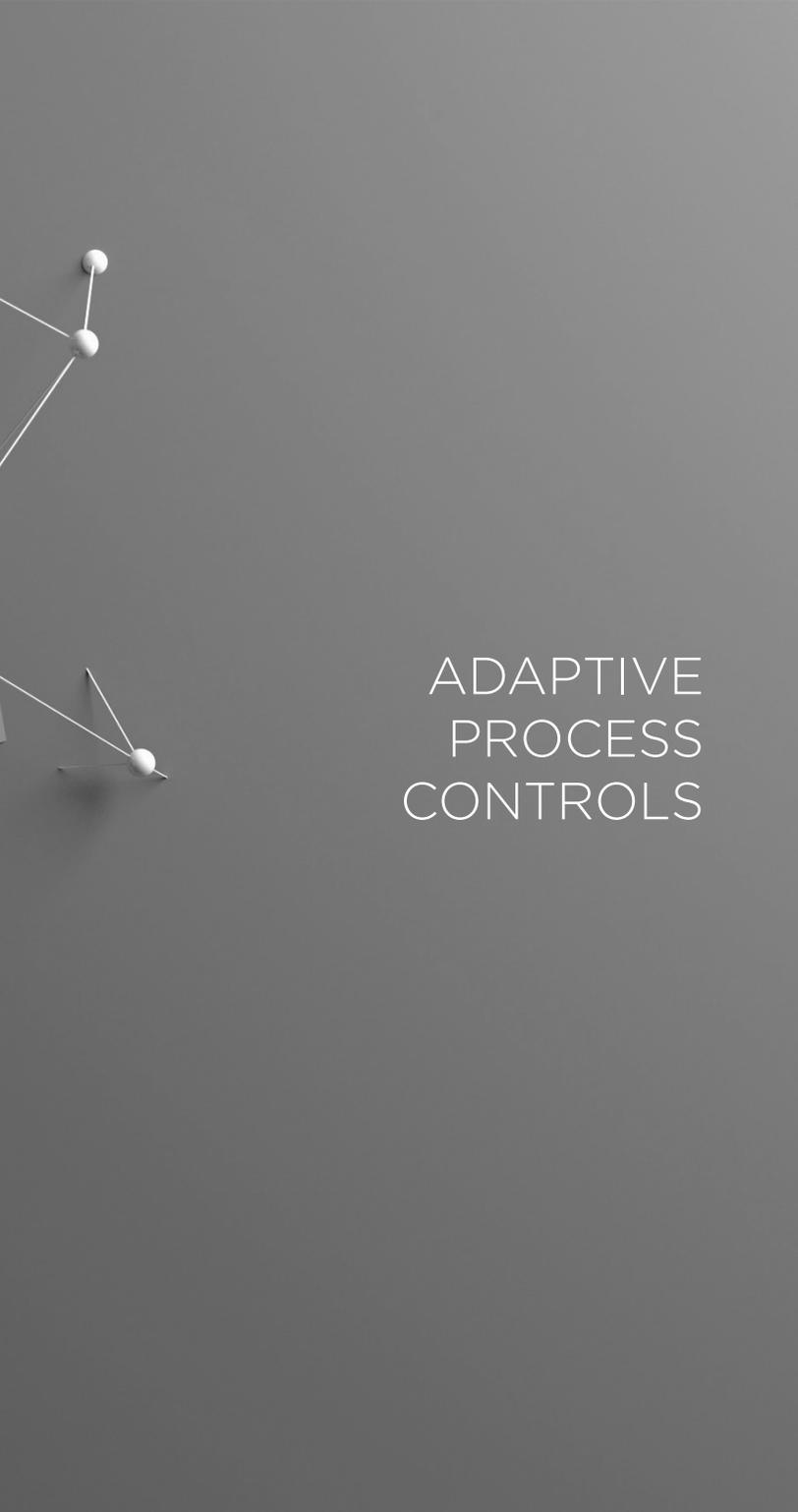


**M•POWERED
SERVICE
MODULE:
iMFLUX**



ADAPTIVE
PROCESS
CONTROLS



KNOWLEDGE IS POWER

M-Powered is a suite of easy-to-use observational, analytical and support services that gives you a competitive advantage through insight. Leveraging Internet of Things (IoT) technology, M-Powered provides unique intelligence on your current operations and future needs, sharpens manufacturing quality and productivity, and optimizes uptime.

REAL-TIME ADAPTIVE PROCESS CONTROLS

Introducing the Milacron M-Powered iMFLUX Module. Milacron, in partnership with Procter & Gamble, is reshaping the molding and manufacturing process with the addition of iMFLUX molding technology into the M-Powered suite.

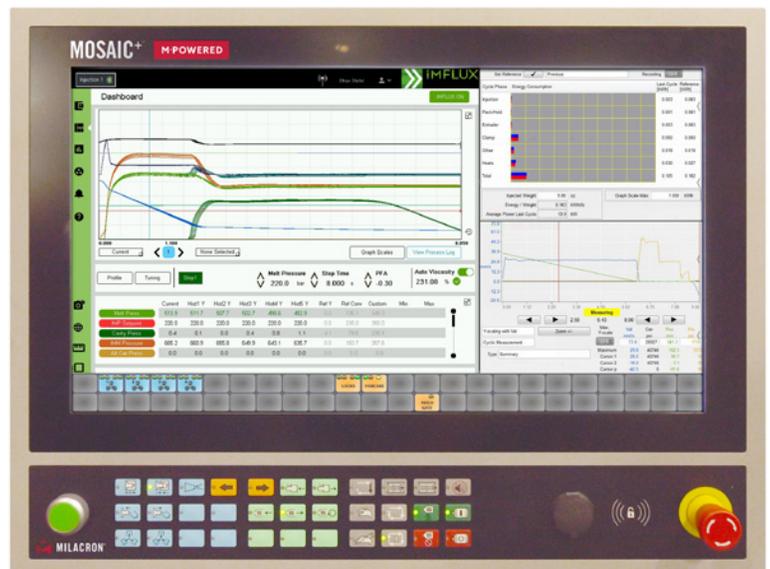
M-POWERED IMFLUX MODULE

The M-Powered iMFLUX Module is the cutting edge technology of adaptive processing control. Backed by years of processing exploration, the M-Powered iMFLUX Module will not only help to improve part quality but also decrease the energy required to produce it.

As part of the M-Powered suite of tools, the iMFLUX Module and molding technology will allow for a number of real-time adjustments to mold and materials changes. These real-time adjustments coupled with the other M-Powered analytical tools are designed to assist in improving OEE through adaptive process control.

When coupled with existing M-Powered applications, iMFLUX allows data to not only be collected and analyzed, but utilized to improve your assets OEE through increased productivity, performance and reduced scrap. With iMFLUX, variations in process are a thing of the past. iMFLUX combines advance data collection with intentional solutions so that your assets are as effective as possible and further assisting your team in maximizing productivity.

Using iMFLUX, molders can increase productivity by up to 50% on existing injection molding machines. The process is ideal for most molding applications, but is especially advantageous for wide specification materials, recycled materials, and can help a biomaterial work for many more applications. This will continue to be an increasing sustainability focus for molders and brand owners.



THE GREEN CURVE IS CHANGING THE WAY THE WORLD MOLDS PARTS.



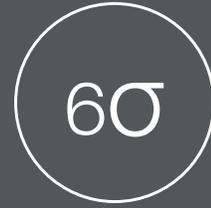
Improves OEE

Increased throughput, reduced downtime, improved quality.



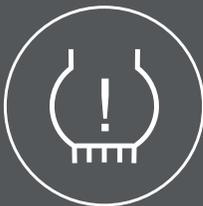
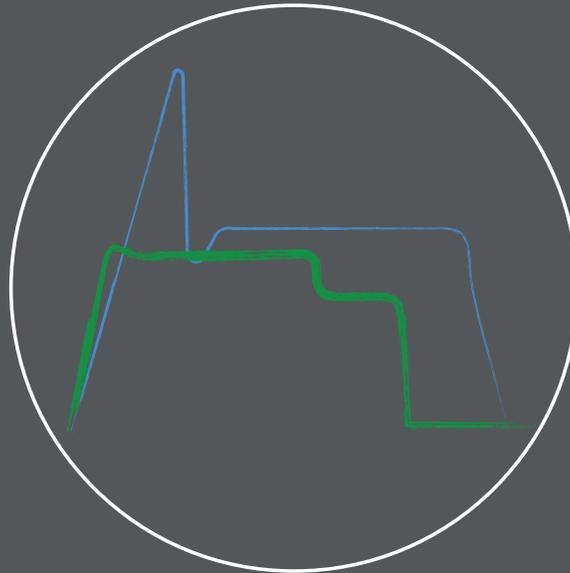
Enables Resin Flexibility

Run wider range MFI & wide-spec resins, enabling cost savings for many applications.



Improves Part Quality

Tighter standard deviations and adaptive control, enable higher capability & improved quality.



Reduces Pressure & Tonnage

Less tonnage required per square inch enables more productivity per ton.



Allows for Thin Walling

Lower molding pressures enable part light-weighting, without the need for higher tonnage and ultra-fast injection velocities.



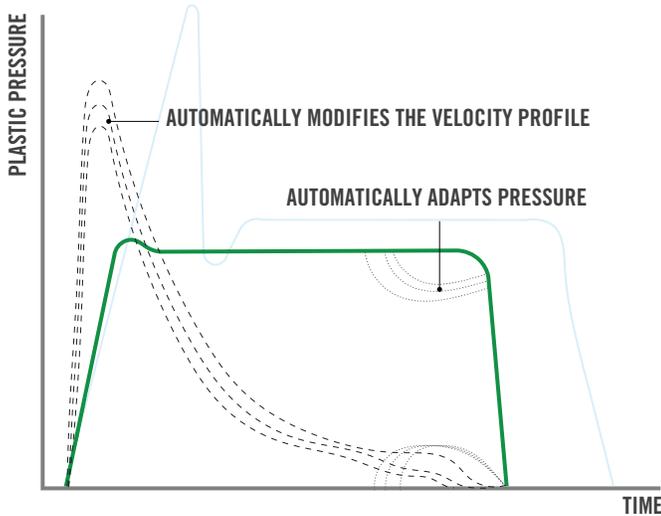
Sustainability Advantages

Handles viscosity shifts without need for process adjustment. Broadens the application window for many sustainable resins.



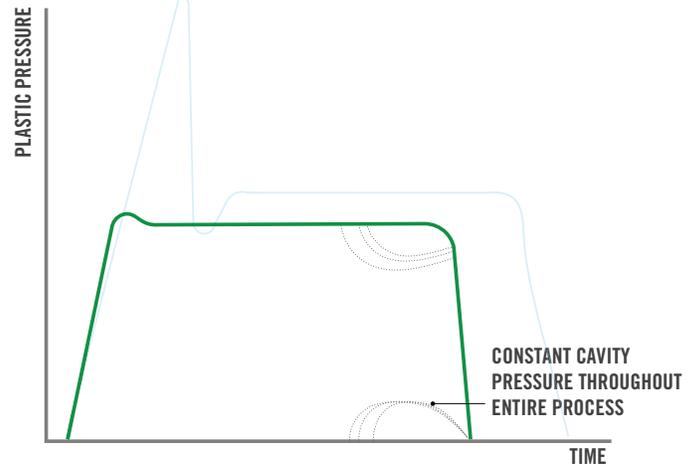
IMPROVES OEE

By reducing cycle and instantaneously adapting to the changing conditions inside of the mold, iMFLUX delivers improved process consistent, higher output, far less operator interactions while generating less scrap and rework



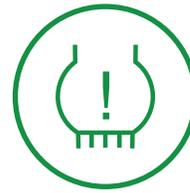
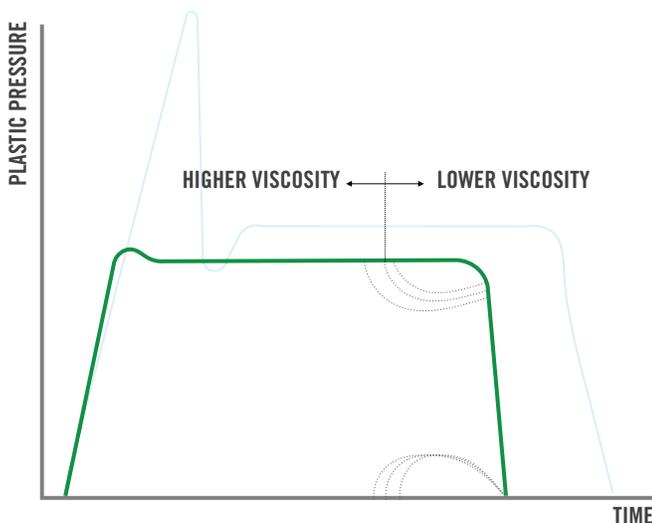
IMPROVES QUALITY

Less pressure variation delivers more uniform shrinkage, reduction of warp and increases cavity to cavity consistency. Filling and packing with low constant pressure to all cavities means the mold is less sensitive to imbalances which provides for greater dimensional consistency



RESIN FLEXIBILITY

Molders can choose to 'reinvest' pressure savings to broaden material choices. Automatic adjustments made to process as viscosity changes allows for the use of wider spec resins and allowance in regrind percentage. Without requiring processor intervention, lower shear conditions permit the use of shear sensitive materials in more applications.



REDUCES TONNAGE

Lower pressure equals lower tonnage. Using less pressure and lower clamps opens up part and mold design freedoms unattainable conventionally. Common pressure and clamp force reduction range between 25 to 40%, enabling the use of smaller presses or increasing the effective molding projected area in a press.



MOLD CAVITATION

Conventional		iMFLUX
750T	Machine Size Limit	750T
23T	Tonnage per Cavity	15T
32	MAX CAVITIES POSSIBLE	48

50%
CAVITATION
INCREASE

MACHINE SIZING

Conventional		iMFLUX
3.6	Clamp Force Factor	2.6
735	32 Cavity Requirement	480

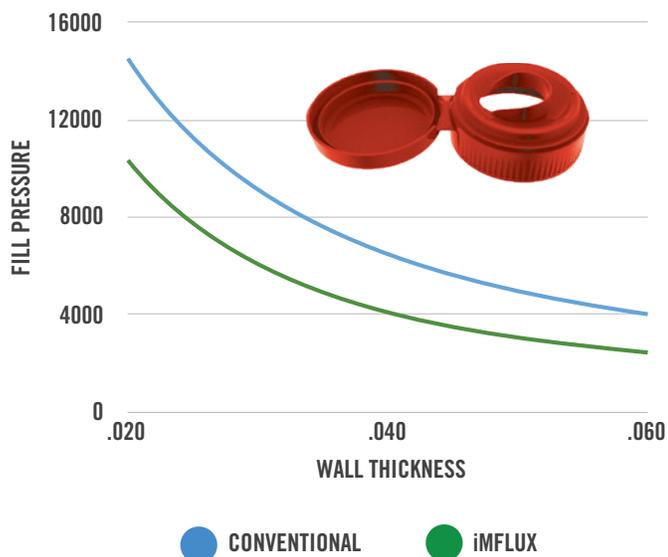
35%
TONNAGE
REDUCTION



LIGHT WEIGHTING

Reinvestment of the pressure reduction allows for wall thickness reduction between 10 and 30%. Lower pressure also allow for higher

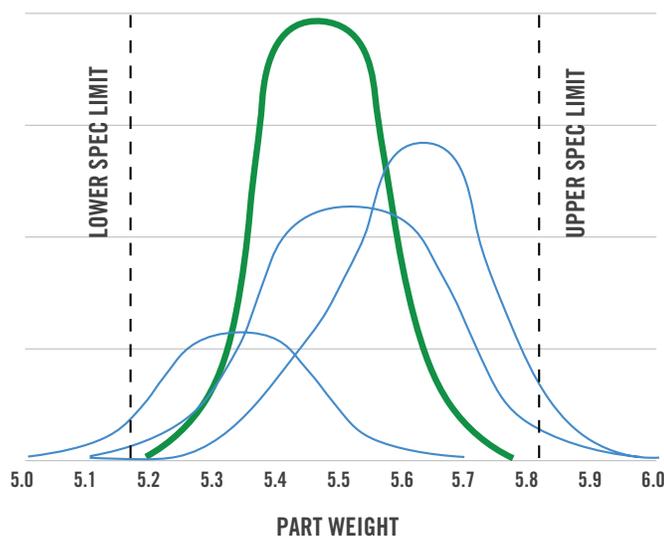
flow length to thickness ratios (L/T), enables light-weighting, and reduces the need for flow leaders and the effects of hesitation and racetrack filling patterns.



SUSTAINABILITY

Lower constant pressure unifies pressures across all cavities, which reduces shrink variations and increases dimensional consistency

across all parts. Moreover, automatic compensation for batch to batch viscosity shifts enables for the used of broader ranges of renewable materials allowing the parts to maintain specification with little operator interventions.



AUTO VISCOSITY ADJUST

Auto viscosity adjust is a major technological breakthrough developed by iMFLUX. This technology recognizes any change in material viscosity and automatically moves the green curve to new pressure setting while maintaining identical flow rates throughout the mold filling and packing phases. Adjustments are instantaneous and require no operator interactions.

iMFLUX software captures the most subtle changes in viscosity but can also adjust for extremely wide ranges of variation (5 MFI to 40 MFI), allowing for the use of wide spec materials while maintaining consistent processing and part quality.

AUTO PROCESS TUNING

Process optimizer tunes your process to the mold, material, and operational environment, to get the maximum performance from your molding system. Machines are typically set up to handle a range of applications, rather than a specific application. This advance in process control from iMFLUX, tunes your machine to get the maximum possible performance, quality, and operational efficiency.

iMFLUX software monitors the performance of your molding system, and tunes the process to maximize performance.

PROCESS NAVIGATOR

iMFLUX allows the processor to actually see, in real time, what is happening in the molding system. The system uses sensors in the machine, feed system, and mold to provide a complete understanding of critical molding parameters. This provides unsurpassed insights for how to maximize throughput, quality, and overall performance of the molding system.

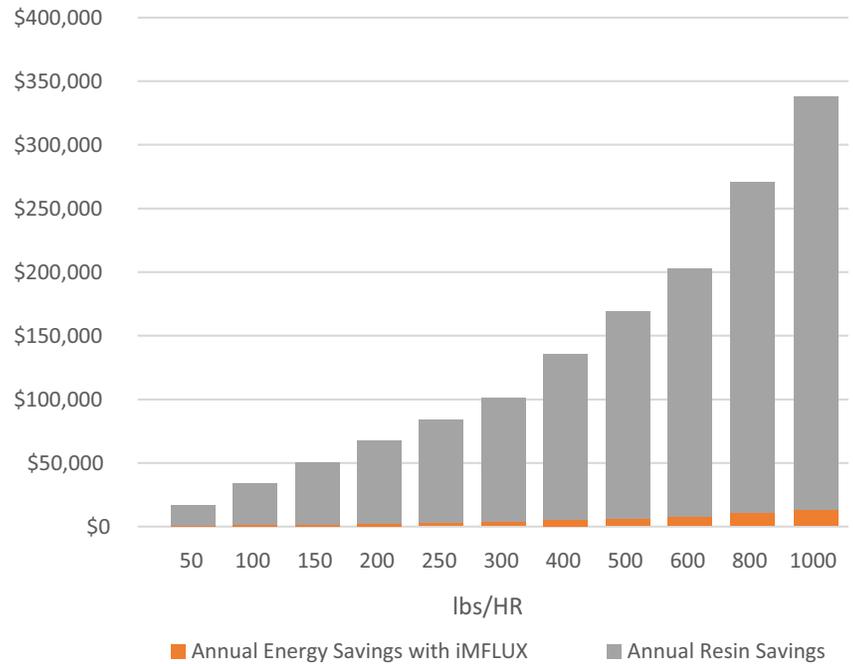
iMFLUX's software and user interface allow the processor to view and modify process parameters and performance in real time. The system displays key variables in high resolution, and provides analytical capabilities for the processor to optimize the molding system.

M-POWERED TO SAVE

The M-Powered iMFLUX module represents realizable savings through scrap reduction, increased productivity and most importantly a reduced cost per part produced.

*Calculations shown based upon 6500 hours per year of operation at \$0.08 per KWH and \$0.05 savings per pound due to wider spec resin buying, alternative materials options and scrap reduction.

M-Powered iMFLUX Savings*



M-POWERING YOUR OPERATIONS

Gain the knowledge, the insight and the competitive edge you need with the M-Powered suite of easy-to-use observational, analytical and support service tools.

M- POWERED DATA & ALERTS

M-Powered Analytics remote monitoring services opens up new ways to view machines and boost productivity. A suite of web browser and smartphone applications provides real time machine data and advanced analytics to maximize your machine's output. The applications are available separately and can be bundled together for maximum value. Monitoring a machine over the Cloud could not be easier.

M- POWERED TECHNICAL SUPPORT

Actively monitoring plastics machinery is critical to its optimal output and longevity. However, technical problems can still happen. M-Powered speeds up and simplifies repairs anywhere in the world.

INTERACTIVE TECHNICAL MANUAL

Machine technicians have immediate access to critical, detailed information about their plant equipment with this platform's easy, intuitive navigation, interactive schematics and innovative troubleshooting flow diagrams.

INTERACTIVE PARTS CATALOG

Instant access to 3D rendered parts and information updated in real time. Parts information is searchable by serial or model number, part number, vendor number, and description. Customer specific pricing and real-time inventory available 24/7.

MILACRON ESTORE (STORE.MILACRON.COM)

This online store services all Milacron branded injection, extrusion and blow molding machine parts (Milacron, Ferromatik, Uniloy). It also supplies all hot runner systems, parts and spare mold components and industrial supplies (Mold-Masters and DME). Order products directly or request a quote.

MAINTENANCE ADVANTAGE PROGRAM

Our program is tailored to address your operational challenges. Our program includes a baseline examination of each functional area of your machine and recommended maintenance and productivity enhancements; a comprehensive plan to address needed repairs; safety reviews and much more.



MILACRON®
SERVTEK

M-POWERED

1-855-SERV-TEK

www.milacron.com/m-powered/

4165 Half Acre Rd., Batavia OH 45103
513.536.2000 info@milacron.com
www.milacron.com
©2018 Milacron LLC. All rights reserved.
Publication: T2.1802.A.10.18