

# WORKING WONDERS

A subcontractor specialising in precision engineering believes it is essential to invest in the latest technology to meet the high standards required by manufacturers

Nowadays, most successful UK manufacturers are working in quality-driven industries. For work that doesn't justify investing in specialised technology and training, or where in-house capacity is insufficient, subcontracting is required; but manufacturers must be confident that subcontractors have the same high standards that they do. All parts must be of high-quality material and made to precise specifications by engineers who understand both production and inspection.

Everything that goes into making an aircraft or a car, for example, from the screws to the engine parts, has to meet stringent quality controls for safety. If something goes wrong in the air, under water or at high speed, it can be very costly and even fatal. Most manufacturing companies use quality certificates as a guide. Many will expect their subcontractors to meet ISO 9001:2008 or an equivalent industry standard, such as AS9100 in aerospace. While these are a good starting point, where high quality is essential it is normal for a company selecting a subcontractor to carry out an audit to confirm the subcontractor meets its specific requirements. Its standards may be higher than the industry baseline, or the subcontractor's standards may have slipped since attaining the certification.

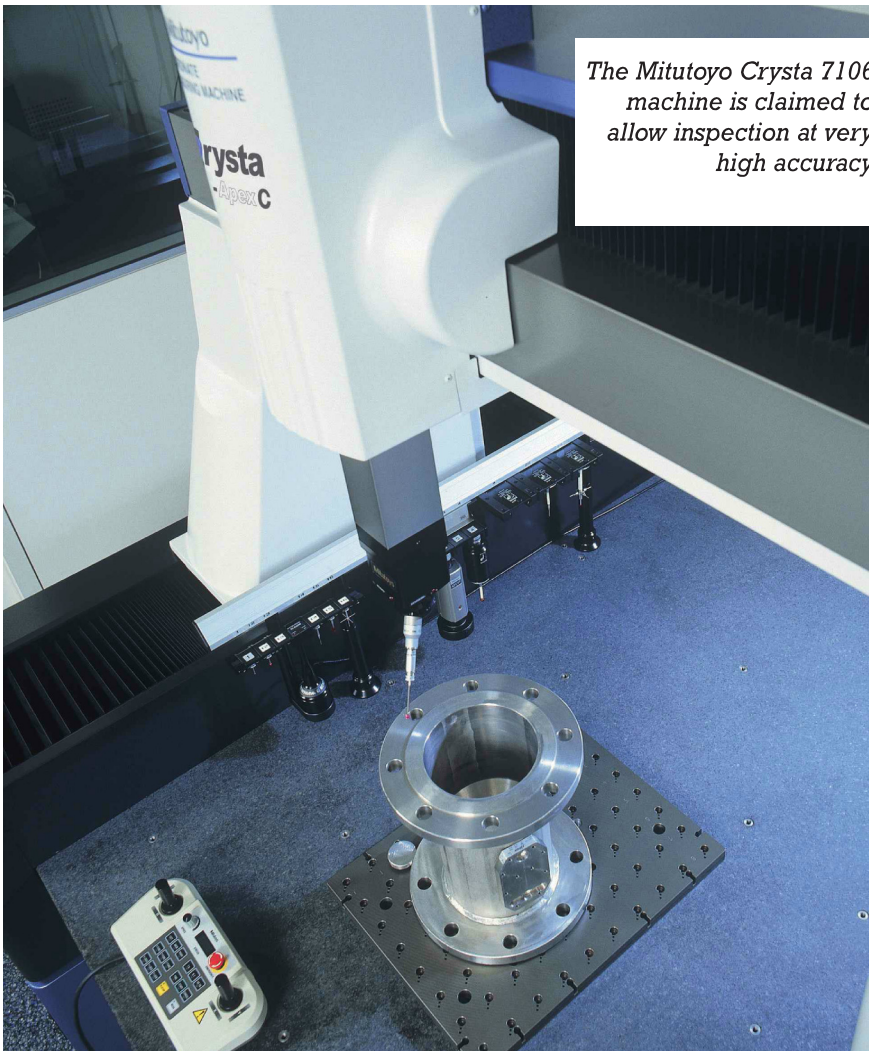
## 'Individual approach'

Dawson Precision Components (DPC) is precision engineering company based in Manchester. Work undertaken ranges from the pins that hold surgical instruments together to carbon rings for satellites and cockpit screws for fighter jets. DPC holds ISO 9001 but feels the individual approach is more important in reassuring manufacturers. 'ISO 9001 gives our customers assurance and for many jobs simply holding it is good enough,' said sales director Paul Dawson. 'But for our most precise jobs, customers rely upon their own audit to reassure themselves that we can work to their standards. We find most people who are choosing a subcontractor care about the quality you can deliver in reality, and this goes far beyond what it says on a certificate.'

Managing director Simon Dawson said he believes that a commitment to quality, and putting up the money to underpin this commitment, is critical. 'There's no secret formula to being a good subcontractor; it's about investing in the latest equipment and training staff and meeting industry expectations,' he explained. 'It's about showing the industry you have the capability to do the job, and then doing it to the standard they expect.'

Paul Dawson provided a list of rules for identifying a subcontractor: 'Search the web, read the manufacturing press and talk to people in the industry. Once you've identified a candidate, call their customers and check that they would recommend them.' Manufacturers then need to satisfy themselves that the subcontractor is up to the job. Even when subcontractors have quality standards, it is usually necessary to carry out an audit to confirm they meet specific requirements.

*The Mitutoyo Crysta 7106 machine is claimed to allow inspection at very high accuracy*



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He added: 'Being audited by high-end manufacturing companies is like undergoing ISO 9001 all over again. Companies go through all our calibration records to make sure all equipment is maintained and calibrated at regular intervals to reassure themselves that the machinery can guarantee the levels of accuracy they require.' Most companies also check parts against their own equipment and compare reports to ensure they get the same reading. 'This makes good sense; it's good for both parties to start out by agreeing that their machines agree and saves a lot of time and money later on if they don't.'

Carrying out an audit doesn't just mean checking calibrations; it is also about assuring yourself that the subcontractor has machines and staff that can do the job. 'We regularly invest in the latest technology, such as Goodway CNC lathes and Citizen L20s,' said Simon Dawson. 'If we didn't, it would hinder our ability to do the job. It's not just about showing calibration records are up to scratch — it would be no good if we couldn't do work to the highest quality because of substandard, but well-calibrated, machinery.'

For example, DPC has invested in a Mitutoyo Crysta 7106 co-ordinate measuring machine (CMM). This allows inspection at very high accuracies, enabling the levels of assurance on material quality that give suitable confidence to clients with high expectations. 'We were in a situation where we had the production machinery and the skills to make the parts, but not the inspection capabilities to prove we could do it,' said Paul Dawson. 'Such investments

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**SIMON DAWSON, DPC**

represent a big outlay for a company of our size, but we are confident that the added value this will deliver to customers will justify the cost.'

Such advanced machinery requires considerable expertise to set up, program and operate. Manufacturers about to make a big order should take time to speak to engineers on the shop floor and ensure they understand the machines and can check drawings and advise on the best approach. In addition, machines are not infallible and having staff who understand not just how to operate the machine but the issues around it is just as important as having the right technology. In extreme cases, this makes the difference between a job being completed smoothly and quickly or going terribly wrong.

**Wrong turn**

Paul Dawson recalls a time when a customer's CMM disagreed with DPC's reading; it was then discovered that the customer's measuring shaft had been turned so it was moving the part it was measuring. After DPC had checked several times and confirmed with a micrometer, it could confirm the accuracy of its own machine and identify an error with the customer's, saving the customer a lot of trouble with its own production process and winning DPC the work.

Underpinning this whole process is traceability. AS9100, for example, requires product identification throughout the product's lifecycle, high-level inspection and testing procedures and documentation. Other industries have similar standards, and even where

they don't, most companies expect such standards. Whether the subcontractor holds a particular standard or not, it is up to the person placing the order to ensure the quality required by his or her company is met.

This means guarantees through certificates of conformity, material test certification, well-maintained traceable records and bespoke inspection reports. 'Even if we've made a part 50 times, batches are still bagged individually and traceable to the materials batch,' said Paul Dawson. If there are problems with the finished product, traceable records can be easily accessed and problems up the chain identified.

This doesn't just apply to a company's subcontractors but to its suppliers too. A subcontractor may have an excellent reputation for larger parts, but not so much for smaller ones, and may need to use its own subcontractors to fill gaps in expertise. This is not a problem, but it's harder to audit. Manufacturers need to be sure that subcontractors meet appropriate standards (whether they hold certificates or not) and that they demand the same of their suppliers. They need to be able to see that the requisite certificates are provided from start to finish, whoever is involved.

By ensuring a subcontractor can demonstrate the right expertise, equipment and processes, manufacturers can be confident the parts they need are delivered quickly and to specification — all of which provides confidence to their own customers, delivering value further down the chain in terms of increased sales and ultimately safer, more efficient end products.

*Quality is critical for products such as mass spectrometer parts and assemblies*

