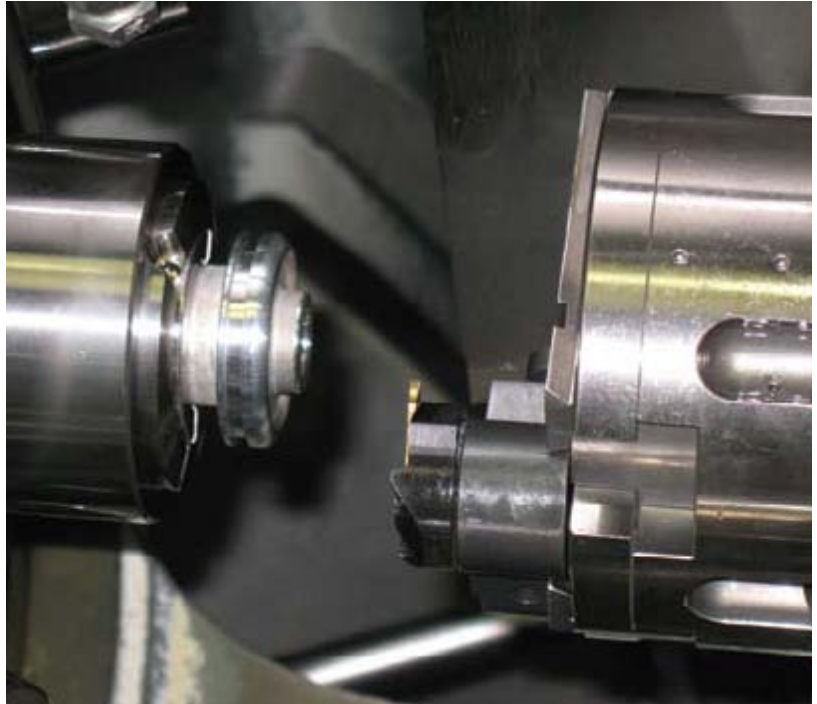


Understanding all aspects of the production process and considering how they interact is the only way to ensure problems are addressed appropriately and proper solutions are put into place.

Edited by Chris Felix



DON'T BLAME THE WORKHOLDING

By definition, workholding components comprise precision-made production tooling that safely and accurately positions and holds workpieces during a production line process. Matching the design of these components to all the other aspects of production is the cornerstone of machining. Simply put, if a part can't be held, it can't be cut.

Thriving in the new reality of machining demands knowing what really goes wrong when workholding fails. Nobody knows this better than Charles Ruecker and his group of companies—RH Collets Ltd., manufacturer of specialty workholding and collets for rotary transfer and multi-spindle machines, and Core Powered Inc., designer and manufacturer of cutting tools, holders, machine systems and process innovations that help manufacturing companies change the way they operate and positively impact their profitability.

“When a cutting tool fails, we blame the tool. When a part spins in the workholder or part position is an issue, we blame the workholding. These views are

common when seeking to improve production, but they often limit the results that are possible with current equipment,” Mr. Ruecker states.

Beyond Workholding

Uncertainty in the automotive industry has implications that are not limited to the factories themselves. The effects are far-reaching, and the impact is felt by most small parts manufacturers, especially when the automotive industry is their number one client. Manufacturers are scrambling for strategies to get ahead and stay ahead of the competition to retain that valuable piece of the pie.

For Anton Hirsch, president of Cobra Metal Works (Elgin, Ill.), the solution for viability is in timing and diversification. “These days the first one that reacts is the one that will get the contract. Timing is key,” Mr. Hirsch says. “It is critical to introduce new systems and processes that will reduce overall turnaround for our new and existing Hydromat clients.”

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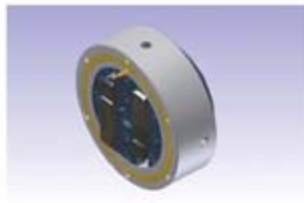
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▲ This screen shot shows a rotary coolant coupling for the Hydromat 5100 CNC recess mill, capable of 4,000 rpm and 200 psi coolant pressure.



▲ The modular tooling system is the Hydromat Epic III 32/45-18 is only possible with a complete understanding of the workholding and space limitations of the machining area.

A global machining supplier with facilities in Illinois, Mexico and Europe, the company has implemented an aggressive course of action to help them meet this goal that includes progressing to a modular tooling system for the Hydromat to improve processes, reducing the complexity of the parts to improve efficiency, and streamlining leadtimes to improve reaction time.

A Look Back

Established in 1997, Cobra Metal Works started by focusing on the automotive industry, producing airbag parts, anti-lock brake components and steering components. Its patented automotive air bag cap skyrocketed the company's growth. Currently a \$36 million company, it produces 55 million parts per

Delivering Performance with Collets and More

It takes more than a collet to deliver the performance today's marketplace demands. RH Collets Ltd. is a high performance collet supplier that manufactures most standard multi-spindle and rotary transfer collets and specializes in providing solutions for difficult to hold parts. The company brings the understanding and knowledge of the related parts involved in workholding, including rotor rods and leads, inverter and shaft bushings, clamp jaws, sliding sleeve and dead length collets, lead fingers, and special-shape, oversize and extended collets. All parts and assemblies are fully engineered using 3D solid modeling software. This capability enables the company to fully inspect the application for fit and function before manufacturing components. Custom applications are guaranteed to fit every line.

European collets in steel that are not commonly available in North America are the material of choice for RH Collets. These materials deliver the superior performance and resistance to brakeage normally found in European collet brands. Customers regularly experience longer collet life and better part accuracy.

Coolant flow, chip contamination and machining requirements are considered in the RH Collet design. Reduced bar and part loading issues, as well as improved cutting tool



▲ All parts and assemblies are fully engineered in Autodesk Inventor 3D solid modeling software. The collet is assembled in the machine housing to check for fit and function. Computer designs that expand the ODM recommendation are possible using this approach. performance are the result. Customers often achieve cycle time reductions of more than 30 percent and improved tool life using these workholding enhancements.



▲ Sometimes new or improved workholding only appears necessary. Charles Rucker inspects the inside of the loader for modifications that will help eliminate an expensive collet purchase, cutting the conversion cost by half compared with a new collet purchase.

year with 150 CNC machines, including four Hydromats that run 24/7.

"The initial foundation of our success and growth was the fact that we had a good quality system in place, especially with the ISO/TS 16949:2002," Mr. Hirsch says. Cobra has more than 100 employees in the U.S., alone, and employs the Six Sigma methodology of quality management throughout its facilities.

However, times have changed since 1997, and the automotive industry is not the keen customer it once was. In order to maintain the growth pattern of the part, the company recognizes the need for diversification and change.

Ivan Aviles, Rotary Transfer Department supervisor has the task of finding ways to streamline the company's Hydromat processes, decrease response time and open the doors to new customers. "In economic times like these, you snooze, you lose," says Mr. Aviles, and with 30 years of experience working with Hydromats from the ground up, he clearly understands what it takes to implement the most effective strategies.

Reducing the Complexity of Parts

In 2006, Cobra began working extensively with Mr. Rucker and his group of companies, each of which offers extensive manufacturing expertise and an innate business perception to the process of improving manufacturing operations.



▲ Custom cutting toolholders can be matched to the machining requirements, making very complex form tool machining a practical option to be used as the Hydromat or single-spindle CNC turning centers.

"One of the key things you have to try to achieve with the Hydromat is to go from one part number to another very quickly," Mr. Aviles says. "Core Powered Inc. has made loader modifications to one of our Hydromats that allow us to switch two very similar parts fast."

The current part had a slight change to its length, and Cobra had planned to buy new collets as a fix. But, after assessing the new part and evaluating the impact on the current process, Mr. Rucker determined that a change to the loader was needed instead and produced the required modifications. "By reducing the complexity of the existing loader, we have eliminated the need for Cobra to buy new collets," Mr. Rucker explains.

Not only that, but the modified loader works on Cobra's new part as well as the existing part. "This affords us a lot of flexibility, which can be key, depending on the volumes from our customers and what the next year brings for us," Mr. Aviles says.

Modular and Innovative Tooling Systems

Innovations in processes are essential to Cobra's expansion and growth. Until recently, the company was dependent on customized tooling for its parts, but with the help of the Rucker group of companies, it is now using a modular tooling system that bolts on to the existing head of the Hydromat 5100 two-axis CNC unit.

"We can't afford the long leadtimes of the past," Mr. Hirsch says about the changing economy and increasing the ability to cut timing. Turnaround time for customized tools can traditionally take as long as 8 weeks, depending on the complexity of the part. With the institution of these standardized modular tools, Cobra can now use off-the-shelf tooling for its Hydromats, cutting the leadtime in half. "We are working towards making all our machines modular, so there is less dependency on customized, expensive and long-leadtime tooling," Mr. Hirsch explains. "This way we can cut down our setup time for new products and can react much quicker."

Cobra has also implemented a new internal recess tool for its airbag end cap. The new part combines a number of different features in the base of one part into one tool (unique for this particular Hydromat application), again decreasing the complexity of the job and increasing efficiency. This reduces the number of tools by half, eliminating burrs and several inspection steps.

"With more standardized tooling and more modular Hydromat parts, we can significantly reduce our reaction time so it can be comparable to other CNC turning standards," says Mr. Hirsch. Hydromat jobs can now be changed over and up and running within hours.

"The solutions that Cobra found through RH Collets and Core Powered Inc. have been a lifesaver," Mr. Hirsch continues. "Finding an alternative supplier that could give us the best turnaround time without sacrificing quality wasn't easy. We had used various suppliers before, and their quality was fine, but the leadtime was always an issue."

In March 2008, the company was faced with a sudden need for a special oversized collet for the Hydromat that was producing the airbag end caps. Customary turnaround for the collet can take as much as 10 weeks, which translates into 10 weeks of production downtime. By enlisting RH Collets to produce the oversized collet, Cobra was able to cut leadtime by more than 50 percent, delivering the replacement part in only 3 weeks.

Working with RH Collets and Core Powered Inc. has allowed Cobra to implement company-wide

initiatives to cut leadtimes in all areas of production, ultimately saving customers time and money. "If I were to do these jobs piecemeal, with several different vendors, we would not have been able to make the turnaround time our customer needed," says Mr. Hirsch.

"We have been able to match the tools Cobra needs with the pace at which the company needs to produce and help it move easily from job to job," says Mr. Rucker about the services his companies provide. "Partnering our resources with customer objectives is what it is all about for us."

"The biggest thing Mr. Rucker and his companies have to offer is reaction time," explains Mr. Hirsch. "They have demonstrated that they can get customized tooling and special components to us quickly, allowing us to react to high production requirements much more quickly than most of our competitors," he says.

Looking Towards Growth

As Cobra repositions itself as a leader in the automotive industry and reaches for entrance into other markets, Mr. Hirsch emphasizes that he believes the strategy for growth is definitely timing and diversification. "Our capacity has been increased by 20 percent," he says about implementing these new processes and working to develop systems that will work in the long term.

What's next? In collaboration with Core Powered Inc., Cobra Metal Works is working to implement a new recess head attachment for the Hydromat 5100 two-axis CNC that will allow coolant feed into both ID and OD recess tools. Not previously available for the Hydromat, this attachment will decrease setup time and increase tool performance, as there will be fewer tool changes and the parts will be more accurate. ■

PM LEARN MORE

For more information from RH Collets or Core Powered Inc., call (888) 975-3599 or search www.productionmachining.com/collets. For more information from Hydromat, call (314) 402-4644 or search www.productionmachining.com/wspellers. For more information from Cobra Metal Works, call (847) 214-8400.