Intelligent OptiSense service automatically delivers an efficient and reliable key performance indicator system

OptiSense Q-DAS certification ensures process quality

Reliable quality indicators are an indispensable tool in the coating industry for assessing and controlling processes. Coating companies therefore want to gain detailed insights into their data and also analyze their history in order to improve processes. This is exactly what the intelligent machine control software Q-DAS does.

OptiSense, leading manufacturer of photothermal coating thickness testing systems, is Q-DAS certified – also for the brand new version. A discussion with OptiSense Managing Director Dr. Jens Heymans shows the added value of the production data prepared and analyzed in this way.

Dr. Jens Heymans, Geschäftsführer OptiSense GmbH

Dr. Heymans, what do you see as the main benefits of OptiSense's Q-DAS certification?
Naturally, an integrated system consisting of many components has a considerably higher error rate than the individual components. Of course, this also applies to powder and paint coating systems. In order to know how reliably specified coating goals can be achieved, so-called process capability indices, i.e. KPIs, are used. These are key figures that statistically evaluate processes.

If the key figures are below level, corrections are made manually up to now – i.e. as a human, individual decision by the respective coater at the plant. The Q-DAS software, on the other hand, succeeds in optimizing the process using purely statistics based corrections. This applies to all parameters, including the coating thickness. And this is where OptiSense comes into play: Thanks to our certification, all data from our systems can automatically flow into the Q-DAS data analysis and evaluation. This significantly increases the process capability indices, meaning: the manufacturing processes are more stable and production more consistent. As a result, the number of rejects also decreases.

So OptiSense is specializes in data analysis in quality assurance…
Yes, exactly. Of course, we always have specific tasks. So it's all about structured data flows that all go into a common database. There, the information is then correlated with process parameters such as temperature influences, pressure and similar things.

The application establishes a link between tool data and measured values, enabling clear communication between the coating line and the database. Always in a structured form.

Through Q-DAS certification, OptiSense enables its coating customers to build a quality metrics system based on efficient and reliable statistical methods

However, there are experts who recommend – keyword Industry 4.0 – to collect as much data as possible in order to be able to analyze it at some point. Even data that cannot be used today.
Our approach is different. Our coating customers have clear questions. And we tailor the data flow to these. Together with our customers, we identify what information they want to obtain. And then it operates in a similar way as the Nuremberg funnel: together with the customer, we determine what should go in at the top so that something usable comes out at the bottom.

Nevertheless, the development around Industry 4.0 will lead to massive data growth. Doesn't that pose a major challenge for data analysis?

Sure, you can collect gigantic amounts of data via our sensors. That's why it doesn't make sense to simply store them unfiltered. You have to consider what to do with the aggregated data. How to combine it with the parts that are coated? The parts and the process parameters have to be correlated with each other. This is the only way to get the information that is relevant to me. Of course, you also have to know your processes as such very well. That is also an important aspect. And this is exactly where we support our customers.

What are the most important requirements that coaters approach you with?

Provide answers to the questions you just raised in real time. If you have a production running, you want to know what its status is. An industrial painter coats hundreds of parts per day. You can't look at the situation at 9 o'clock in the morning and think it will be the same at half past three. Then you may have already produced 600 or 700 parts of scrap. That's not possible. So you need real-time information.

Can you give a concrete example?

Take the painting of a battery cell, for example, where 20 or 30 different points are inspected. When your system performs the measurement and the computer analyzes the data, you get a statement on the KPIs, i.e. the key performance indicators, defined in advance in a fraction of a second. For example: How good is the quality? Have you exceeded any specifications? Do you need to inform someone? And you also get the associated history for this information. By the way, the comparison with the history is very important, because you only get this information by comparing it with the retrospective. You have to compare the results with the state that you once defined, with which you are satisfied.

In simple terms: The OptiSense measuring systems "speak" Q-DAS...

Exactly! We can guide the employee step by step through the inspection. Let's take a look at a manual measurement by GSO surface technology. The monitor shows the employee exactly at which points and in which order he has to measure.

This ensures that no test step is forgotten or that the documentation is omitted. In addition, our system automatically checks whether the measurements are plausible and informs the employee if the test needs to be repeated. This means that manual processes can also be integrated securely into an automated production process.

During the entire inspection, no measured values need to be noted or typed in manually. Another plus: Even inexperienced employees can perform measurements correctly and accurately. Additional information such as date, time, temperature, batch and machine number can be added automatically.

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*At **GSO Oberflächentechnik**, an inspection plan with pictures, drawings and explanations defines what is to be inspected, how and in what order. This can be measurements, but also visual inspections or handling instructions.*

Q-DAS has just released version 2...

With the new release, we can offer our customers even more services. The coater can select the parameters to be corrected – for example the coating thickness of the pretreatment or in the oven – directly in the software and enter the optimized values. By the way, the values entered are checked against tolerance limits so that incorrect entries are detected.

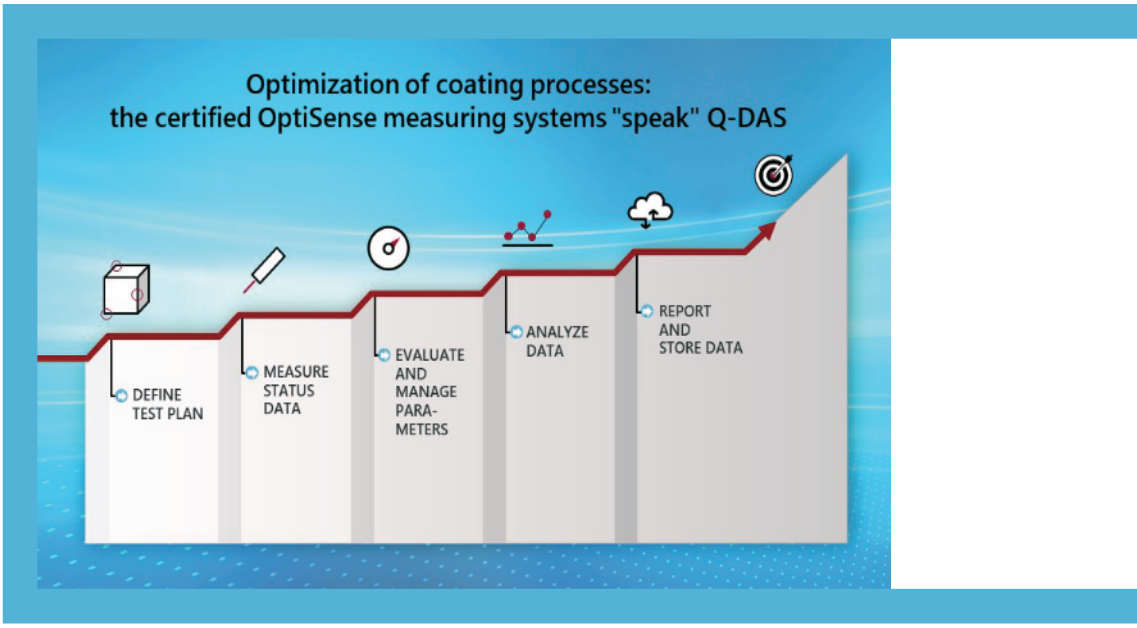
In addition, the inspecting operator can store events together with the manual correction to document the change. This ensures quick and easy traceability for both the operator and his colleagues. Traceability helps the youngsters among the machine operators to learn from experienced colleagues and see why changes are made, and a knowledge base is created for each employee. I think it is not necessary to tell how important well-trained employees are today.

What market requirements can we expect in the near future?

In the automotive sector, probably no vehicle in the world will be built in the foreseeable future that has not come into contact with process-optimizing software. This applies to both the automotive manufacturers and their suppliers as well as suppliers of machines and production equipment or measuring devices. And this is exactly why we are Q-DAS certified since years. The certification officially confirms the compatibility of our interfaces.

What topics are next on the OptiSense roadmap?

I see a very strong trend in the fact that coaters increasingly want to take a quick look at the current quality figures. Of course, this also includes dashboards that not only take a plant perspective, but also look at higher levels – for example, the entire production. This results in new tasks for the dashboards, which have to provide information in a clear and compact form on a wide variety of platforms.



Individual steps of the KPI system of OptSense: recording, evaluating, managing, analyzing, reporting and archiving

Furthermore, in addition to the measured values, process parameters are gaining in importance, allowing to perform preventive measures in the sense of predictive maintenance by correlation. OptiSense also has solutions for this, which we would be happy to present to interested coaters.

Thank you for this interview.

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