

TOSHULIN VTL Is Key to Revolutionary Chip-Removal Process

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CINCINNATI—A TOSHULIN vertical turning lathe (VTL) played an important role recently in the creation of a revolutionary new process for removing metal from aircraft engine spools.

The new process, developed by Greenleaf Corporation and Pilsen Imports for an East Coast aerospace manufacturing plant, resulted from the plant's efforts to reduce machining operations and cycle time. After determining that its existing equipment was too old to produce its spools efficiently, the plant purchased two new TOSHULIN VTLs, which they dedicated to the design of their new metal removal process. The company employed Greenleaf to help engineer the new process and asked Pilsen to build the custom machines and tools required.

"No machine existed at the time that could do what the customer needed it to do," says Greenleaf engineer Paul Daoust, "but TOSHULIN and Pilsen were able to customize a machine to get the job done."

Greenleaf fitted the ram head tool holders of each machine with ceramic whisker inserts that remove metal faster and cleaner than traditional cutting inserts. Pilsen and TOSHULIN provided a ram large enough and with the high rigidity necessary to support the redesigned tool holder. Each machine was then equipped with separate 150-PSI and 5000-PSI coolant systems, supplied by Pilsen, which cool the cutting tip during the machining process. The 5000-PSI ChipBLASTER and the 150-PSI TOSHULIN system disperse coolant onto the tip from opposing directions, ensuring a constant temperature and chip removal during cutting. To date, the new process has delivered a metal removal rate of 25.27 cubic inches per minute—the highest rate in the plant's history.

"It's a combination of rigidity, cooling of the tool tips, and the tools used to increase chip removal that makes this process successful," says Tom Whittington, Application Engineering Manager for Pilsen.

The new process has also significantly reduced the number of hours required to operate the machine. The new machine provides the rigidity to support a $\frac{1}{2}$ -inch-wide groove tool running at 800 SFM, a feed rate of .0035 IPR, and a material hardness range in the scale of 42 Rockwell/C.

"That machine is running at 42 percent motor load," says Mr. Daoust. "That says a lot for the machine's rigidity and how quiet it runs. The power is awesome. You tell anyone you're machining Inconel 718 at that rate, and they're going to be impressed."

Pilsen will demonstrate its machine customization capabilities, as well as its solution- and application-driven sales approach, to interested attendees at IMTS in Chicago, September 4 – 11. To learn more about Pilsen Imports, Inc., and TOSHULIN a.s., visit www.pilsenimports.com.

Pilsen Imports—Your Vertical Turning Machine Specialists

Pilsen Imports is a leading supplier of vertical turning equipment, specializing in the installation, service, and support of TOSHULIN vertical turning machines. Pilsen's highly skilled machine specialists have an average of 23 years experience in the machine tool industry. We are dedicated to providing our customers with 24/7 service and support, including overnight delivery, phone and on-site support, and comprehensive operators', programming, and maintenance training for every machine we sell.