



ITM Engineering Services

Flexible and high precision 3D measurement

ITM in Gleisdorf (Austria) needs top-class 3D measurement technology in order to optimise manufacturing processes. Flexibility to accommodate various measurement processes and, at the same time, high precision and process reliability are key requirements to serve their customers. The Nikon 3D scanners, software and other components completely fulfill the challenging requirements of the engineering service provider.

"As a service provider, we are involved in development, design and 3D metrology. Through our comprehensive know-how in the engineering of operational equipment and measuring systems, we are constructing production plants for, among others, automotive subcontractors as well as for manufacturers of gas and steam turbines. In this regard, our focus lies on the metrology assisted process optimisation," explains Christian Vidic. As the owner, he manages ITM's business in Austrian Gleisdorf. He founded his company in 2004 after previously having worked as a designer at a tool machine manufacturer. ITM now employs seven highly-qualified experts. The employees measure and test equipment and prototype

parts by commission order. Moreover, they develop and realise automated inline measurement solutions which serve to optimise manufacturing processes and/or improve process reliability.

The specialists at ITM have, for example, designed a special machine for drilling and milling bodywork sections made of aluminium. The customised integrated measurement technology adjusts the machining process adaptively. This increases the precision and process reliability substantially. The specialists in Gleisdorf have realised similar devices and special machines for automotive applications such as the processing of cylinder head, gear and turbocharger turbine wheels. In another project which concerned the measurement of steam turbine shafts fitted completely with blades, ITM successfully conceived and realised the entire measurement process including the measurement strategy, the required equipment, and the measurements.

"In order to be able to render these comprehensive engineering services we require particularly top-class and, at the same time, flexible measurement technology," explains Mr. Vidic and continues: "During the planning and design process, we must repeatedly measure prototypes and test various measurement strategies in order to be able to respectively select the optimal solution for the integrated measurement technology."



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Christian Vidic – owner of ITM



Flexible measurement tools to serve a wide range of applications

During the last year, ITM invested in two coordinate measurement machines (CMM) and other measurement equipment. This includes, among others, measurement arms and optical scanners. In addition to the measurement of very large workpieces, the specialists in Geisdorf also use this for reverse engineering, thus tracing back 3D measurement data from a measured component into the design data in the 3D CAD system.

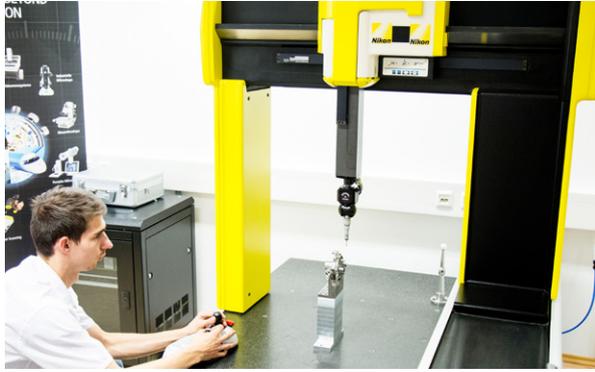
In this regard, Mr. Vidic prescribes special requirements particularly for the procured coordinate measurement machines. They must be multi-sensor enabled to alternately conduct touch-trigger measurements as well as 3D touch trigger and optical scans. Following thorough market research the company opted for a CMM from Nikon (LK V HA 15.10.8). On this system, the Gleisdorf metrologists are capable of 3D tactile scanning at very high speeds using a Renishaw REVO probehead. Today, ITM is the only measurement technology company in Austria which offers this advanced technology. "Another advantage is that the Nikon CMM can be flexibly used as the Nikon controller enables the use of software from various manufacturers. As such we profit, firstly, from the performance advantages of the installed software; secondly, we adapt flexibly to the respective measurement requirements of our customers. As a universal service provider with customers from many diverse industries, this is a critically-important factor for us," explains Vidic. Based upon the application, ITM works alternately with diverse software applications; for example, from the manufacturers Renishaw (Modus) and Nikon (CMM-Manager, CAMIO) respectively in conjunction with the LK V HA CMM.



■ Cross Scanner XC65Dx on the retrofitted DEA CMM

Retrofit boosts CMM performance

Based upon the impressive advantages, Vidic ultimately chose to comprehensively retrofit an existing CMM from the manufacturer DEA (Hexagon) with controller and components from Nikon in order to obtain state-of-the-art technology. "In particular, during the planning and implementation of the technical updates, the specialists at Nikon have always supported us upon a partnership basis", he reports. ITM received the optimally suited equipment within a very



■ The DEA CMM was retrofitted with Nikon's components and thus state-of-the-art technology was obtained.



■ The REVO probe enables 3D contact scanning at very high speeds without any problems.

short period of time. The CMM update was executed in a short time with great expertise. The investment costs remained moderate, and the CMM retrofit quickly provided return on investment.

A CMM retrofit produces numerous advantages. The CMM's acceleration and positioning – now with drives from Nikon – is enhanced significantly. Moreover, the controller ensures that ITM can also use diverse measurement technology and metrology software on this CMM. Thus, the Gleisdorf engineers have another top-performance, multi-sensor CMM for touch-trigger probing, contact and optical scanning technology. For the scanning applications they use the digital Nikon XC65Dx laser scanner. Mr. Vidic: "Laser scanners from Nikon offer great accuracy, speed and process reliability. Because they automatically calibrate, they work reliably and quickly as well as independently of the surfaces for the components to be scanned. Regardless of whether they are on shiny, strongly-reflecting or black, matted surfaces, Nikon laser scanners detect even the smallest geometric details without any problems."

Multi-sensor ready

Particularly in conjunction with Nikon's multi-sensor software CAMIO, various probes and 3D laser scanners can be exchanged easily on the CMM. The CAMIO software optimises the cost-intensive use of the CMM in various ways. Inspection programmes

can be created in advance offline from a CAD model. The software automatically generates paths for scanning complex surfaces. During scanning, it provides high speeds and short measurement times. Measurement results can be directly compared with the 3D CAD data that can be imported from diverse 3D CAD packages. For the output of measurement data, countless interfaces and a broad range of common data and file formats are provided, thus offering a reliable connection to the measurement and evaluation software of other manufacturers.

Owing to the high degree of flexibility, there are unlimited growth opportunities for ITM. The company is in any case well-positioned for successfully implementing its know-how, including in the future, in countless diverse industries and production companies. Mr. Vidic summarises his satisfaction with Nikon: "Measurement technology from Nikon is flexible and universal. It has proven itself successfully to us. In addition, it is particularly cost-effective. The experts from Nikon also support us upon a partnership basis, competently, throughout the entire range of 3D measurement technology."

Another step towards an even more intensive cooperation with Nikon Metrology was thus only logical for Vidic: For interested parties in Austria, ITM in Gleisdorf has been the exclusive sales partner for Nikon's measurement technology since 2014.