AXIS CONTROL VALVE
WITH CLAMP CONTROL ALGORITHM

Motion control solution for greater accuracy and productivity for injection molding machines

Clamp units in larger tonnage injection molding machines require precise motion control to ensure repeatability, reduce cycle time and improve productivity. Traditionally, clamp units have a natural frequency of lower than 10HZ, which limits the control gain, lowers the hydraulic dampening and reduces precision in state position control. Thus, a high performance servovalve is critical for better control as it allows the machine builder to more aggressively follow the motion control profile.

Our advanced state control algorithm optimizes clamp performance, providing better machine control. The Moog Axis Control Valve (ACV), in combination with the new state algorithm provides an integrated solution, enhancing the machine's production process by allowing higher precision control at stage positioning. This concept allows for dynamic control by increasing loop gain up to 3x over PID controllers.

ADVANTAGES

• More precise motion control at clamp axis with state control algorithm

• Higher productivity due to faster processes, allowing shorter cycle times and precise repeatability

• Delivers an integrated design solution that enhances the production process and eliminates the need for additional analog hardware such as the servocontroller
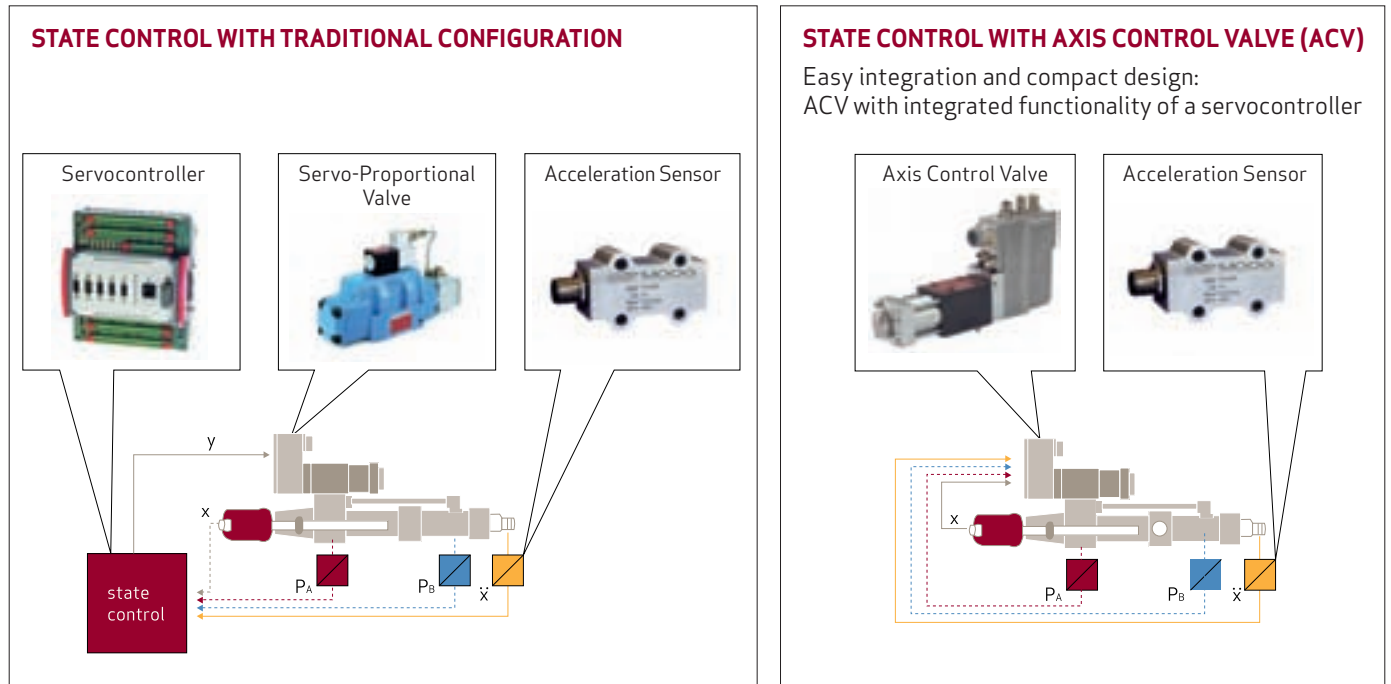
INDUSTRY APPLICATIONS

The Moog Axis Control Valve with Clamp Control Algorithm provides greater accuracy and a higher level of performance for clamp axis injection molding machines.

WHAT MOVES YOUR WORLD
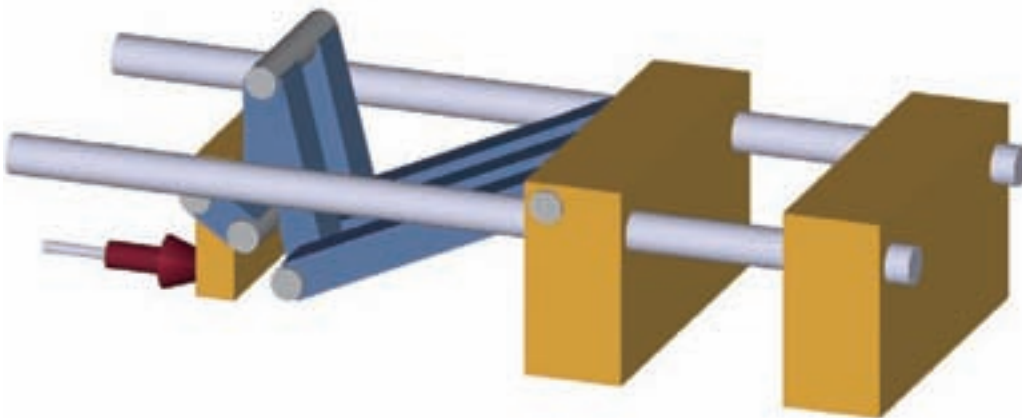
MOOG

Moog solutions and products are designed for higher performance in injection molding and other plastic applications. Our team of engineers collaborates with you to provide a hydraulic clamp control solution that will meet your exact precision, power and safety needs.

STATE CONTROL WITH TRADITIONAL CONFIGURATION

Servocontroller	Servo-Proportional Valve	Acceleration Sensor

STATE CONTROL WITH AXIS CONTROL VALVE (ACV)

Easy integration and compact design:
ACV with integrated functionality of a servocontroller

Axis Control Valve	Acceleration Sensor

The typical PID closed-loop position control for clamp units is a problem for larger tonnage (200+ tons) machines due to the low natural frequency of the unit (lower than 10Hz) and low dampening. There is greater risk of control error, less static and dynamic position accuracy, lower acceleration capability, less repeatability and lower load stiffness.

The Moog solution provides an advanced state control algorithm that is optimized for clamp control, increasing the possible loop gain up to 3x over PID control. As a result, there are fewer control errors, greater static and dynamic position accuracy, and increased acceleration, repeatability and load stiffness.

Moog has offices around the world. For more information or the office nearest you, contact us online.
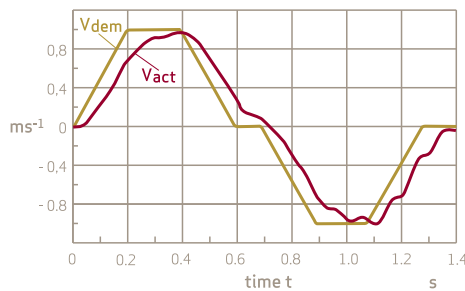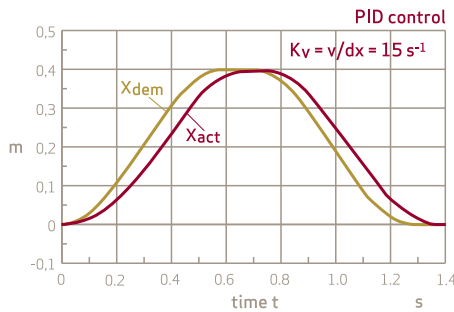
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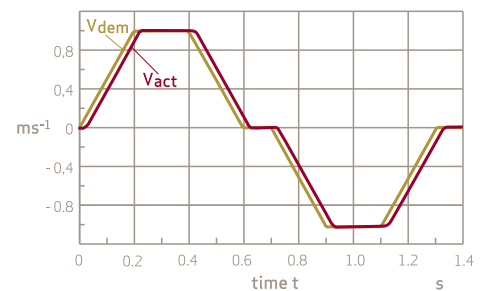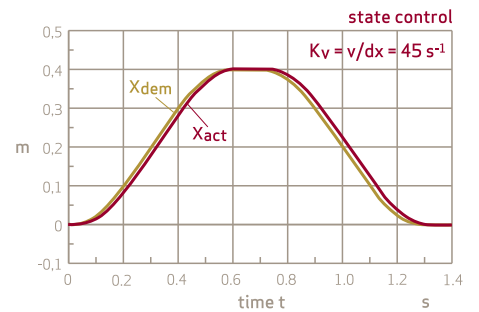
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Traditional Solution with Control Problem

PID control

$K_V = v/dx = 15$ s^{-1}

Clamp Control Solution

state control

$K_V = v/dx = 45$ s^{-1}

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