ABERLINK
Innovative Metrology

Case Study


Subcontract Case Study 07/2018

Company: Helix Precision Machining Ltd

Zenith 3

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Based in Hull, East Yorkshire, Helix Precision Machining Ltd was established in August 2003. Having gained an excellent reputation for the quality of its precision machined components and for delivering projects on-time and on-budget, over the past 15 years the company has experienced impressive levels of growth.

Frequent investments in the latest CNC machine tools, design and manufacturing software and advanced inspection aids has enabled Helix Precision to regularly increase its capacity, expand its machining envelope and to broaden its range of competencies. In addition to providing a comprehensive range of CNC machining services, the company is now able to undertake a wide variety of secondary operations resulting in the provision of a true one stop solution to its growing customer base.

Helix Precision's quality management system meets all the relevant requirements of the international quality standard AS9100D and having recently been evaluated against BAE's exacting standards, Helix Precision is now BAE Systems approved.

Encouraged by constantly rising demands for the production of complex, high precision machined components, Helix Precision have recently invested in advanced machine tools, such as a 5 axis Haas VF3 YT BT50, equipped with a Lehman 5 axis trunnion table. To enable the company's inspection department to keep pace with its significant rise in production, a search was recently made for a large, accurate and fast acting CNC Coordinate Measuring Machine (CMM). After considering several models from leading, global metrology companies, an advanced Zenith 3 CMM was purchased from UK company, Aberlink.

Helix Precision Machining Ltd. Director, Lee Sansam explained. "To help prevent non-conformance situations and rework, we apply a company-wide, 'right first time', total quality approach to all of our processes and we make regular strategic investments in the best available inspection aids. We also constantly seek to expand our range of proficiencies and the kind of work we are able to undertake. For instance, we have recently invested in a range of BT50 Heavy duty vertical mills for cutting exotic materials and we are currently machining Zirconium for a major Tier one supplier.

"As we anticipated the expansion of our business and the increase in the machining of complex, accurate components, whist visiting the MACH exhibition in 2016, we witnessed demonstrations of large capacity, precise CNC CMMs from several leading companies. Having had the opportunity to compare the merits of the available machines we agreed that, due to its large capacity, speed of operation and impressive accuracy specification, the Zenith 3 from Aberlink was the perfect CMM for all of our future needs.

"Our output of complex, high precision components recently reached the anticipated high levels. As this began to put strain on our existing inspection resources, we revisited the Aberlink Zenith 3 literature. Although, given the possible progress made by other CMM manufacturers, again we compared the Aberlink CMM with other similar specification machines. Judged against our list of criteria, once again the Zenith 3 CMM came out on top.

"In addition to its impressive accuracy specification and speed of operation, it helped that Aberlink's intuitive software meant that the Zenith 3 was the easiest to use of the CMMs that we considered. Also, unlike other brands, Aberlink provide unlimited free software updates. As the advanced Aberlink machine had many advantages over the other similar specification CMMs, we were surprised to discover that the Zenith 3 was the least expensive of the machines we looked at.

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"Following the CMM's installation and an Aberlink training course, our quality staff quickly mastered our new CMM's operating system. To further exploit our new CMMs automatic CNC inspection routines, our quality personnel will soon be writing part programs for our regularly repeated machining work. We will then be able to instantly recall the relevant program, load a single large component or multiple smaller parts onto the Zenith 3, then start a fully automatic CNC measuring routine. On completion, when required, our new CMM will also generate detailed inspection reports.

"Our Aberlink's Zenith 3 has already proven to be a great success. Not only has our new CMM enabled the rapid, precise measurement of complex components, Aberlink's Zenith 3 CMM has improved our accuracy capability and also significantly speeded-up the throughput of work in our busy Quality Department."

Designed and manufactured by Aberlink, the largest UK owned Coordinate Measuring Machine manufacturer, the large capacity Zenith 3 series consists of 10 machines with XYZ capacities ranging from 1000x1000x600 mm up to 1000x3000x800 mm.

The Zenith 3 CNC CMM is the result of the design evolution of the award winning Aberlink Zenith too CMM range and of more than 25 years of innovative CMM design experience. The machine's bridge and all moving parts are manufactured from advanced, strong yet lightweight materials, the resulting extremely low inertia and optimal acceleration characteristics enable the Zenith 3 to deliver extremely fast inspection times.

Thanks to innovations, such as the use of a wider air bearing separation, that results in greater stiffness and significantly improved accuracy, the first term error for the Zenith 3 is more than a micron better than the popular predecessor.

Although the advanced Aberlink CMM is perfectly suited to use within environmentally controlled inspection departments, it is on the shop floor where the Zenith 3 range's low thermal mass and extremely robust characteristics come to the fore, by enabling the accurate measurement of large components to take place nearer to their point of manufacture.

The impressive hardware of the Zenith 3 is complemented by the range's intuitive Windows based software. A welcome bi-product of any Zenith 3 CMM inspection routine is that a simultaneous picture of the measured component is created in real-time on the operator's computer screen. Dimensions between the measured features, mirroring those that appear on the component drawing, are then picked off as required. In essence Aberlink's 'smart' software represents an intelligent measuring system that is able to automatically recognise and define the various features being measured.

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