

Production of turbine blades accelerated



A Fine Forge CMM operator setting up inspection of a turbine blade on the LK Metrology ALTERA CMM using the continuous scanning probe.



We are now exploring new possibilities in the supply of pipe fittings and heavy truck components. Laser and tactile scanning is a phenomenal advantage.

Vinod Reddy, Managing Director

At its Hyderabad facility, industry leader in the forging of steel turbine blades in India, Fine Forge, has installed a multi-sensor coordinate measuring machine (CMM) from British manufacturer LK Metrology. The tactile probing and laser scanning system, used for quality assurance (QA) and reverse engineering, has helped to increase productivity and support the expansion of Fine Forge's product portfolio.

Operating primarily in the power generation sector, the ISO 9001:2000-certified company was established in 1989 to reduce the need to import stainless steel blades for steam turbines and replace them with locally manufactured components, in response to a push by the Indian authorities. Since that time, the firm has diversified into other industries, such as supplying steel forgings to the automotive sector.

Multi-sensor CMM combines high accuracy and throughput

Occupying a large percentage of Fine Forge's production, the turbine blades are made from X20, X10 and X22 stainless steels. The company manufactures up to 95 types of moving blade and 24 types of guide blade, all of which have different, complex geometries. A system that could simplify

3D scanning of the wide range of varying shapes and sizes was required.

Fine Forge previously used manual and destructive measurement, for which data collection methods were particularly time-consuming. The company wanted to replace its manual methods and was keen to avoid the waste of expensive materials and parts. It was also looking to introduce reverse engineering capabilities to help slash computer-aided design turnaround times.

Several potential CMM suppliers were asked to offer a fast, accurate, multi-sensor system that could facilitate both QA and reverse engineering. LK Metrology proposed the fullest and most comprehensive solution.

Increased productivity, better insight and new possibilities

The multi-sensor ALTERA CMM with LK's CAMIO software combines touch probing, SP25 continuous scanning and laser scanning, providing Fine Forge with a complete inspection toolbox.

In terms of accuracy, the Nikon LC15Dx laser head is closing the gap with tactile inspection systems. It delivers the most accurate results possible for a

laser scanner, achieving a probing error of just 1.9 μm . The SP25 is an ideal partner for it.

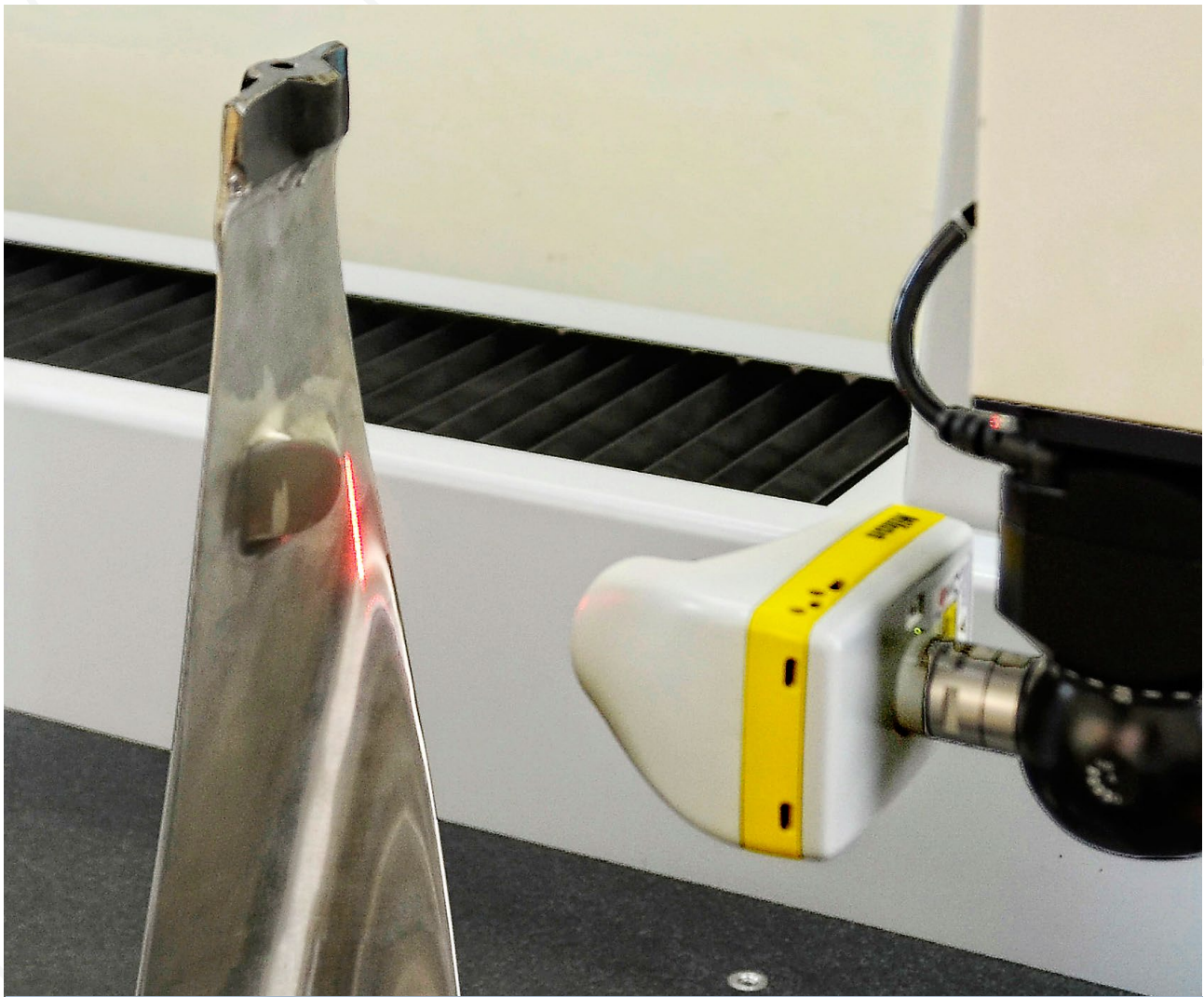
For difficult-to-access areas such as internal features and diameters, or if there are only a few sections to measure, the tactile SP25 is very functional. In CAMIO, changing between the laser scanner and tactile probes is completed with just a few clicks of a mouse.

After the arrival of the LK Metrology system, the team at Fine Forge expressed its satisfaction with the investment and the opportunities introduced. The increase in blade productivity since the CMM installation has helped the company to look for

other business opportunities and expand into different sectors, which has been advantageous as power industry work has now peaked.

Managing director Vinod Reddy explained that the company is now exploring new possibilities in the supply of pipe fittings and heavy truck components and described laser and tactile scanning as a “phenomenal advantage”.

He added that many pipe fitting manufacturers do not have drawings of their parts, but the introduction of the CMM with its reverse engineering capabilities made entering this market possible.



Laser scanning of a turbine blade at Fine Forge on the LK ALTERA CMM

About LK Metrology

LK Metrology is renowned for innovative CMM hardware and software solutions. The company's metrology products are used worldwide to control and improve the quality of manufactured components. Its precision technology underpins the process chain from design, development, production and assembly through to quality assurance in global industries such as automotive, aerospace, defence, motorsport, energy, medical and contract inspection.

Established in England in 1963, LK Metrology has an impressive heritage in metrology dating back to the birth of CMM technology. Founded by CMM pioneer Norman Key and his father-in-law Jim Lowther, LK Metrology is credited with many of the CMM industry's firsts including the first bridge-type design, first OEM to integrate computers, first to use a touch trigger probe, first to develop inspection software, first to use all air bearings and granite guideways, first to use carbon fibre composite spindles, first to use microprocessor-controlled drive systems, first to produce a truly thermally stable CMM and first to produce a high-accuracy horizontal-spindle CMM.

In 2018, LK Metrology was relaunched as an independent CMM manufacturer after several years as a division of Nikon Metrology. Headquartered in the UK, LK's CMM development and production are at the company's facility in Castle Donington. Sales and support offices are located in the UK, North America, Belgium, France, Germany, Italy and China, supplemented by a worldwide distributor network.