# Accelerated inspection cycles help Quality Needles recover investment cost within one year.

The Indian based worldwide needle exporter, Quality Needles is using the fast, high accuracy Nikon Metrology LC15Dx CMM laser scanner for inspection of in-house manufactured production tools. With the advanced inspection equipment, Quality Needles recover costs from the initial out lay within one year.

Incorporated in 1984, Quality Needles (Noida, India) is one of the world's leading medical needle producers and specializes in the manufacture of surgical suture needles. High standards and strict quality assurance are of the utmost importance, as the needles need to conform to worldwide quality standards such as to IS-9165: Bureau of Indian Standards, German Vornorm DIN-13170 and more. It's not just a large quantity of needles produced, but a wide variety also, with over 2,500 different types and sizes of regular eye, spring eye, drilled end and atraumatic needles. The company currently exports 80 % of its production across Europe, Asia, the Americas and Africa for use in a whole scope of procedures from ophthalmic to cardio-vascular surgery.

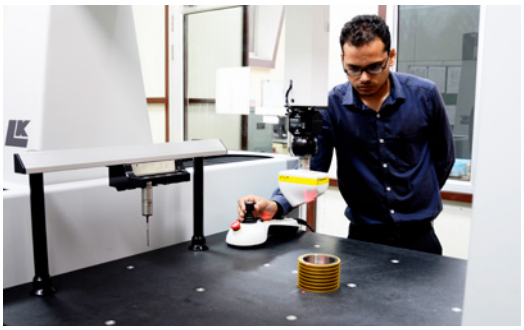
To meet the quality standards it conforms to, Quality Needles excels in its quality control processes. For the production of the needles, there are tests for sharpness, stiffness, ductility and many others, however it's not just the quality of the needle that is monitored so closely. The success at Quality Needles is largely attributed to the in-house development of its own equipment, tools and technology. For some of the vital machining components in the production of these needles, other tooling suppliers were unable to guarantee the levels of quality required or were simply too costly. It was discovered that for Quality Needles to produce these components in-house would lead to significant savings. Whilst the production of these components wasn't an issue, a well-trusted, comprehensive and accurate quality assurance method needed to be introduced. Quality Needles turned to Nikon Metrology to offer a solution that could not only increase productivity, but introduce an unparalleled level of accuracy.

## Increased level of production requires a fast and accurate solution.

Anchan Mago, the General Manager at Quality Needles explains how he discovered that vast savings could be made by manufacturing the production components with the in-house facilities rather than using expensive imports. The feed wheel, made from EN-31 carbon alloy steel, is a very important part in the manufacturing process at

*The LC15Dx offers a superior insight, which results in the ability to manufacture complicated parts much more easily.*

*Anchan Mago – GM at Quality Needles.*



The high resolution LC15Dx accurately measures the narrow grooves of the feed wheel.

Quality Needles. It is used to transport needles from station to station throughout the manufacturing process. It features grooves that vary in size, typically between 0.20 mm and 0.90 mm to carry the needles. Whilst it is a basic component in all the machines, its accuracy and concentricity is very important for functionality of the machines, so to be in full control of the component dimensional quality is paramount.

Having recently upgraded the production facilities, Quality Needles has seen an enormous increase in its production capabilities. Since the introduction of the new 5-axis CNC machine center, the previous manual measurement methods couldn't cope with the increased throughput. Callipers, micrometres and other manual techniques were previously used to monitor the quality of these pivotal components. The higher level of productivity meant that they required a faster measurement method. Not only were the manual methods considerably slow, but due to operator handling, they offered limited repeatability.

## A rigorous benchmark for selecting the laser scanner.

Quality Needles needed a solution that was accurate and reliable enough to check the profile, straightness, dimensions and concentricity of these vital components but also fast enough to deal with the pressure of high productivity requirements. Prior to searching for the solution, criteria were outlined which consisted of achieving accurate surface measurements and profiles of parts, as well as speed to complement the improved production capacity of the new CNC machines. A feed wheel like the one pictured was used as a test piece to determine if the laser scanners were capable of measuring the surfaces and features required.

A variety of other CMM manufacturers were consulted but it was found that no solution could meet the tough requirements other than the Nikon Metrology LC15Dx. The angles of the grooves in the feed wheel were too tight for the other laser scanners to measure and grooves often weren't detected, however for the LC15Dx this wasn't an issue.

With the unique ESP3 technology and a probing error of just 1.9 µm (comparable to tactile probing accuracy), the LC15Dx offers the best accuracy for a laser scanner. The Enhanced Sensor Performance (ESP3) technology maintains accuracy, speed and data quality by intelligently adapting the laser settings for each measured point in real-time, necessary to cope with the glossy metals and varying part reflections. The fact that Nikon offered the perfect pair; the ALTERA and LC15Dx to introduce a multi-sensor system left Quality Needles with no doubt about which system to select. The out coming point clouds are compared to original CAD models and colored deviation plots indicate where errors occur. Anchan explained that the superior insight into product conformity helps Quality Needles to manufacture the intricate components with ease and speed. Beside the LC15Dx , the systems is also equipped with an SP25 scanning probe, mainly to measure inner diameters of the wheels.

## An increase in productivity and quality output have helped to recover costs within a year.

In less than a year, the original outlay for the CMM and laser scanner had been recovered with the vast increase in overall productivity and product quality, enabling a much higher work capacity. Anchan was very complementary of the Nikon solution and outlined the main short term benefits they have profited from already. With a part that was previously difficult to measure, it was a big step forward to be able to inspect it, but the LC15Dx does so with such ease, Quality Needles has seen its productivity rise significantly. Anchan states that Quality Needles has seen an increase in productivity by 3.10 % and the overall quality performance indicators have also improved by 1.6 %. Considering that Quality Needles work on 110 million cycles per month using the wheels in question, these figures are quite appreciable.