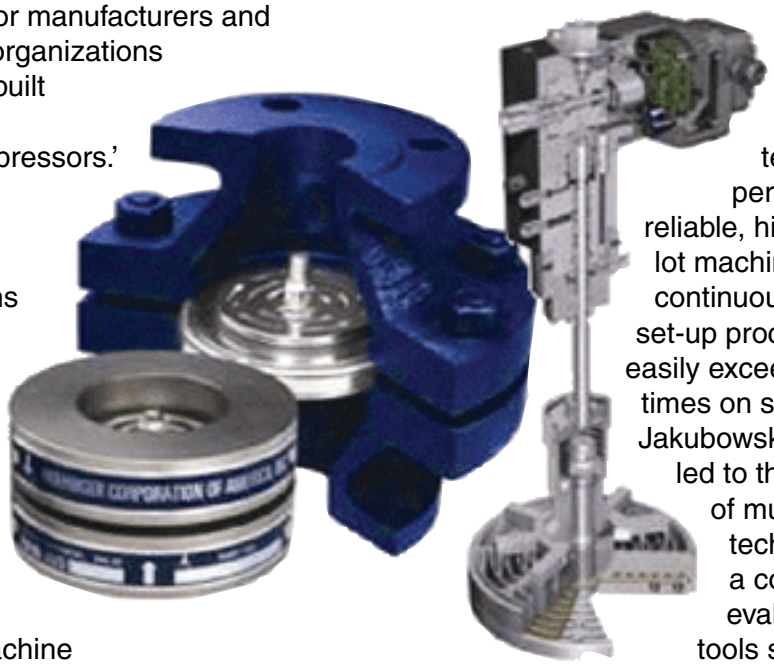
ESPRIT
The Right Choice

Hoerbiger compression technology achieves high-quality small-lot machining

Building on its reputation for product innovation, quality, and engineering excellence, Hoerbiger Compression Technology is employing advanced CAM technology as a key component of its manufacturing strategy. Hoerbiger Compression Technology is the world's leading manufacturer of valves, controls and sealing systems for reciprocating compressors. Hoerbiger serves both OEM compressor manufacturers and compressor service organizations as part of it strategy built around the 'Reliable Performance of Compressors.'



Hoerbiger's Compression Technology operations in North America are taking the lead on a new initiative employing advanced CAM software to streamline the process of converting new designs into CNC machine programs. Hoerbiger Compression Technology's North American manufacturing operations in Florida and Texas engineer and manufacture compressor valves and components tailored to specific customer operating conditions in the field. "Our OEM and service customers require products engineered for specific applications, and our response time needs to be measured in days, not weeks or months, notes Randy Richardson, Hoerbiger Compression Technology's North American Director of Manufacturing Engineering.

Since the products are developed for a specific application, the result is thousands of unique machined components, usually produced in small quantities. "The vast majority of our shop orders are for 10 pieces or less" notes Don Jakubowski, Hoerbiger Compression Technology's North American VP of Operations.

To meet this challenge, Hoerbiger must employ advanced technologies to permit efficient, reliable, high-quality small lot machining. "Despite continuous improvements in set-up processes, set-up times easily exceeded machining times on small orders," Jakubowski said. "This reality led to the investigation of multitasking technologies, and a comprehensive evaluation of machine tools spanning Europe, Asia, and the Americas."

After a detailed evaluation, including extensive trials with Hoerbiger parts, Hoerbiger's team selected the Mori Seiki MT2500SZ twin-spindle, twin-turret 9-axis multitasking machine. The MT2500SZ produces the company's key valve components in a single set-up, providing significant time savings on small quantity orders. The Florida plant installed its first MT2500SZ in late 2004, and recently installed its third machine.

But Hoerbiger recognized that although the MT2500s addressed key challenges in machining small quantity orders, other challenges remained; such as converting new designs into G-code suitable for the multitasking machines, optimizing multitasking productivity by balancing work between spindles and turrets, synchronizing the movement of the turrets and preventing crashes, and reducing or eliminating the time lost "proving out" the dozens of new programs introduced each week.

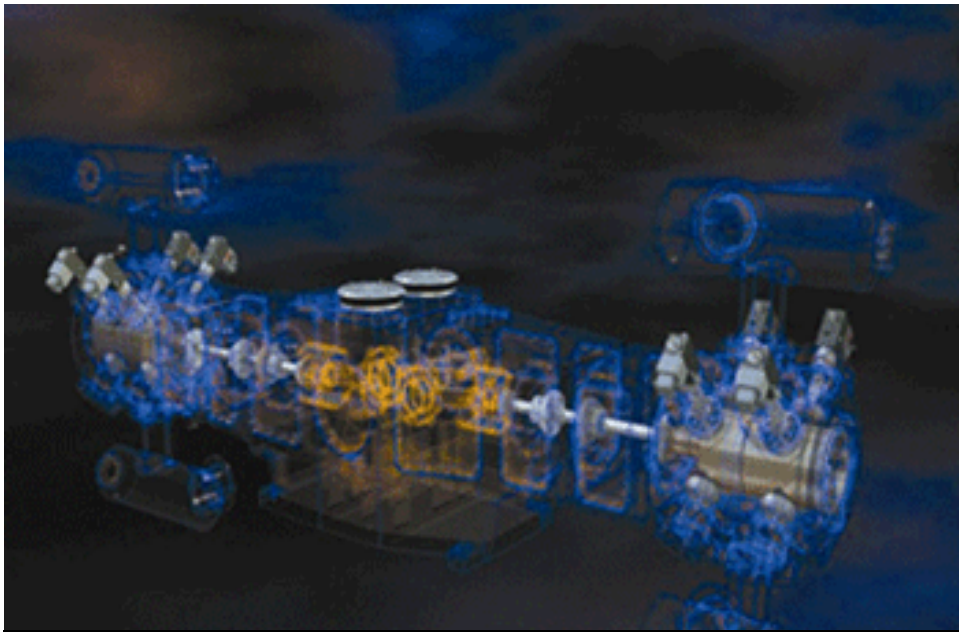
These challenges led to a new project chartered to evaluate, select, and implement an upgraded CAM solution. Hoerbiger decided to reduce its reliance on its old, heavily-customized CAM software system and seek a new system that could handle the complexity and advanced features of the Mori Seiki multitasking machine.

"Blending historical needs and desired new capabilities," Richardson said," our team developed detailed software demonstration instructions for the vendors, requiring each vendor to show us what they could do with Hoerbiger parts."

Ultimately, Hoerbiger's team unanimously selected the ESPRIT CAM software solution by DP Technology Corp. in Camarillo, Calif. "ESPRIT was one of very few CAM solutions available at the time that could adequately support twin-spindle twin-turret multitasking, and we appreciated the close working relationship between the ESPRIT team and Mori Seiki", said Richardson.

ESPRIT's Knowledge Base was a key selling point, since it allows Hoerbiger to apply proprietary machining strategies to the features it recognizes on the part, and standardizes the machining approach, tool selection and feeds and speeds for those features. "It is important to Hoerbiger that we capture our experienced machinists' knowledge of machining best practices and apply it consistently", noted Jakubowski.

ESPRIT imports new solid models directly through an Inventor interface, streamlining the design to manufacturing flow and reducing opportunities for error. Before ESPRIT, Hoerbiger's exported part geometry to an Excel spreadsheet and then importing that data into their old CAM software system through a custom interface. But since information was sometimes lost in translation, programmers had to review the 2D drawing to verify all dimensions and part characteristics and then reconcile any discrepancies. Custom macros then generated the toolpath and tools for each part family, based on the typical configuration of that part family. However, if the part contained unique characteristics, programmers would have to manually modify the program.



Natural gas compressor showing Hoerbiger product offerings

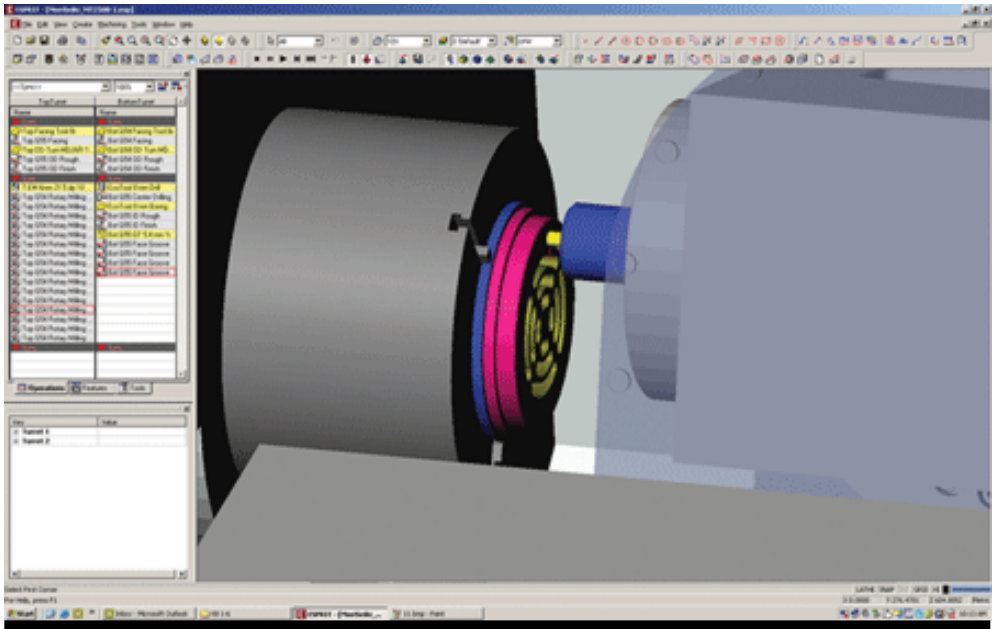
Hoerbiger now imports the solid model directly into ESPRIT. The software's Feature Recognition identifies features to be machined, and then the ESPRIT Knowledge Base applies Hoerbiger machining strategies to these features. "Designs deviating from the typical configuration for part families are no longer a problem, as long as the ESPRIT Knowledge Base has processes defined for the added feature" notes Richardson.

As it's multitask machining processes took shape, Hoerbiger quickly learned that optimizing productivity requires advanced tools for program review and analysis. "The key to productivity on this type of machine is balancing the workload between turrets and spindles", according to Richardson. "Esprit's synchronization and time study tools allow us to gauge utilization of each turret on each part and move machining operations as required to achieve optimal productivity."

Hoerbiger also learned that with two turrets and two spindles sharing the workspace, the risk of crashes is far greater. ESPRIT's simulation tools show the machine, the turrets, the chucks, the tool holders, and the tools with collision detection on all of them, greatly reducing the likelihood of a crash.

In order to efficiently process a high volume of new designs sharing similar features, Hoerbiger opted for selected VBA enhancements. The Inventor interface was enhanced to pick up more complete information on threads and surface finish directly from the solid model. Feature recognition was automated so that dozens of features are recognized in a single step. "We utilized VBA extensions only as required to meet strategic objective of streamlining the design to manufacturing flow," Richardson said. "'We've always done it that way,' is not a good reason to change the way the software works. If we're automating we want to make sure the time saved in getting new parts in production is worth it."

Jakubowski summarizes "We view this project not as a software upgrade, but rather as a strategic initiative marrying Mori Seiki's multitasking technology with ESPRIT's advanced CAM capabilities to help us meet our customers' needs for valves and components engineered and built to order as quickly as possible." in getting new parts in production is worth it."



ESPRIT simulates Hoerbiger valve component machining

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