

Two GTMA suppliers have been instrumental in meeting the high precision requirements of the accurate and efficient calibration of jigs and fixtures in a £43 million factory of global agricultural and construction machinery company, JCB.



The jigs and fixtures are a critical part of the facility in Staffordshire which is described as one of the world's most modern manufacturing plants and one of the biggest single investments in JCB's 70-year history. The company, begun by one man in a garage in Uttoxeter, now has an 11,000-strong workforce in 22 plants worldwide.

Its JCB Heavy Products factory designs and manufactures the JCB range of tracked and wheeled excavators, weighing from seven to 46 tonnes, and can produce 8,000 machines.

QUALITY CONTROL

Quality at JCB's Heavy Products factory has been taken to new heights with help from two GTMA suppliers.

It has taken quality to new heights and part of the investment has been in new machining centres with extremely accurate jigs and fixtures, which put JCB in direct control of component quality. The centres can self-position and 'find' components to maximise machine precision.

To ensure quality, the plant administers a stringent policy of regular jig and fixture calibration. They play such a critical role, says Manufacturing Engineering Manager Andy Young, that it was decided

“to establish a jig and fixture calibration regime with calibration time intervals based on the perceived requirements of each individual piece of equipment.”

The supplier contracted to implement the procedures was GTMA’s Manchester Metrology which uses fellow member FARO’s Vantage Laser Tracker. This has outstanding accuracy and long distance measurement so is ideal as some of the fabrications can be seven metres long.

The system generates detailed traceable certificates and on rare occasions when a drift from nominal position is highlighted relevant steps can be taken to re-calibrate the fixture.

As well as calibration procedures the Laser Tracker has, said Andy Young, “proved invaluable in determining the accuracy of our first-off prototypes prior to sign-off for manufacture. Also, the advanced FARO equipment is used for generating initial sample reports on all new sub-assemblies.”

Manchester Metrology owner Paul Bulman said: “As the...Laser Tracker is portable and ideal for large scale measuring, we use this very accurate equipment for our on-site work at JCB. Having used the tracker and FARO CAM2 Measure 10 software to measure and capture the dimensions of critical features on a jig or fixture, we are then able to compare the data to CAD models and when necessary identify areas that could cause concern.

“In the same way, when involved in checking prototype fabricated parts or sub-assemblies, we are able to judge the gathered data against engineering drawings.”