PROGRESS THROUGH COLLABORATION

In an age where customer relationships drive businesses to change, Hexagon Manufacturing Intelligence India's Managing Director, **Anup Verma**, and Regional Manager, **C.S. Srivatsa**, explore how the company's long relationship with Hindustan Aeronautics Limited (HAL) has left a lasting impression on both businesses.

Business success is related to finding the right combination of people, processes and tools. At Hexagon Manufacturing Intelligence, we place this knowledge right at the core of our work, taking a customer-centric approach and working smart for success. As a strategic partner to many big businesses around the world, we pride ourselves on delivering above and beyond the typical scope of work.

These characteristics have been acknowledged on many occasions during our long association with Hindustan Aeronautics Limited (HAL). The company's robust technical requirements and stringent online tendering selected us as the supplier who could match their requirements for absolute and accurate measurements, within the shortest turnaround time. Both companies have grown over the period we have worked together, and from the Hexagon side it's fair to say this association has helped us scale new heights – we have evolved from being just a supplier to a valued partner by understanding HAL's challenges and proactively suggesting solutions.

Creating a Legacy in Every Relationship

HAL has been a customer for us since 1988 and today it is one of our biggest customers in APAC, as well as a strategic collaborator. Before working with Hexagon, HAL followed first principle methods by using basic measuring instruments, profile projectors, blue matching etc. for its aircraft manufacturing activities.

Hexagon has helped develop HAL's metrology infrastructure so that quality control is integrated into every aspect of day-to-day operations. For an aircraft builder, it is vital that actual measured values, which can be used to both ensure quality and inform process decisions, are delivered every time. Chief Resident Inspectors (CRI) from the Air Force and DGQI witness every component measurement, so it's imperative for HAL to maintain robust processes that inspire customer confidence in its manufacturing capabilities.

Diverse and Collaborative Solutions

One of the key advantages that Hexagon can offer is the sheer range and diversity of the product portfolio – something that HAL has embraced fully to build customised solutions for each department and division of the company. Hexagon's GLOBAL CMMs are being used at the LCA Division, HAL Sukoi Engine Division in Koraput, HAL Engine Division in Bangalore and at the HAL ARDC Division. A DEA ALPHA gantry CMM is situated at the CMD Division and an ultra-high accuracy Leitz Cygnus CMM (a forerunner to the Leitz PMM-C model) at HAL Helicopter Division. For large-volume measurements, Leica Absolute Tracker range laser trackers are used extensively in the Aircraft, Helicopters, ARDC and LCA Divisions, while a specially-customised DEA LAMBDA with a measurement volume of 9 m x 4 m x 5 m, believed to be one of Asia's biggest CMMs, is in operation at the Aerospace Division in Bangalore.

In two particularly successful installations, Hexagon CMMs are interfaced with 5-axis machines. The components are picked up by robots from the machine, placed on the CMM and measured so that feedback can be provided to the machine for further correction or processing.

Hexagon machines are also used for inspection in HAL's Engine division where critical aero engine NGVs are machined, while HAL Aerospace utilises them after machining rocket parts for satellite launching vehicles. In one of its most prestigious projects, the Tejas light combat aircraft, HAL's LCA division uses Hexagon equipment to measure the machined body parts while the helicopter division uses it extensively for all types of gear and worm measurements for helicopters. At HAL Helicopters, the Leitz Cygnus machine is used to take Gleason nominals and the gears are measured without using the rotary table. In what is thought to be a first for metrology in India, our CMMs are interfaced with the manufacturing machines for automatic feedback.

Interestingly, HAL utilises one of the more specialised applications of the ROMER Absolute Arm portable CMM, the ability to measure pipes and send feedback to CNC bending machines. These arms are currently used in HAL Aircrafts and the HAL Engine Division. Almost all the departments of HAL also use TESA precision measuring instruments ranging from hand tools to height gauges.

Of course, in the aerospace industry, data must be stored for a minimum period of 25 years to ensure traceability, and our software-centric solutions are designed to make this process easier for HAL. While most of the machines work with PC-DMIS CAD++ software, two of the ARDC division installations use QUINDOS software.

Partnerships Driving Change

With change being constant and markets and technologies evolving, businesses have to be agile. Our recent transition from Hexagon Metrology to Hexagon Manufacturing Intelligence reflects the growing diversity of our capabilities – all of which is driven by demanding customers like HAL. Being associated with such businesses is not only a great privilege and achievement, but also an ideal platform to develop our technology and position ourselves to help more customers. ■