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1 *Thomas Gießler on the topic of innovation: »It's vital that we're always two steps ahead of the competition.«*

2 *Fraunhofer IPM's sensor head records nine million 3D measuring points per reading – ten times a second.*

»WE LEARNED A LOT FROM EACH OTHER.«

Werner Gießler GmbH commissioned Fraunhofer IPM to develop a fully automatic in-process inspection system for precision turned parts. The system verifies at one-second intervals the sealing surfaces of precision turned parts that are around the size of a thumbnail, and can reliably detect micro-defects as small as a few micrometers. Read on for an interview with Managing Director Thomas Gießler.

Mr Gießler, how did you come to work with Fraunhofer IPM?

We had already contacted several companies, but none of them were able to offer a solution which met our requirements. Our client Bosch demands 0 ppm, which means that out of a million components supplied not a single part may be faulty. This would be almost impossible to achieve by checking the parts manually under a microscope. We eventually contacted Fraunhofer after a Google search displayed the Institute's name among a list of potential partners. And although the problem initially seemed insurmountable even to Fraunhofer, it was gradually found to be within the realms of possibility. We learned a lot from each other during the process.

What expectations did you have and were these fulfilled by the end of the project?

The turned part, on which we need to ensure that the sealing face is 100 percent fault free, is found in 70 percent of all common rail diesel injection systems for HGVs worldwide. We are Bosch's sole supplier and this part accounts for 50 percent of our turnover. This means that we were extremely interested in finding a solution (i.e. a sensor) to perform the final inspection of the component's surface. We specified a number of requirements such as the cycle times and feed-in. Fraunhofer IPM succeeded in seamlessly integrating its sensor into our environment and ensuring that it could perform rapid optical surface testing.

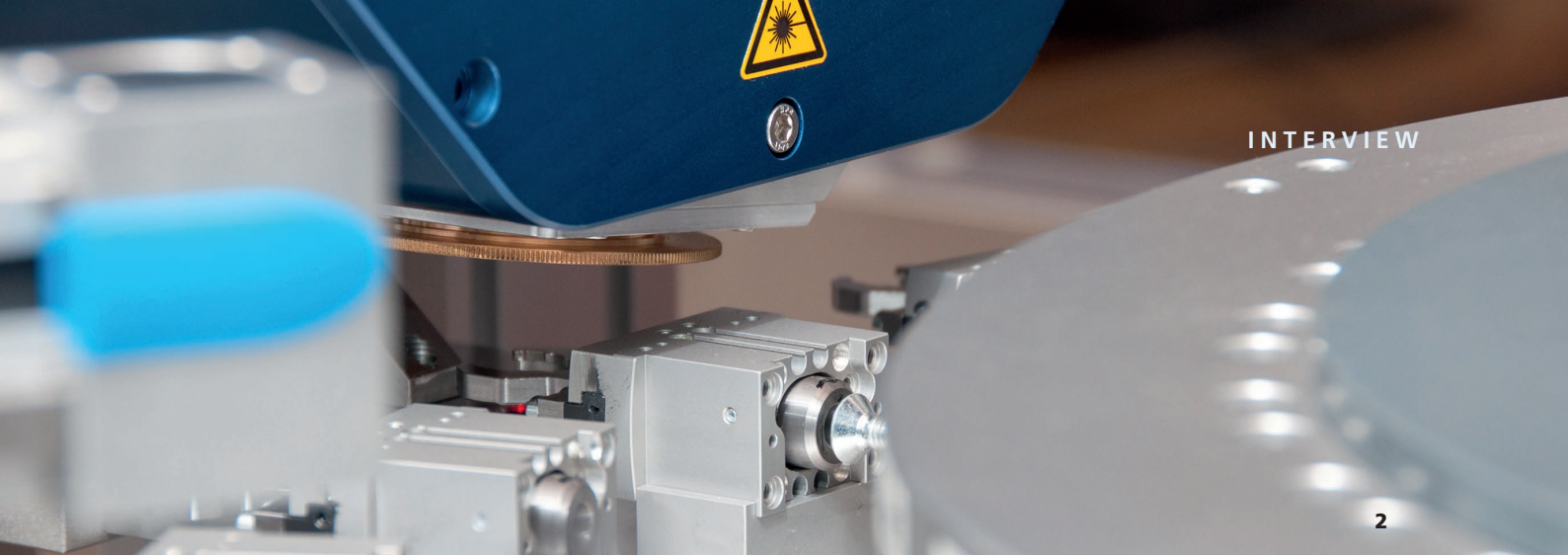
Was it difficult to find common ground between research and industry?

We have already built many systems, for example sorting machines as well as interfaces to machinery and automated equipment. Communicating with Fraunhofer IPM's measurement technology experts therefore did not present completely new territory for us. Like us, their thoughts and actions are very industry driven. Since we were on the same wavelength, we were able to commission the job only eight weeks after making initial contact with Fraunhofer IPM!

To what extent will the investment in measurement technology pay off for you?

To date, the final inspection process, which we have now automated with the help of Fraunhofer IPM, has been manually performed by an external service provider as part of a labor-intensive procedure that requires staff to examine each individual part under a microscope. Fraunhofer IPM's sensor costs less than two years' worth of visual inspections. We were delighted to receive advance funding from ZIM, a funding program for SMEs run by the German Federal Ministry for Economic Affairs and Energy, for a number of decisive feasibility studies. This support was crucial, as it enabled us to significantly lower the financial risk from the outset. The entire inspection system will have paid for itself after three years.

from: Fraunhofer IPM: Measuring, Monitoring, Optimizing. Annual report 2015/2016, Freiburg i.Br. 2016. pp 20-21



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WERNER GIESSLER GMBH manufactures complex precision turned parts, particularly for supply to the automotive industry. Based in Elzach near Freiburg, Germany, the medium-sized company employs around 130 people and made a turnover of 13.2 million euros in 2015. Depending on the end client's requirements, the heat- or surface-treated components are supplied as individual parts or groups of components.

In your opinion, when does working with an external research partner prove worthwhile?

For me, it is essential that working with an external development partner enables my company to achieve a unique position on the market. I'm not really prepared to take risks, and essentially wish to use innovations to ensure that my employees' jobs as well as my own position are secure. We would gladly work with Fraunhofer IPM in exactly the same way again. It's vital that we're always two steps ahead of the competition.

What are the technological challenges facing suppliers in the metalworking industry?

Suppliers are being presented with ever greater risks. When you get involved with large companies, it is essential that you have the appropriate inspection equipment in place. Companies that have not learned this won't survive for long. A specific example of this is the fact that we were only awarded our seven-year contract as Bosch's sole supplier for a specific turned part because we boast a large number of unique selling points in the required process. It is these that secured us this line of business.

Fraunhofer IPM is located less than 30 kilometers from your business – how important was this close proximity?

During the initial part of the selection process, it was Fraunhofer IPM's competences alone and not its location that made it a contender. At first, staff at Fraunhofer told us that our requirements would be impossible to fulfill. However, they then visited us a short time later to examine the entire challenge in detail. This meant that their proximity to us was indeed extremely beneficial. Our partnership was and is exemplary – and could possibly lead to further projects in the future. Our company has considered launching such highly specialized inspection systems onto the market in collaboration with Fraunhofer. We would provide the handling technology, while Fraunhofer IPM would build the sensor.

Thank you very much for talking to us!

3 *»Companies that have not learned to test the quality of their components won't survive for long,« predicts Thomas Gießler.*

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