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Materials Testing Needs***

Multi-Plastics Uses ADMET for Precision Plastics Quality Control

Multi-Plastics Inc. (MPI) of Saegertown, PA, is a leading, full-service injection molder of precision plastic components and assemblies, primarily serving the electronics, consumer and medical industries. MPI specializes in complex projects and offers services ranging from product design and mold prototyping to turnkey manufacturing solutions. Combining state-of-the-art technology with superior service and quality, MPI has established itself as a premier provider of injection molded products. The company ensures its quality using an advanced quality laboratory for both product development and manufacturing testing. MPI recently replaced an old analog tensile testing machine with a state-of-the-art ADMET eXpert 5603 universal testing machine that has resulted in enhanced productivity and accuracy.

Multi-Plastics Inc. (MPI), a privately-held injection molding company based in Saegertown, PA, has a 30-year history of providing precision moldings. It sells to automotive, aerospace, appliance, business machine and electronics companies for consumer, industrial and military applications.

MPI recently took over the molding operations of another Pennsylvania-based injection molding company and consolidated operations. This substantially increased manufacturing capacity giving the Saegertown plant 27 presses ranging from 55 to 500 tons.

The company primarily produces small precision components and assemblies. Examples include brackets for a fuel rail for a major automotive manufacturer, gear components for a weapons system and a flush valve assembly for a plumbing supplier.

It is a full service shop, designing and building molds, running prototypes and testing the prototypes to determine the metrology of the part produced. It tests to ASTM standards; however, 98% of the tests are to customer specifications.

The company works with various types of engineering and medical grade thermoplastics. Materials range from nylons to Liquid Silicone Rubber (LSR), Polybutylene

Terephthalate (PBT) Polystyrenes -- thermoplastics with up to 40% fiberglass content.

Full service lab

Gary Smith, Quality Director, oversees the TS-16949 registered quality management system. MPI has an in-house A2LA metrology lab that handles both product development and production quality testing. Explained Smith, "We do surface finish tests, cleanliness tests and metrology for first-piece inspection off of the machine according to the control plan. We also do visual – no fill, flash and visual to the print inspections and we maintain a Class 100,000 clean room for the molding of plastic medical components."

The different formulations each have their own tensile properties that must be controlled to meet customer specifications. Other quality characteristics tested include knit line strength, as well as the tensile strength of ultrasonic and spin welds. The lab also conducts compression tests on some parts and conducts specialized tests, such as a pull test to see how much pressure is required to separate Velcro-joined parts.

Smith explained that the demands on MPI's in-process lab have increased substantially since the consolidation. They now have three quality techs per shift – three shifts a day – seven days a week.

SOLUTION OVERVIEW

Industry: Plastics

ADMET Product: eXpert 5603 with an eP Digital Controller

Customer: Multi-Plastics Inc.

Application: Tensile and compression testing specialty plastic components

Prior to the consolidation, MPI relied on a 30-year-old Monsanto analog test frame that was failing. He explained, "The mechanics were still fine on the machine, we just couldn't get it to do anything. There aren't any replacement parts any more."

Smith considered both retrofitting his existing machine and purchasing a new one. He researched suppliers on the Web and spoke with a few but ultimately decided on ADMET which retrofits machines with updated digital controls and state-of-the-art servos, and also builds new testing systems.

Beyond a retrofit

An ADMET engineer visited the lab and determined that it was not cost effective to retrofit the Monsanto machine. "He wanted to see our entire operation so he could recommend the right solution," explained Smith. "He came down to see about the retrofit – what we did – he didn't want to give us something that we didn't need or something that we would have to redo later."

The engineer recommended an ADMET eXpert 5603 4.5kN tabletop machine equipped with an eP Digital Controller – an inexpensive, simple-to-operate closed loop servo controller. "We like ADMET's approach. The fact that they build their machines in the U.S. was a big selling point – the owners like to buy things that are made here," said Smith.

The project took about six weeks from research to installation and the system actually arrived earlier than expected. Smith set the machine up and used his local calibrator to certify the setup.

New process – higher productivity

The new machine is handling the increased workload quite well. All of the operators are trained to run the eXpert machine. Smith sets up and stores the test parameters for each test in the eP Digital Controller and the operator simply selects the proper test routine for the part being tested.



ADMET eXpert 5603 with eP Digital Controller

The operator mounts the part and hits "Enter" on the eP Controller. The machine automatically preloads, performs the test, then displays and stores the results in the controller.

The increased throughput and ease-of-use helps with the heavier workload. "Right now we have a lot of testing because we just started a new valve assembly which has four different components," said Smith. "The new assembly requires four tensile tests on the parts and spin welds. When we're running other production jobs, we can have dozens of different types of physical tests a day."

The operators read the results directly off the controller. "Then the tech enters it into our own database through a computer

terminal in the lab. We'd like to download directly to our computers in the lab but it's down on our list of our priorities right now," explained Smith.

The test results are maintained for historical purposes and for reference if a customer wants to see a report.

Smith is happy with the ADMET system. "ADMET worked very well with us. They answered all the questions. The machine got here quicker than they thought and it has performed well since it was installed," concluded Smith.

For more information:

For more information about ADMET products or services, please call us at 800-667-3220 or 781-769-0850, email sales@admet.com or visit our Web site at <http://www.admet.com>.

For additional information on Multi-Plastics Inc., visit <http://www.multitool-plastics.com>, call 814-763-6664, or email info@multitool-plastics.com.

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