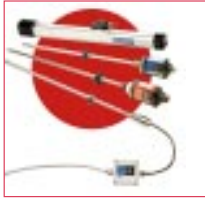


## Temposonics® Position Sensors

### Provide Cost-effective Solutions for the Plastics Industry



Temposonics absolute, non-contacting magnetostrictive position sensors are routinely used to provide solutions in plastics applications such as on injection molding and blow molding machines. The sensors' high-performance, superior ruggedness, durability, and mounting flexibility has made them the standard in the plastics industry.

#### Advantages:

- Increase productivity
- Reduce downtime
- Eliminate mold damage due to sensor drift or erratic output
- Reduce scrap
- Improved part consistency

#### Features:

- Resolution & Repeatability to 2 microns
- Absolute position feedback
- Non-contacting technology
- Velocity feedback
- Excellent linearity
- High-speed data transmission.
- High immunity to shock and vibration
- Stroke lengths to 300 inches

#### Mechanical Packages:

Temposonics position sensors are modular in design. That allows the core sensing element and the output electronics to be packaged in a variety of mechanical configurations to meet a wide range of mounting requirements:

##### External Mount:

The external mount sensor package offers great mounting flexibility and is suitable for use in a wide range of applications. They are especially effective in applications where space is an issue or when high levels of dust and contamination are present.

##### Cylinder Mount I:

This mechanical package is typically mounted inside a hydraulic cylinder (however, it may also



#### Injection Molding

Temposonics sensors are routinely used on injection molding machines. Typically, at least three (3) sensors are used on each machine, one each to control the injector, clamp, and ejector functions. Refer to the case study on the back panel of this document for an innovative solution to load frame measurement.



#### Blow Molding

On blow molding machines, Temposonics sensors provide position feedback to control the clamp, extrusion, and ejector axes. Temposonics sensors are very durable and are designed to withstand the rigors of industrial environments including the high levels of shock and vibration often seen during the ejector phase of the blow molding process.

be mounted externally). The high-pressure rod can withstand pressures to 5000 psi, static (10,000 psi spike). The modular design allows removal/replacement of the sensing element without breaking the high-pressure seal when installed in a hydraulic cylinder.

##### Cylinder Mount II:

With the same high-pressure attributes as the version above, this version is specifically designed for installation in space-restricted clevis-type cylinders. The sensing element is separate from the electronics module, connected only by an interconnect cable.

##### Custom Packages:

Because of the innovative, modular design of the Temposonics position sensors, custom packages can be produced for OEM customers with appropriate volume requirements.

For example, software in microprocessor-based SSI, CAN, and other bus modules can be modified, to perform application specific tasks. Contact MTS for details.

All versions are extremely durable, as is evident by the two-year warranty that comes with each sensor.

#### Data Formats:

A wide range of output options are available to meet the requirements of most industrial controllers and bus systems.

##### Analog:

0 to 10 Vdc, 10 to 0 Vdc, 4 to 20 mA, 20 to 4 mA

##### Digital Pulse:

Start/Stop, Pulse-width Modulated (PWM)

##### SSI

Serial Synchronous Interface

##### FieldBus:

CANbus, DeviceNet™, Profibus· Others TBD

##### Customer Specified:

Custom outputs are available for OEM customers with appropriate volume requirements. Contact MTS for details.

**CASE STUDY:**

## **Innovative mold machine manufacturer reduces costs and improves performance with Temposonics® position sensors**



Measuring the load frame stretch, or strain, is basic to efficient operation of injection and blow molding presses. For

example, Negri & Bossi S.p.a., a plastics injection molding press manufacturer based in Cologno, Monzese, Italy, manufactures an average of 800 injection molding machines per year, that are used in rugged industrial environments.

According to Mr. Maurilio Meschia, technical engineer, there is nothing more important than reducing the cost of mechanical and electrical monitoring hardware and accessories on the company's injection molding machines, without sacrificing tonnage-strain measurement accuracy.

Prior to installing Temposonics III absolute, non-contacting position sensors, on their machines,

Negri & Bossi used conventional strain gauges and accessory clamps to measure load frame tonnage stretch. For last year's introduction of the V370 and V480 injection molding machine lines, the company installed Temposonics III sensors supported by a CANbus interface.

By installing multiple-magnet sensors (2 magnets in this case), the company was able to use fewer

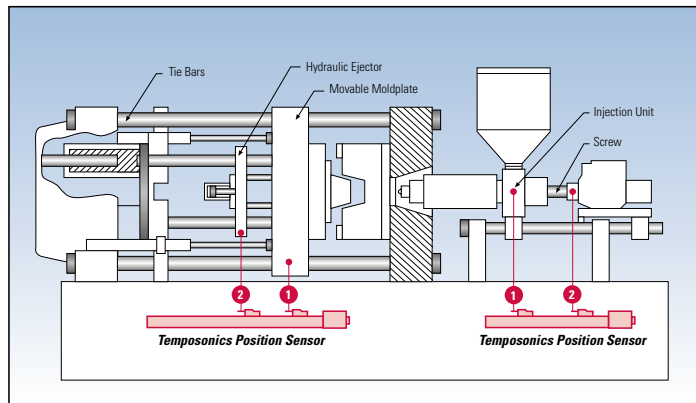
interface to emit highly accurate, rapidly updated measurements. In the Negri & Bossi system, the sensors monitored the outputs of four axes—the ejector, the clamp, and the carriage.

The sensor (with magnet #1) monitoring the clamp saves the peak position reached during each cycle. This value is uploaded to a controller as a "peak value" at the end of each machine

cycle. By comparing the peak value to the command position, the difference between the two measurements shows the amount of stretch in the load frame columns. The controller then calculates the strain/force which is used to adjust the tonnage on successive cycles.

Magnet #2 on the sensor monitors ejector position, thus eliminating the need for a second sensor. And, because a single sensor monitors the injector

carriage and injector screw, only two sensors are needed, not the standard four as is typically required for this application.



**Sensor System - Injection Molding Machine**

sensors and eliminate the need for special strain gauges while still achieving equal or better data. The Temposonics' intelligent sensors use special electronics and software through the CANbus

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