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## Charter Steel retrofits tensile tester to increase reliability

Charter Steel of Saukville, Wisconsin is a leading supplier of special bar quality steel (SBQ) products to customers worldwide. The company is focused on quality and has been certified to the ISO 9002 and QS-9000 standards. Its laboratories have received American Association for Laboratory Accreditation (A2LA) accreditation for many of the tests performed. Its dedication to quality even extends to its environmental management system, which meets the ISO 14001 requirement. So, when it became difficult to find replacement parts for its SATEC tensile testing machine's digital controller, Charter Steel process quality control lab manager, Tom Melichar, decided that the situation needed to be addressed. He researched retrofitting the machine and discovered that ADMET offered both the expertise and the best price for the upgrade. A few weeks later the company had a new controller from ADMET installed and operating.

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Charter Steel, a member of the Charter Manufacturing family of companies, melts, rolls and processes special bar quality (SBQ) steel. It produces wire in diameters from .140" through 1.439" and rod/bar from 7/32" to 1 9/16".

Quality control is an integral part of the manufacturing process. In addition to dimensional and surface inspections, the company checks tensile strength and reduction of area (RA).

### **Heavy demands on testing equipment**

Operating 22 Box Anneal furnaces, and two continuous furnaces, over three shifts, Charter Steel's quality inspection system is a high-volume, ongoing operation.

"Usually we test a minimum of four coils from each furnace but we may check all of the 12 coils from a batch on the box anneal furnaces. Each continuous furnace produces up to 50 coils in a 24-hour period. Charter normally samples about 70 samples from these furnaces in a 24-hour period,"

said Tom Melichar, Charter Steel processing quality control lab manager.

This translates into 150-200 test samples for tensile testing in each 24 hour period. Each sample is tensile tested and the reduction of area is also calculated.

The results are entered into a laboratory management system. Certified tests are also recorded on reports provided to customers.

This level of activity puts heavy demands on the testing equipment. Charter Steel has a used SATEC tensile testing machine that it acquired in 1996. The 120,000 lbf machine performs both wire and bar tests, pulling up to 80K. "We don't run full capacity to protect the machine," commented Melichar. A smaller, 30K Tinius Olsen machine is kept as a backup, but is seldom used.

Although the load frame itself worked well, Melichar was having trouble getting replacement parts for the digital controller. "We were living on the edge. If we lost a couple of different boards we would have been shut down," said Melichar.

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## **SOLUTION OVERVIEW**

**Industry:** Steel manufacturing  
**ADMET Product:** Retrofit using the Precise Digital Controller

**Application:** Tensile testing  
**Customer:** Charter Steel

## Researching the options

Melichar contacted INSTRON, the company that had bought SATEC, to see about a retrofit. He found the quoted price to be too high, so Melichar and others started researching their options. That's when he discovered ADMET, which offers new tensile testing systems and specializes in retrofitting machines from other companies.

Melichar called a sales engineer at ADMET and he submitted a proposal that was less than half the INSTRON bid. The price difference was such that Melichar wanted to make sure that he wasn't sacrificing quality for cost.

The ADMET sales engineer encouraged Melichar to contact some other recent ADMET retrofit customers for references. This gave Melichar the opportunity to compare an ADMET retrofit in Milwaukee to an INSTRON retrofit at Charter's rolling mill.

Commented Melichar, "It looked to be a similar system and the company we visited was real happy with the way it was going. So it was kind of a piece-of-mind visit for us."

He then contracted ADMET to perform the retrofit. ADMET specified its Precise Digital Controller, a self-contained unit that ADMET includes both in new equipment and for retrofits as a lower cost alternative to computer/Windows-based systems. It works with both manual and servo-controlled tension and compression testing machines from virtually any manufacturer.

Unlike most retrofits where the new digital controller is installed and the servo system

upgraded, the Charter Steel retrofit was a bit more involved.

## Electrical system requires overhaul

When the field service engineer visited Charter Steel, he discovered that the machine's electrical system had been modified several times over the years. Consequently, this made servicing difficult for Charter's electricians when they would troubleshoot the machine.

ADMET offered to re-engineer the machine.

The field service engineer converted the electrical system and upgraded the controller. The installation took only a day.

Training was simple. Each of Charter Steel's eleven test technicians who ran the tensile testing machine required only a few minutes of training before they were back in business.

All-in-all, it was an extremely smooth retrofit with virtually no machine downtime. Charter Steel is able to continue to use the load frame and now has a reliable controller with ADMET's responsive support team standing behind it, and replacement parts that are readily available. The new controller is also capable of being integrated into Charter's laboratory management system.

"We never considered replacing the machine since the load frame itself was fine. For less than \$10,000 we were able to update the machine with the latest controller and get the wiring straightened out at the same time," said Melichar.

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## For More Information

For more information about ADMET products or services, please call us at 800-667-3220 in the US or Canada, email [sales@admet.com](mailto:sales@admet.com) or visit our Web site at <http://www.admet.com>.

Additional information on Charter Steel is available at <http://www.chartersteel.com>.

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