

Advanced Tooling Keeps Shop Fast, Agile



Tony Chastenay, All Axis R&D Owner and Operator. All Axis' REGO-FIX powRgrip push-button automatic unit loads/unloads tools in less than 10 seconds. The unit accommodates five different powRgrip collet sizes.

All Axis R&D, a three-man prototyping, pilot production and engineering shop in Claremont, NH, machines between 300 and 500 new part numbers annually. Typical lot sizes range from single-digit runs to perhaps 100 pieces, and the parts routinely require tolerances of +/- 0.0001" and surface finishes of 8 Ra or better. In addition, the shop also provides customers with manufacturing process engineering assistance. The shop's heavy and varied workload magnified the need for efficiency.

"One of our goals is to manufacture parts in as few operations as possible," said Tony Chastenay, All Axis R&D Owner and Operator. "To increase part quality and accuracy, we try to machine parts on multiple axes so we can complete them in one or two set-ups. At the same time, we work to minimize spindle downtime associated with tool set-up and adjustments."

Getting a tool set up to run correctly can consume a considerable amount of time, according to Chastenay. "Quite often when an



"We run REGO-FIX tooling because it is quicker than heat shrink and extremely precise," said Chastenay. "Plus, we can save hours of set-up time on just one tool. That is significant when a job may require as many as 30 tools."

history, Chastenay said that they would typically have to put an indicator on an endmill and move it around in the holder to dial it in and achieve concentricity. "Sometimes this process took 20 minutes, sometimes an hour. In any event, it wasted a lot of time," he said.

"REGO-FIX powRgrip tooling helps eliminate that downtime," said Chastenay. "The system is a hydraulically actuated press-fit tool clamping - one that provides TIR of less than 3 microns. Unlike heat-shrink toolholders, the powRgrip tooling involves no heating and is ready for immediate use after the cutting tool has been clamped into place."

Clamping and unclamping tools into powRgrip holders is accomplished

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No More Limits to Machining Large Parts



A pair of saw guides in process. The new Sharp Industries Box Way Vertical Machining Center SV-6332SX allows the fixture of multiple parts on the table, which results in a longer unattended cycle time. This is a key concept to allow a single operator the ability to run several machines at once. With automated probing as part of the setup, the operator can mount the raw stock or parts in a fixture, hit cycle start and walk away, returning only to remove the parts and fixture for the next set. The operator is free to go to another machine and repeat the same process for a different operation or part.

For years Innovative Economical Solutions was forced to enlist outside help when work for parts of a size exceeding 40" came in because their VMCs were simply not capable of handling them. Stuart Caruk, founder of Innovative Economical Solutions, began to consider the purchase of a new machine in order to broaden the company's scope. He felt that working on larger sized parts was a niche his

company should be able to satisfy for his customers.

Mr. Caruk looked into available options that could handle the dimensions he required and found that within the suitable size class the new Sharp Industries Box Way Vertical Machining Center SV-6332SX stood out in regards to its specification and particularly its weight. It is approximately

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Technology Meets Flexibility and Precision Requirements



Lufthansa Technik provides a large component spectrum for individual customer requirements.

A modern aircraft is a highly complex machine. The safety of passengers - as well as the reliability and cost-effectiveness of an airline's flying operations - depends on error-free functioning of the parts. For Lufthansa Technik AG (Germany), a full-service

provider of technical inspection, retrofitting, maintenance, overhaul and painting, the spectrum of parts is considerable since customer wishes are extremely individual and maintenance and repair work can be unpredictable.

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Technology Meets

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Next to safety, high quality demands are the focus for mechanical manufacturing in the aerospace sector.

Following the purchase of a state-of-the-art machine pool, investments were also made in high-tech peripherals. The objective was not only to increase process safety, but in particular to ensure maximum flexibility in order



(l-r) Frank Pieterwas and Jan Horn, Lufthansa Technik; Julian Lüdecke, Zoller; and Ulrich Rienks, CAMTECH/Edgcam

Individual requirements include the daily production of high quality components with new geometries.

Over the years, new requirements were added, which necessitated a greater variety of tool data. The distribution over several databases resulted in redundant data management. This led to increased inefficiencies and contained potential sources of error due to repeated manual entering of data. A solution was needed, and expandable systems and maximum data accuracy were essential requirements.

Lufthansa Technik found a solution when it partners

to respond to market changes. Until this time, only a single manual tool presetting machine was in use. Labels were printed and the data was entered manually into the machine.

The CNC-guided »venturion 450« tool presetting and measuring machine has been in use since 2007. "We decided in favor of Zoller, following a cost benefit analysis," explained Planning Engineer Frank Pieterwas. "Decisive for us was the expandability and



The »venturion 450«, a CNC-driven tool presetting and measuring machine from Zoller.

CAMTECH, master reseller for Edgcam in Germany, and Zoller.

In order to meet the individual production requirements for its customers, a tool pool of approximately 2,000 different, complete tools is utilized by Lufthansa Technik. Since 2000, the elaborate NC programs for these complex geometries have been programmed using the Edgcam CAM system, and since 2009 5-axis simultaneous operation has been utilized. Both prismatic parts and free-formed surfaces are milled here.

The basic machine had been successively extended over the years and Tool Management Solutions had been added. "We wanted the Zoller database because it is a leading system," said Horn. "If a new tool is set up, it can be entered into the Zoller Tool Management database so that the name, description and the T-number are correct. Once entered, it can be used by all employees in a standardized manner throughout the entire process and can be found consistently."

The interface from Edgcam to the

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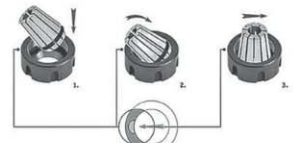
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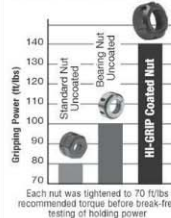
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For Lufthansa Technik, fast response to market changes is now possible.

Zoller Tool Management Solutions had already been developed in 2011. In 2013, the Edgecam-CAM system, the tool memory of the CNC machines along with the Zoller tool presetting and measuring machine were all linked via the Zoller database. This ensured data consistency, from the CAM system on through to the machine.

All data is saved in TMS Tool Management Solutions and accessed by the CAM system. The measuring regulations are saved in the database next to the tool and are available on the measuring machine. "Professional measurements are made at the push of a button

and the tool data is transferred to the machine," said a Zoller spokesperson. "This ensures consistency and eliminates all sources of error due to manual entry. Multiple storing of data was thus abolished."

The tool data is now saved in the Zoller TMS database according to DIN4000 and is available in the Edgecam CAM system as a precise 3D model. The system programs using real data and outputs the data of those tools along with details on the simulation that was performed. These can then be assembled on the machine in the same way they were simulated. "Particularly

in the case of complex processing methods, it is important to have the true tool data available for programming in order to avoid crashes," said a Lufthansa Technik spokesperson. "In addition, it saves enormously on time."

After the first six months of operation, the error rate had already dropped significantly and employees were given optimal support when looking for possible tools to satisfy individual customer requirements. "Of course, the savings cannot be quantified as in a series production," said Horn. "However, being able to efficiently search for tools is a major benefit. The flexibility for the employees is a big advantage due to continuous changes on the NC machines. Everyone simply downloads their NC program onto the machine. The tools are included and have standardized descriptions. Everyone can orient themselves everywhere, and all that is occasionally needed is a tool retrofit. I use a single set of tool data and it applies to all of the machines. Once I have written a program in Edgecam, then it also applies to all of the machines. All I need to do is change the post-

processor, send the NC program and the process is completed. A big advantage with Edgecam is the simple, subsequent change of already programmed parts to other machines."

Lufthansa-Technik often has to respond to market changes extremely fast. Repairs and unique customer requirements are often unpredictable. High flexibility is necessary, especially to realize the external manufacturing ratio of up to 70%.

"We have created a perspective for the future with the introduction of these systems" is how Pieterwas summarized the benefits of the investment. "This also allows us to actively approach the external market. We are independent of our own assembly components. Operating systems, such as Edgecam and those from Zoller,



Data consistency is provided, from the CAM system through to the machine.

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allow us to respond in a flexible manner - and customers can continue to take off safely in the future."

The Lufthansa hangar in Hamburg employs some 8,000 staff for the maintenance, repairs and interior fitting of aircraft. Over 1,000 employees take care of VIP, business and government aircraft, covering the areas of maintenance, design and production. As a full-service provider of technical inspection, retrofitting, maintenance, overhaul and painting, the company can provide unique solutions for customers' aircraft.

For nearly 70 years Zoller has been a manufacturer of presetting and measuring machines, as well as a provider of technology and system solutions.

For more information contact:



Lufthansa Technik comprises six business areas. One is the area of VIP Services, where production sets high demands on flexibility.

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SIFCO ASC Achieves OHSAS 18001 Certification



SIFCO Applied Surface Concepts (ASC), a supplier of selective plating technology and solutions, has gained the Occupational Health and Safety Assessment Specification (OHSAS) 18001 accreditation. SIFCO ASC has also been recognized with the ISO 14001 environmental management standard and ISO 9001 quality management system. The addition of the OHSAS 18001 shows safer working conditions and improved performance across SIFCO ASC.

Mark Smith, European General Manager of SIFCO ASC, said, "Achieving such a prestigious certification is fantastic for SIFCO ASC. We continue to work hard in providing our employees with an exceptional standard of working conditions. The OHSAS 18001 occupational health and safety recognition confirms that we are fully committed to the welfare of our employees.

"Our people are the most important asset to SIFCO ASC. As a company, we are committed to our health and safety standards and keeping our employees safe is at the forefront of our interests. It is our staff that continues to

drive the company forward with their hard work and excellent attitude. Maintaining their working environment to this high level is important to us."

The OHSAS 18001 standard is an internationally accepted method used to assess and audit occupational health and safety management systems. It was awarded to the Health and Safety Management System of SIFCO ASC following an assessment by the National Quality Assurance (NQA).

Developed by the leading trade and international standards bodies, the OHSAS 18001 identifies and manages occupational health and safety risks, as well as hazards. The assessment process includes staff training and awareness, communication of safety management systems and response to emergency situations.

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