

PC Control of a dispensing system for Foam In Place gaskets reduces costs and saves wiring time

# Superior seals for control cabinets

Gaskets are used wherever assemblies or components must be protected from dust, moisture or other contamination. Foam In Place gaskets (FIP) made of high-quality resins such as polyurethane offer reliable protection for these purposes. Seal Tech Industries, based in Chanhassen, Minnesota, USA, are experts in FIP polyurethane gasket technology. The company supplies machines for producing gaskets for a wide range of applications such as control cabinets, filters or medical devices.

The Motion Control solution: AX5000 EtherCAT Servo Drives and servomotors from the AM3000 series and planetary gearboxes actuate the motion control.



Frank North, V.P. Machinery Division, Seal Tech (left), and Matt Lecheler, Beckhoff USA application engineer (right). "Thanks to PC- and EtherCAT-based control technology, we are able to offer manufacturers of control cabinets top-class FIP gasket technology at affordable prices," Frank North explained.

The machine is operated via a Beckhoff "Economy" Control Panel with 15-inch touch screen.



Seal Tech machines are designed to dispense two-part polyurethane for any profile customers may require. "Meeting customers' expectations for cost-effective solutions is obviously a top priority," explained Frank North, V.P. Machinery Division, Seal Tech. "We offer competitive prices, and at the same time innovative functionality. Another aspect is the user-friendliness of Seal Tech machines. Our operator interface is designed to be very intuitive, keeping the learning curve manageable." The latest innovation from Seal Tech – and the result of 20 years of experience in the industry – is the STI 8400, a machine that produces high quality polyurethane gaskets for electrical cabinets.

#### Exact dosage matters

Perhaps the most important function of FIP machinery is to ensure that the mix ratio of polyurethane ingredients is dispensed at precise outputs. "An integrated scale helps the machine operator ensure that foam mix ratios are correct," said Frank North. "The integrated scale automates most complex calculations that machine operators normally perform." Calculating the dosing ratio, which previously took 15 to 20 minutes, now only takes a few seconds. "The operator simply enters the 'shot time' and the mix ratio at the operating panel, and the machine then tells the operator what the desired output is," said Frank North. With the simple press of a button, the scale sends the finished calculations up to the HMI. On pressing the "Calculate" button, the machine determines the exact percentage of the individual ingredients in the polyurethane mixture. On pressing the "Adjust" button, the machine automatically adjusts the pump speeds. The control architecture consists of a Beckhoff C6920 control cabinet Industrial PC and operation takes place via an "Economy" Control Panel with 15-inch touch screen.

"The main feature of the PC-based Control system from Beckhoff is that all machine control elements, i.e. PLC, CNC and HMI, are housed in a single Industrial PC and run in a single software platform. In addition to the scale, further peripherals can be easily integrated into the system," added Frank North.

#### Remote connectivity simplifies troubleshooting

The PC-based Control system offers automatic network connection and web services and enables Seal Tech to support its customers across the world with remote troubleshooting. This means that lengthy downtime and travel times are a thing of the past. "We can watch customers operate the machine and examine all parameters. In this way, we can see if anything is out of the ordinary and what could be improved based on what the machine is doing in real-time. Customers nevertheless have total control in security and access to their machines," Frank North explained. Seal Tech usually designs its FIP machines with wireless connectivity, enabled by a dongle. This dongle is given to the customer's plant supervisor so the machine is connected to the Internet only when the customer wants it to be.

#### EtherCAT performance throughout

The TwinCAT automation software for PLC and CNC functions is at the core of Seal Tech's control system. TwinCAT controls the motion of the STI 8400 machines' dispense heads and the servos that drive the polyurethane component pumps and the mixing motors. Beckhoff AX5000 EtherCAT Servo Drives, servomotors from the AM3000 series and planetary gearboxes actuate the motion control.

In the STI 8400, Seal Tech uses EtherCAT throughout, from the drive system right through to the EtherCAT I/O terminals and to the EtherCAT Box modules in protection class IP 67 that are mounted directly on the machine. This simplifies the machine communication. "In addition to industry-leading performance, exceptional diagnostics capabilities and fast communication speeds, the EtherCAT I/O system saves me considerable time wiring Seal Tech machines and makes them easier to troubleshoot," said Frank North. Also, the moisture- and dust-resistant EtherCAT Box modules can be installed on the machine in areas where it's not practical to install another electrical cabinet.

#### Further Information:

Seal Tech Industries – [www.sealtechind.com](http://www.sealtechind.com)  
[www.beckhoffautomation.com](http://www.beckhoffautomation.com)