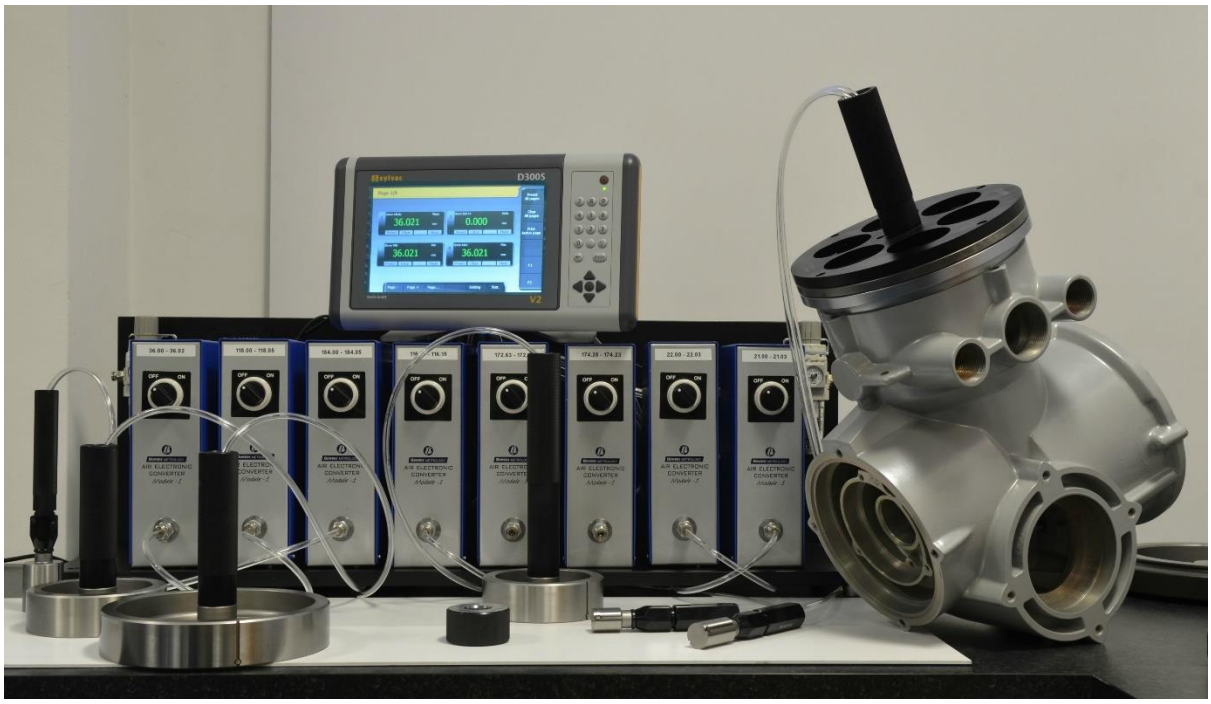
Bowers Group Creates Bespoke Air Gauging System for Aluminium Gearcases

Rotork, the market leading actuator manufacturer and flow control company, works closely with companies in the oil and gas, water and waste water, power, marine, mining, food, pharmaceutical and chemical industries across the globe. Rotork's products and services are used throughout the world to improve process efficiency, assure safety, and protect the environment.



Rotork is a specialist supplier of actuators, adaptions and accessories to the international valve and actuator industry. They provide an extensive range of valve actuators, designed to withstand the challenges of operating valves in harsh environments, including subsea and nuclear. They also provide a complete range of assembly and test services.

Within its range of actuators, Rotork produces a gearcase made from aluminium alloy. Among other features to be inspected on the gearcase are 7 critical diameters, 6 parallel and one taper, ranging in diameter from 21mm to 184mm. The size and form of these features are extremely important because when they are fitted with their mating part, a flame proof joint is formed.

Each of these diameters is required to be meticulously checked for roundness and diameter, with tolerances varying between 0.020mm and 0.050mm. The results from each measurement are then collated and recorded within Rotork's statistical process control (SPC) system.

Rotork had been using a contact gauging method of measurement for many years. However, due to the abrasive nature of the material and the tendency for aluminium alloy to "cold weld" itself to any part that it comes into contact with, Rotork approached Bowers Group with a view to discuss the merits of changing over to a "non-contact" gauging method for these parts.

Air gauging is a measuring system that makes no physical contact with the component at the measurement point. Bowers Group has many years of experience in producing air gauges, and in

January 2015 invited Rotork and their associates to a meeting at their Camberley demonstration centre to discuss the merits of moving to a non-contact air gauging solution.

Rotork has made substantial investments over the years in the Sylvac D300s Digital displays, and understandably wanted to retain this equipment as the preferred digital display for the measured results. At that time, Bowers did not have an air gauge system that could be used in conjunction with the Sylvac D300s display, and so the process began to develop such a bespoke solution.

In conjunction with a current air gauge supplier, Bowers put a proposal forward for an 8 channel air gauging station that incorporated all of the requirements stipulated by Rotork. This system would be capable of linking in with the Sylvac D300s Digital displays, as requested. Early testing of the system showed the measuring results to be extremely stable, and the system proved easy to calibrate and very simple to use.

Based on these encouraging early results, Rotork placed an order for two identical systems in July 2015, and the manufacturing process began. The manufacturing process was completed in late October 2015 and the first of the two systems was delivered to HPC (a key machining partner to Rotork) for testing on the Series 2 components.

Paul Dennett, Quality Engineer at HPC said: “The results are looking very good, even on the diameter 36.0mm bore which only has a 0.020mm tolerance. I must also say that the gauging is much more shop floor friendly than the old contact style gauges.”

In December 2015, Rotork placed a further order for a 10 channel system based on the same principle. Bowers Group are expecting to have this completed by the end of April 2016.