

activeGate™

Process Control - HYDRAULIC



HYDRAULIC



Stabilize your Process

Synventive
molding solutions

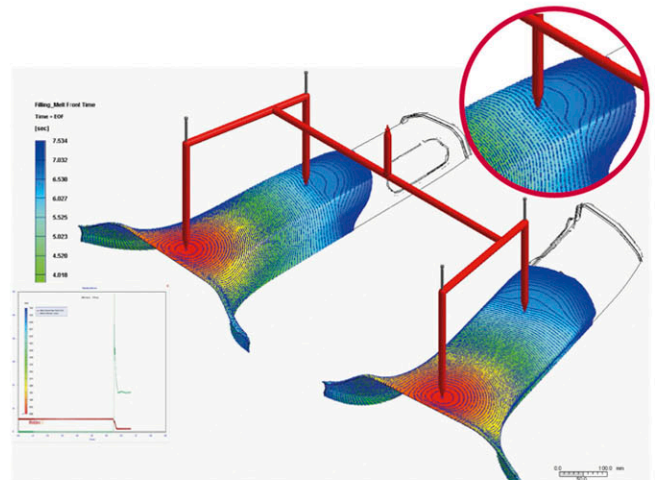
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Synventive Process Control

activeGate™ molding uses sensor, microprocessor, digital and control valve technologies to precisely control the flow of melt within the mold. These technologies provide independent melt flow control at the point of melt entry of each hot runner gate and monitoring of process conditions within the mold. **activeGate™** technologies are designed to facilitate perfect surface quality, dimensional stability and reproducibility of injected molded parts.

Potential benefits:

- Less impact of viscosity variations
- Simplifies balancing of tools
- Improves cosmetic defects on the part
- Provides for higher production rates
- Increases feasibility of challenging family tools
- Enables production of parts with complex geometries
- Faster mold startups and qualifications
- Lowers scrap rate



Modular approach

Synventive's hydraulic **activeGate™** offering allows for a low initial cost investment. Should additional control be needed, it can be easily added after initial mold sampling.

Begin with **activeGate™** enabled

- Enabled system, allowing for future upgrade
- System can be supplied with pin monitoring capabilities

Upgrade to an **activeGate™** pin opening control

- Mechanical adjustment:
Mechanical flow restrictor valve - **mFRV**
- Two speed control:
Electrical flow restrictor valve - **SynFlow®**

Greater control with an **activeGate™** complete control technology

- **hGate™**:
 - Complete pin position control
 - Complete pin position control with cavity sensor triggering



Pin Monitoring

VMI - Valve Monitoring Interface

VMI facilitates easy set up for your sequential valve gated applications. Having VMI installed allows you to safely check that your valve pins are moving as intended without the need for physical checks and also provides measured individual pin movement data. The main module can be used on multiple tools.

- Real time valve gate status
- Improved operator safety through remote pin monitoring
- Troubleshooting (of open/close issues)
- Eases process setup of symmetrical zones
- Signal outputs for data logging and advanced process setup

Pin Opening Control

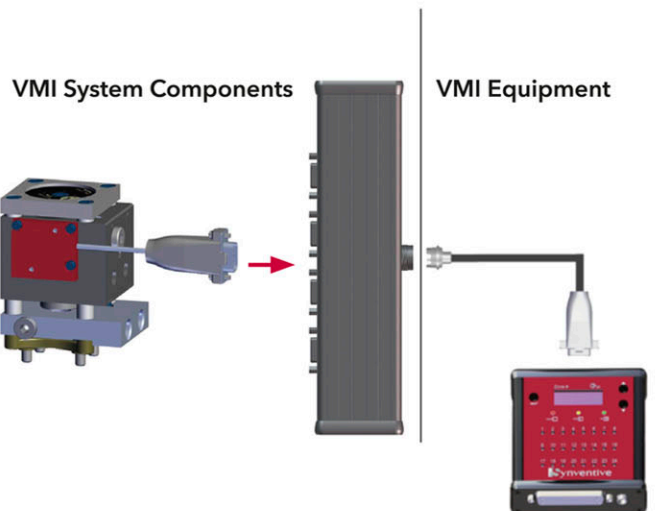
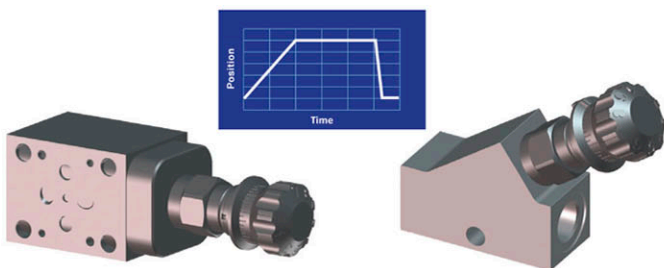
Pin opening control facilitates a reduced pin opening speed for reduction of melt expansion and prevention of related molding defects such as:

- Pressure alteration, opposite gating and sink marks
- Reduced adhesion of finishes

mFRV - Mechanical Flow Restrictor

Mechanical Flow Restrictor Valves are the entry level to **activeGate™** control technology and provide manual adjustment of the valve pin opening speed for the entire length of the stroke.

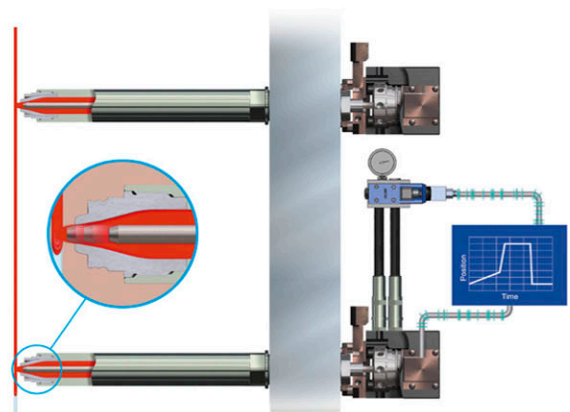
- Simplest form of pin control
- Enhanced process setup and monitoring with combination of VMI



SynFlow® - Two Speed Control

SynFlow® allows the user to individually define opening velocity of each valve pin, and the amount of opening stroke in which the velocity will be controlled. The remaining portion of the opening stroke and the entire closing stroke will be at full speed.

- Reproducible pin opening process
- Advanced process setup and monitoring
- Avoids excessive pressure loss and shear of conventional molding process



activeGate™ - Complete Pin Position Control

By controlling the flow of plastic out of each gate, **activeGate™** control technologies are capable of improving the part's surface finish quality and geometrical accuracy and are ideally suited for:

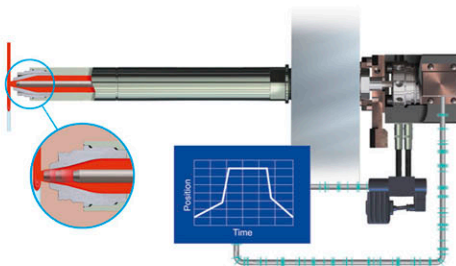
- **In single cavity molds:**
 - for complex part geometries
- **In multi cavity molds:**
 - for precision and consistency in higher cavitation
- **In modular molds:**
 - for different cavities in the mold base and modular tool inserts
- **In family molds:**
 - for different or complimentary parts in one unit
- Balance of tools can be improved without the need for changing steel



hGate™ - Independent Pin Control

hGate™ enables the user to independently and precisely dictate the pin's position, speed, acceleration and stroke gaining an extended level of control in regulating the release of melt pressure into the cavity.

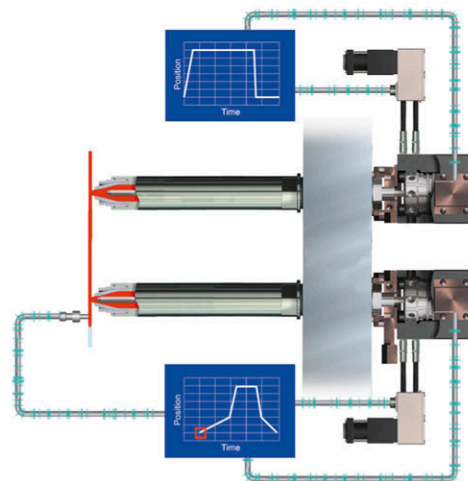
- Increased part's quality: surface finish, geometrical accuracy
- Repeatability of part quality
- Increased part to part & shot to shot consistency
- Advanced process adjustments and monitoring
- Easily solve balancing challenges



hGate™ - Independent Pin Control + Cavity Sensor Triggering

With the addition of a Sensor Input Module, compatible **hGate™** controllers can receive signals when the plastic melt reaches temperature or pressure sensors installed in the cavity. These signals allow for advanced process setup by triggering pin movement events upon predefined melt pressure or temperature values.

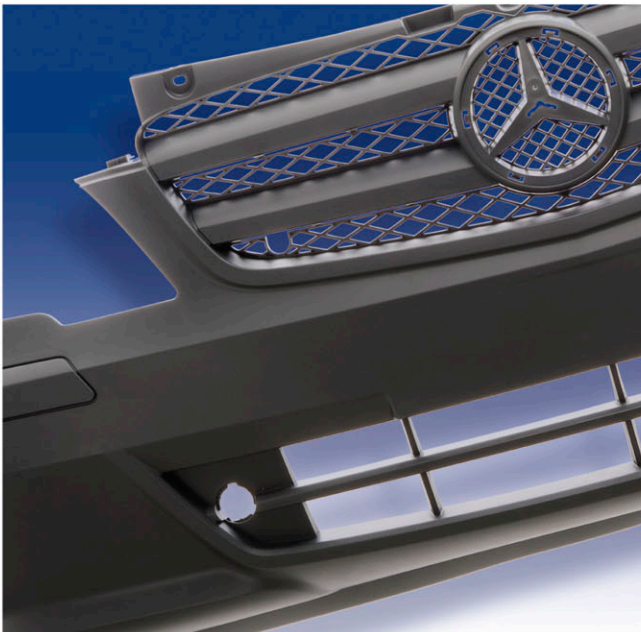
- Increased precision of process setup
- Process setup based on melt pressure or temperature sensor values



activeGate™ - Pressure Control

Individual melt pressure control in each gate is facilitated by intelligent software and utilization of feedback from pressure sensors in the melt flow combined with a melt control valve in each nozzle. Each gate receives a predefined profile of injection and pack pressure. This is equivalent to having separate injection units located at each hot runner nozzle in the mold. This ultimate **activeGate™** control technology provides a maximum processing window for superior part quality, dimensional consistency and optimum filling and packing.

- Real time, closed loop process control of individual gates delivering unique injection and packing pressure profile
- **In single cavity molds:**
for complex part geometries
- **In multi cavity molds:**
for precision and consistency in higher cavitation
- **In modular molds:**
for different cavities in the mold base and modular tool inserts
- **In family molds:**
for different or complimentary parts in one unit
- Reduces the need for tedious mold rework
- Faster start-ups and lower reject rates



DynamicFeed®

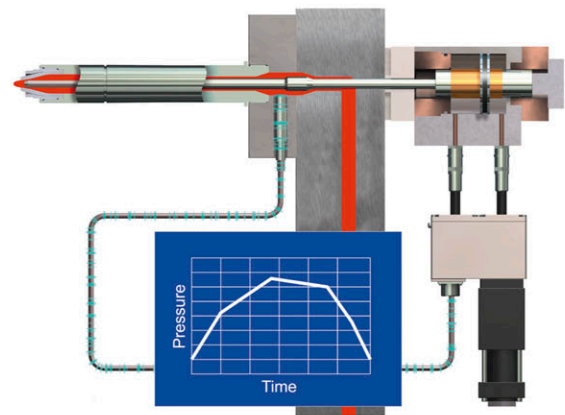
DynamicFeed® is the original **activeGate™** control technology. It enables individual closed loop melt pressure control at each gate. Each gate has its own pressure transducer and receives the precise injection and pack pressure profile that is predefined for its position.

Eliminates or improves:

- Differences in flow velocity
- Differential pressure in the cavity
- Influences of deviating material viscosities
- Sink marks

Assures:

- Excellent surface finish
- Demanding tolerances
- Dimensional stability
- Perfect reproducibility of complex molded parts





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