

Product Report



ZEISS Smartzoom 5 with ZEISS ZAPHIRE

Seeing beyond

An Interview with Dr. Robert Zarnetta
Head of Industrial Microscopy Solutions at ZEISS Industrial Quality Solutions



ZEISS Microscopes Are Taking Over the Measuring Lab

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The experts from ZEISS working in industrial microscopy and metrology have pooled their expertise to create ZEISS ZAPHIRE offline evaluation. With this software function, which is directly integrated in ZEISS ZAPHIRE, ZEISS offers optimized and comprehensive metrology functions for importing microscopy data of the ZEISS Smartzoom 5 digital microscope. – a true USP from ZEISS. Dr. Robert Zarnetta, who is responsible for Industrial Microscopy Solutions at ZEISS Industrial Quality Solutions, sat down to discuss the range of applications for this new functionality.

Measuring technology for microscopes – what exactly does this mean?

Dr. Zarnetta: First of all, just think about how we analyze microscopy images today. Let's say you're looking at an extremely small electronic component and want to know if the dimensions are right. In this case, you zoom in as far as possible, manually draw the angles or distances and hope that you can actually measure very small differences correctly. Or maybe you want to determine the diameter of a circle in an image. So, you use the mouse to select three points along the edge of the circle, and the software determines the corresponding value. However, this isn't sufficiently precise, can't really be repeated and simply is no longer up to date. With ZEISS ZAPHIRE offline evaluation, we offer a software function for our ZEISS Smartzoom 5 microscope that identifies

on its own, where the edge of a circle or an object within a specified area is located. Then you just click on the features that have been identified and a selection menu appears. You can decide if you want to calculate the diameter of the circle or measure the angle between two edges. In addition, you can also define features like roundness for circles and, for the first time, measuring tools reference each other. If you see two holes as circles in the image, the function ZEISS ZAPHIRE offline evaluation enables you to quickly and easily select the circles yourself and, for example, measure the distance between their two center points with great precision. Basically, we're making everything available for microscopy which has long been part and parcel of metrology solutions.

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What led to combining the ZEISS Smartzoom 5 and ZEISS ZAPHIRE?

Dr. Zarnetta: The ZEISS Smartzoom 5 is the microscope best-suited for metrology applications – both from our own portfolio and as compared to our competitors' offerings. It's completely calibrated and features the best optics. At ZEISS Research Microscopy Solutions, we have 170 years of experience, which is plain to see in this technology. However, we were lacking of an evaluation function within the ZEISS measuring software.– until now. It simply was not possible to perform repeatable measurements in the images captured by the microscope. This is where our metrology colleagues from Industrial Quality Solutions got involved. They have 100 years of experience in their field and, thanks

to their expertise, had already developed the standard metrology software solution at ZEISS. Instead of reinventing the wheel, we decided to make this already well-known and tried-and-tested functionality available for the ZEISS Smartzoom 5, which produced ZEISS ZAPHIRE offline evaluation.

What's the added value for the user?

Dr. Zarnetta: You can answer this question in two ways. On the one hand, microscopy customers have the chance to analyze their images with measuring technology. Just like a picture is worth a 1,000 words, a measurement value says volumes about an image.

On the other hand, measuring technology is increasingly expected to inspect smaller objects, such as in the electronics, medical industries and any other field where there's a trend toward miniaturization. Thanks to this solution, operators faced with this challenge have an outstanding microscope for their measuring jobs. And they, in particular, also benefit from the trend analysis enabled by ZEISS ZAPHIRE. Quality assurance is one typical application. Here, companies examine and measure the same parts over and over again. The ZEISS Smartzoom 5 with ZEISS ZAPHIRE and its statistics function can store the previous ten or 100 measurements. This way, operators can monitor the results to see if quality either increases or decreases over a specified period of time.

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Metrological inspections and analyses of microscopy data are performed automatically by the ZEISS ZAPHIRE software.

And the user-independent results are always precise. Different operators can reproduce images on this calibrated system under exactly the same illumination conditions and with identical magnification. They are supported by an intuitive, workflowcontrolled menu navigation so that each user achieves optimum results immediately.

Does this create new applications for microscopy?

Dr. Zarnetta: We certainly think so. With ZEISS ZAPHIRE, we’ll become part of the production process. The ZEISS Smartzoom 5 is compact, and you can also install it close to your manufacturing equipment. And then you have the option of capturing high-resolution

images of your product, measuring it and performing any correction directly on your production machinery. And also important in production – monitoring incoming goods. With our software, creating a measurement plan is easy: when the order arrives, place the object under the microscope and start the measurement. Should something be amiss and you have to negotiate with your supplier, you’re armed with watertight arguments in next to no time. ■

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