



CMM Case Study 11/2019

Company: Vert Rotors

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Vert Rotors  
Axiom too



Operating from a precision technology factory in Edinburgh, award-winning Vert Rotors are the pioneers of the revolutionary Conical Rotary Compressor (CRC) technology.

The innovative CRC technology, the first major innovation in the high pressure compressed air industry for over 40 years, has been integrated into the flagship Vert compressor range. The A100 compressor and the recently unveiled A150, both boast the ability to provide compressed air at market-leading low noise levels from a portable package, whilst still being capable of continuous operation.

With the ability to achieve higher pressures than existing technologies of the same size, the difference with the CRC technology lies its ingenious step of rotating inner and outer rotors. As air travels along the rotors the volume of the chamber reduces, which in turn increases the pressure of the air.

It is this powerful and efficient technology, that found the company winners of the Made in Scotland award (2018) and Innovator of the Year award (2017).

The resulting pressure has a notably low noise signature, which means that Vert compressors are ideal for use in environments where people may be working in close proximity. Vert's primary target application is in laboratories and workshops, and other environments where low noise is a distinct advantage. The compressors are a portable, plug and play solution which can quickly and easily be set up wherever air is required.

Established in 2013, Vert has experienced rapid growth in the last 5 years and has benefitted greatly by bringing all its manufacturing processes in-house.

Nicol Low, Head of Production at Vert explains: "We have design, engineering, manufacturing, assembly and R&D all in one facility. We are able to produce all the parts we require for our compressors ourselves, without relying on subcon services. This enables us to carry out design iterations far faster than was previously possible. In particular, the inner and outer rotors are difficult to machine to the required tolerance, so we need to quickly evolve the manufacturing strategies to get those correct." Due to the design and manufacturing complexity of the Vert technology, there was a real need to ensure manufacturing tolerances were as precise as possible. And so, the decision was made to invest in further, more advanced metrology.

Nicol explains: "The helical and contoured surfaces of the parts we produce are complex and we needed to ensure that machining accuracy was being achieved and maintained. We looked at all sorts of measuring technologies available, scanning, optical, but our initial search for a CMM was driven by a requirement for accuracy and reliability whilst also keeping an eye on price. As we discovered, Aberlink CMMs could meet all the accuracy requirements and are very price competitive."

Following an initial conversation with Aberlink, Vert sent 3 rotor parts to the company's Gloucestershire HQ for testing - 2 parts were known to be out of tolerance and 1 that was removed from a performant compressor. It took only 10 minutes on one of Aberlink's advanced Axiom too CMMs to identify the compliant part.

Nicol comments: "The report data we got back from Aberlink exactly matched the testing we had done ourselves, which was a big thumbs up from us. It was obvious that we could shortcut a lot of the existing manual measurement and lengthy performance testing, save on time and be confident that parts were accurate. It was a pretty easy decision in the end."

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Installed in a temperature-controlled Q&A department the Axiom too CMM since purchased by Vert, has been put to good use, providing rapid, accurate feedback on parts for the CRCs. It has also served a dual purpose; the CMM itself is powered by one of the very same A100 compressors that Vert produce – providing an example of how the Vert compressors can be put to use to power machines quietly within a workshop setting.

Nicol explains how the CMM has proven to be a valuable asset: “The inner CRC rotor is fairly easy to measure but you need a CMM to be able to do so. We conduct a series of peck scans of the surface and then compare that against a 3D model and check that the machining strategies are effective, that the parts are compliant, and that the tool offset is correct.”

“The outer rotor is more complex to measure, and the measurement programs that we create can be a little bit difficult to reproduce, but with Aberlink’s help, we were quickly able to identify the best way to measure this part. Now we can run the program and come back to the Axiom too CMM 10 minutes later for a detailed measurement report.”

“The CMM has proved very reliable and the accuracy of the machine is equally impressive given the price. The Axiom too has been an important machine for our production and has been pretty vital to improve our compressor technology to the point where it is.”

Designed and manufactured by Aberlink, the largest UK owned Coordinate Measuring Machine manufacturer, the Axiom too is the complete inspection system, a turnkey solution to meet the most demanding measurement requirements.

The Axiom too range of CMMs consists of capacities from 640x600x500mm up to 640x1500x500mm and is available either with manual or CNC control. Not only the easiest to use, a major benefit of Aberlink CMMs is just how affordable they are. Aberlink are proud to be the only major metrology manufacturer to supply machines with zero annual software maintenance contracts or subscriptions and, free software updates for the life of the machine. All of this means that the cost of ownership is very low and the shortest return on your investment is possible.

**About Aberlink**

The largest UK owned CMM manufacturer, Aberlink’s comprehensive range includes 40 variants of both CNC and manual CMM. Aberlink CMMs enable the precise measurement of the smallest of components, to parts of over 3 metres long and up to 6 tonnes in weight. Customers can select from a wide range of probing and non-contact measurement options and on-machine fixturing. The company’s wide range of available solutions allows Aberlink to offer high quality CMMs and vision measuring systems to suit all applications and budgets.

Based in Eastcombe, Gloucestershire, Aberlink has established a global reputation for its metrology products which are innovative, easy-to-use and competitively priced.

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