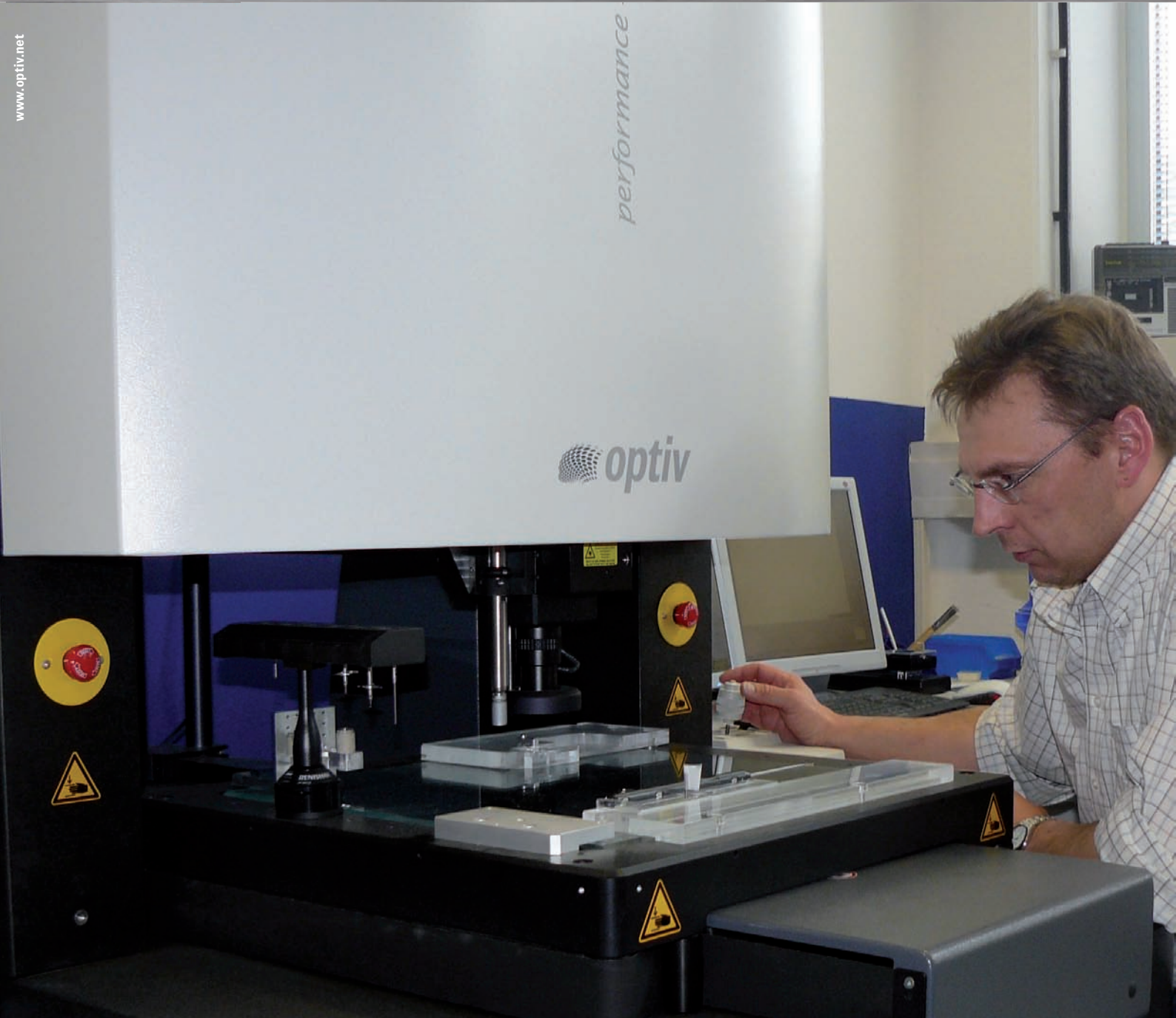




Case Study Hitega Präzisionsmechanik
Watertight records

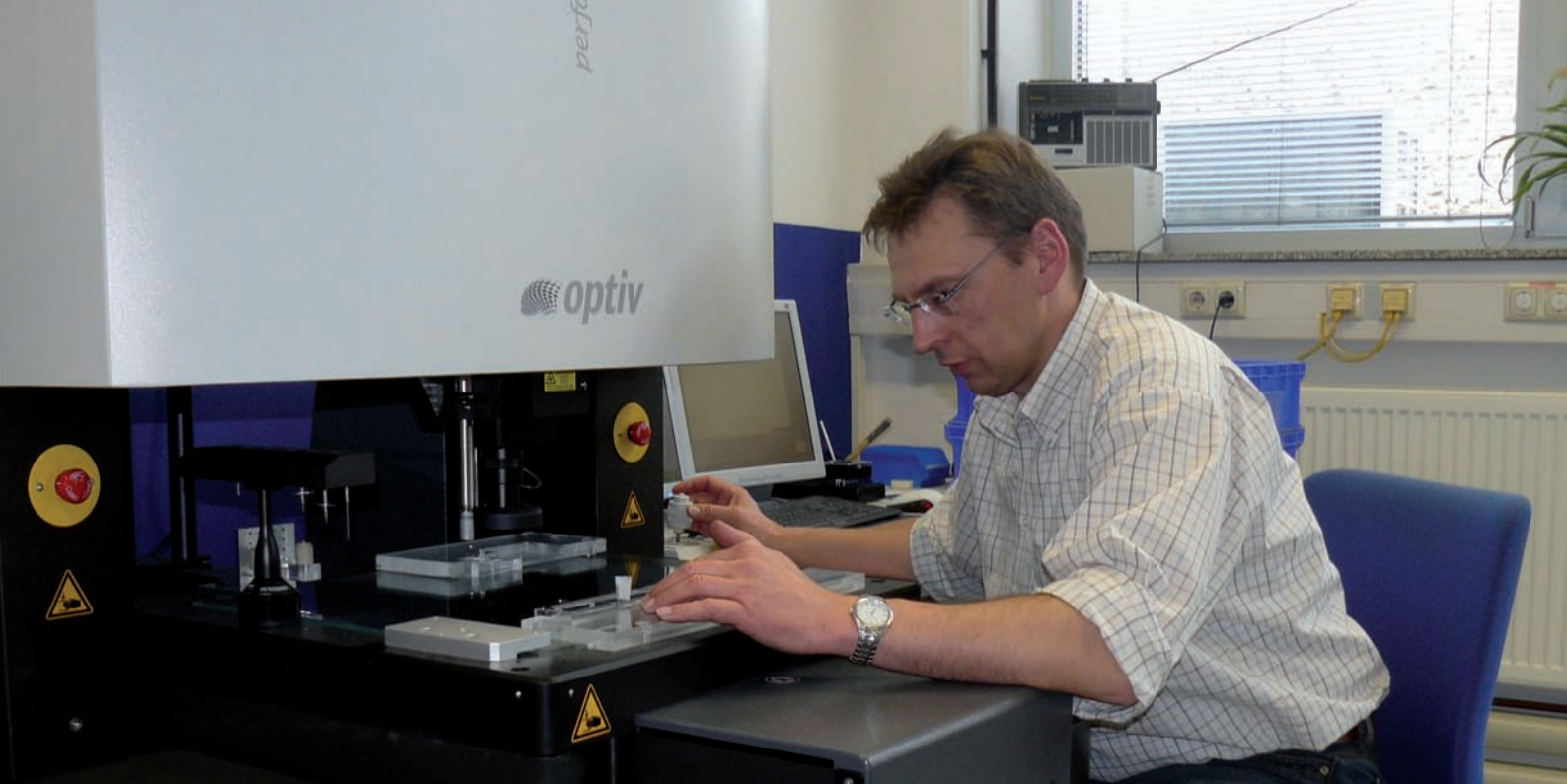


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Precise, compact and somewhat special. The perfect description of a Hitega product. The company from Gangkofen in Lower Bavaria has established itself as a precision engineering service provider. Various optical, tactile and multisensor measuring systems are essential to the success of the Hitega team. Not without good reason, the company has invested in top-class measuring equipment: In particular, its customers in the healthcare and biomedical engineering sectors require 100% inspections and watertight, fully comprehensive documentation of every single stage of the process.

Precision is our passion. Such is the company's claim. That is obvious when taken on a tour of the company. Kaizen charts everywhere. A spotlessly clean production hall. Shiny machining centres representing the state-of-the-art, as far as the eye can see. „At Hitega we work in a field of absolute precision," says Managing Director Michael Herre. „We have made a name for ourselves in the single and small batch part production of high-precision machined components, prototype construction, assembly and fabrication engineering mainly for the biomedical engineering, semiconductor and appliance industries."

Materials such as aluminium, stainless steel, technical plastics and magnesium are processed at Gangkofen. Hitega relies completely on its know-how in the fields of assembly and metrology. As the focus is on assembly and the associated metrology, Hitega has invested strongly in these areas, particularly in its equipment and employee training. „Metrology is part of our core business," says Herre. Three multisensor systems supplied by Hexagon Metrology are used for quality assurance at Hitega. Two of the systems have a measurement range of 400 x 400 x 200 mm, the third handles a measurement volume of 600 x 600 x 200 mm. Armed only with callipers and a micrometer, Hitega would not have progressed very

far. The parts are too complex and the requirements of the customers too high.

Flexible multisensor technology

Martin Ebner, production manager at Hitega, explains: „Everything has become increasingly complex over recent years. We receive parts, for example spinal implants, which have form and position tolerances here, there and everywhere, all of which have to be checked. With one of these implants, we have to deal with form and position tolerances on three holes using the maximum material principle related to three datums. Screws are inserted into these holes later to attach the implant to the bone structure." Tolerances on the various features are usually of the order of hundredths of a millimetre and in most cases are checked against the CAD model. Hitega employs optical and tactile measurement procedures in order to capture all the features. By using multisensor measuring systems from Hexagon Metrology, Hitega can do all this in one clamping operation. All three machines are fitted with high-precision optical and tactile probe systems as well as laser sensors.

Traceability from A to Z

However, multisensor machines on their own are not enough. Just as important is complete documentation. The vision software package from Hexagon Metrology

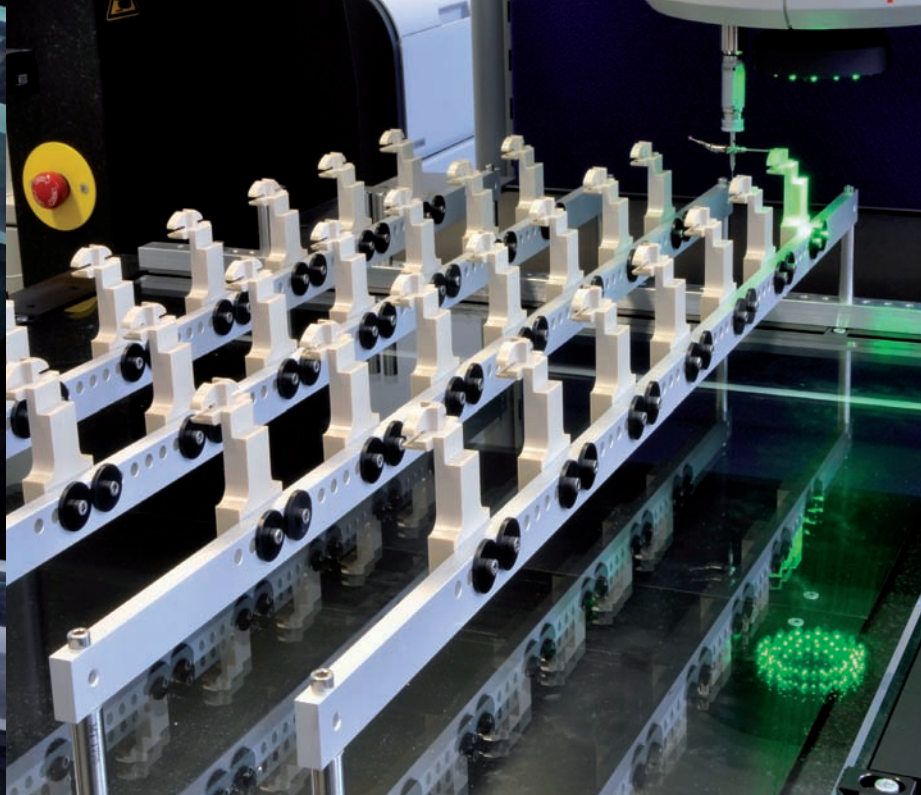
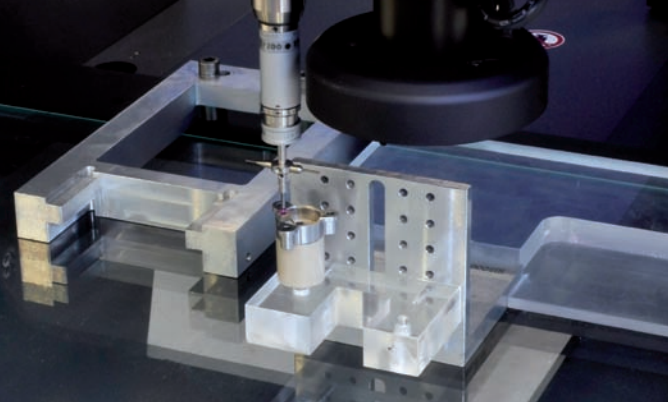
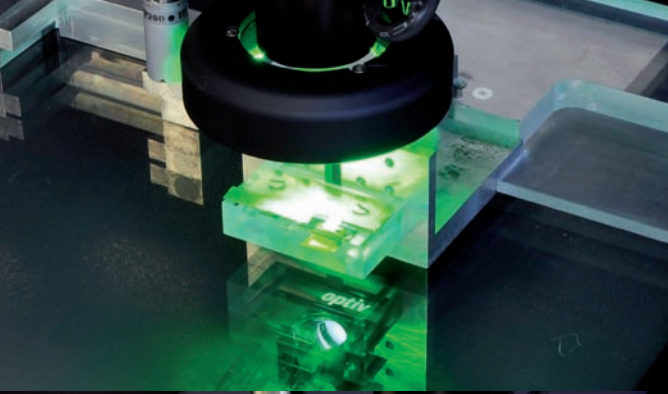


Image above: Measuring a component for the semiconductor industry using a laser sensor.

Image below: Optical and tactile sensors tackle this implant. Screw holes and external radii have to be measured along with flatness and fit.

The multisensor system can inspect 30 to 40 implants in one session using pallets.

allows the user to inspect and document all the functionally relevant features on every single object. Depending on the customer's requirements, Hitega Präzisionsmechanik can produce documentation in electronic or paper form, or a combination of the two methods.

For some of Hitega's customers, the US-American Food and Drug Administration (FDA) regulations come into play. The FDA's CFR 21 Part 11 covers electronic records and signatures and is mandatory for manufacturers of biomedical engineering products. It seeks to ensure that all production process records are safe from manipulation. „Our new Optiv Performance 442 supplied by Hexagon Metrology is equipped with a suitable validation program. It allows us, for example, to maintain the passwords of each user in a protected database, record user access to the system and assign everyone with an electronic signature," explains Ebner. Traceability is the magic word in biomedical engineering and healthcare.

Almost like measuring it yourself

The importance of the validation system becomes even more apparent with one look at the measuring strategies at Hitega Präzisionsmechanik. In the case of small batches with a high metrology content, in other words, parts with close measuring

intervals and many features to be measured, the company opts for inspection by the production staff. Martin Ebner sets up the measuring program to cope with this: „I have designed the user management system to allow certain operatives limited user rights for certain parts. The operative enters his name, password and the ID number of the part. The monitor then displays an image showing the operative exactly how he has to clamp the part. With just a few mouse clicks, he can start the measuring program, which then runs fully automatically."

For larger batches, Hitega switches to pallet measurement. Two of the multisensor measuring systems from Hexagon Metrology are configured to do this. Spinal implants manufactured from PEEK (polyetheretherketone) are some of the products inspected like this. The multisensor system completes a 100% inspection of 30 to 40 implants overnight – without user intervention.

Capacity bonus thanks to offline programming

Inspections by the production staff. Pallet measurement. Sometimes there is hardly any machine time left for measurement programming. A good reason for Hitega to invest in an offline programming station. Swapping programs between machines is no

problem, as all three multisensor measuring systems have the same Vision software from Hexagon Metrology installed. About 70% of the programming is purely data input, for example loop programming or parameter assignment. The offline station has proved ideal for this sort of task. „Previously we had only one Hexagon Metrology measuring machine with multisensor capability, with which we performed intermediate checks, final inspections and programming. Now of course, we have a much better arrangement," says Martin Ebner. And his satisfaction with Hexagon Metrology software support is clear: „The software itself is superb and the support from Hexagon Metrology is top class. Over all this time we have found Hexagon Metrology willing to listen and quick to come up with a solution."

The measuring concept based on operator self-inspections, pallet measurements and offline programming is gaining in popularity. Hexagon Metrology provides the tools for this strategy: flexible and accurate multisensor systems that inspect and document, while keeping your records absolutely watertight.

Birgit Albrecht



Optiv

Hexagon Metrology is the all-rounder in the world of metrology. With its new brand Optiv, the world's largest metrology group keeps this promise once again. Optiv stands for multisensor measuring machines of any kind. The portfolio ranges from benchtop measuring machines to high-accuracy multisensor measuring machines which achieve top performances even in the nano range. Multisensor measuring machines combine optical and tactile measuring techniques and thus, enable the user to measure all features of a workpiece in one measurement cycle. At the same time Optiv features both: flexibility and accuracy.

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