



WWO – the company

The success story of weist + wienecke oberflächenveredelung GmbH (WWO) begins in 1996 in a small, rented hall in Alfeld, Lower Saxony. Continuous process optimization, certifications in all areas, highest quality and a sophisticated service enable WWO to grow rapidly. Today the company, specialized in powder coatings, has around 20 employees and finishes components of all colors in the large warehouse and production hall.

Deutsche Bahn has been one of the company's flagship customers for over 10 years.

For contract coater WWO, added value is the maxime

Rail vehicles: checking component coating thickness earlier and more economical

When it comes to coating rail vehicles, quality control and thus measurement technology are increasingly becoming the focus. The processes are getting faster, and the requirements on quality and traceability are continuously growing due to numerous norms, standards and regulations.

The innovative contract coater WWO specializes in high-quality powder coatings. Company founder Oliver Weist provides real added value for his customers – such as Deutsche Bahn – by optimized processes and quality assurance. The coating thickness measurement with OptiSense systems is contributing its part.

Optimized quality management turns into added value for the customer

Oliver Weist relies on highest quality and excellent service when it comes to powder coating. "Finishing is usually one of the final production steps but it is much more than just applying some paint. To provide our customers with maximum added value, it really makes sense to be involved in projects as early as possible" states the head of the company. Requirements on coating surfaces are manifold: Antibacterial, heat resistant, food-safe, luminescent, scratch

WWO uses antimicrobial paint systems at Deutsche Bahn, which are ideal as anti-graffiti protection. In addition, the powder coatings score with their resistance to a wide variety of weather conditions

At WWO, the layer thickness is measured without contact while the paint is still soft - the PaintChecker mobile from OptiSense also does this for the demanding antimicrobial, function-relevant paint systems with graffiti protection



proof and slip resistant. Each customer comes with individual specifications. WWO then develops a coating process exactly tailored to the customers objectives and requirements.

No wonder that modern quality assurance is a top priority for the head of the company. "Our continuous process optimization and the resulting outstanding product quality are the key to customers like Deutsche Bahn" says Weist, outlining his recipe for success.

It is further supported by state of the art equipment, handling mass production and one-off pieces equally flexible and efficient. WWO's powder coating line can process parts weighing up to 400 kg and measuring up to twelve square meters. The new two-storey warehouse and production hall was built in 2015.

Perfection from Alfeld in the trains of Deutsche Bahn

Among many other things, the extrem robust and resistant outer coatings for trains originate from here. Specially tailored powder coating technology provides protection against vandalism and graffiti. With antibacterial coating WWO ensures that annoying spray smearings are easier to remove.

WWO coating quality is equally present inside the trains. The cast desk bins e.g.

receive a sophisticated coating. An inconspicuous component at first glance, but one which is subjected to extreme wear and tear and often the target of vandalism. The novel coating technology features a highly resistant surface that significantly reduces the spread of germs. This hygiene concept minimizes the risk of infection by health-threatening pathogens or microbes in the trains of Deutsche Bahn. To achieve this, each workpiece to be coated undergoes a sophisticated process.

“Our constant process optimization and high product quality made orders for Deutsche Bahn possible in the first place.”

Oliver Weist,
Managing Director WWO

The WWO coating team uses manual or automatic guns to apply the soft and sensitive coating powder. Often the powder color needs to be changed ten times a day – no simple task with train parts, whose quality control requirements are much more demanding than average.

Quality assurance systems and process standards of Deutsche Bahn

Deutsche Bahn is well aware of this fact. Together with the Qualitätsgemeinschaft Industriebeschichtung (QIB) the railway company reformed the Standard 918340. Since then, the powder coating system must be specifically suitable for the particular application, e.g. aluminum or steel, interior or exterior, matte, satin or glossy finish. In addition, the intended use is relevant, i.e. technical or decorative purpose.

The novel quality assurance system refers not only to the coated parts, but also to the production processes and the equipment used. The stringent load specifications and coating standards to be met make it even more important for DB suppliers to select the appropriate coating system.

Coating thickness measurement as the superior test method

Deutsche Bahn coating suppliers are responsible for order-related documentation of the pretreatment and for self-monitoring. They also have to comply with certain retention obligations. For this reason, WWO tests each individual part. The laboratory staff performs weathering and ball impact tests, check the gloss and determine the coating adhesion through bend tests. Dozens of quality checks are carried out daily in the

“For us, the early process control thanks to the non-contact layer thickness measurement is extremely valuable because the measurement results can be evaluated and assessed very early on.”

Oliver Weist,
Managing Director WWO



The PaintChecker mobile family

Compact controller and ultra-light sensor

The complete measuring system consists of two units: The controller with the evaluation electronics and the lightweight, compact sensor as the actual measuring device. The tiny dimensions of the smallest sensor of 130 × 25 mm with a weight of just 50 g enable measurements in places that were previously difficult to access.

The right sensor for every task

The mobile OptiSense laser models are mainly used for smooth coatings on metallic substrates. Due to their tiny measuring spot, the slim laser sensors are particularly suitable for coating thickness tests on delicate small parts, corners and edges.

Due to the larger measuring spot, LED sensors are ideal for freehand measurements on rough surfaces. The PaintChecker mobile Gun-R model is particularly suitable for components made of plastic or rubber.

The PaintChecker mobile Gun-B is optimized for non-parts contacting tests of freshly applied powder coatings before baking. It measures the still soft powder coating on substrates such as metal, glass or plastic, independent of color and type. The shrinkage during the baking process is taken into account.

company's own laboratory to ensure that only flawless products are delivered to the customer. According to Deutsche Bahn-Standards each individual part needs to pass stringent coating thickness and gloss tests. But even this is not sufficient for Oliver Weist. WWO is constantly striving to optimize and further develop its own processes, including those for measuring the coating thickness.

Weist is one of the pioneers in the industry when it comes to quality assurance. "We check the coating thickness on the cured part, but also immediately after the coating booth when the powder has not yet been baked and is very sensitive". The innovator relies on OptiSense's non-contacting inspection systems for this purpose: "Meanwhile we are using the latest model of the PaintChecker mobile. The non-contacting device measures the still soft powder coating on metals such as steel, galvanized steel or aluminum – regardless of the powder type and across the entire color space."

Intelligent process control thanks to online layer thickness measurement
Intelligent process control thanks to online layer thickness measurement. For many coating companies, material or cost savings are the main argument for non-contacting coating thickness measurement. "But that is only one side

The head of quality assurance at WWO also checks the layer thicknesses of new types of paint with the PaintChecker mobile from OptiSense in the in-house laboratory.



WWO has the official approval of Deutsche Bahn AG to manufacture powder-coated add-on parts made of steel and aluminum for the technical and decorative exterior of rail vehicles of Deutsche Bahn AG.



of the coin”, says Weist, “Coating thickness measurement is so important for us, because the testing requirements of our customers are constantly increasing – especially in respect of multi-point measurements. On the other hand, the coating thickness measurement before baking improves our process reliability, especially when it comes to new parts or new coating materials.”

This avoids rework and prevents customer complaints. “Early process control by non-contacting coating thickness measurement is extremely valuable for us. We obtain measurement data already in the first production steps and can assess the coating quality at a very early stage. Furthermore, we continuously verify and record the burned-in layer thickness,” says the WWO founder, summarizing the advantages of the OptiSense systems.

Measurements in the blink of an eye
The head of laboratory and quality assurance at WWO sees another plus point in the easy handling of the layer thickness devices from OptiSense: “The sensor is aimed at the object to be measured until the three position LEDs unite in one point. Then the measurement button is pressed to trigger a measurement – done. The whole thing doesn't even take a second.” The start and end of the measurement are indicated by the position LEDs flashing

briefly and the result shown on the display. The measuring device is then ready for the next measurement.

Advantages of coating thickness measurement with the PaintChecker
Coating experts are excited about the performance of the PaintChecker, but also about the service offered by OptiSense. “Somehow it's always the complete package that counts” states the head of the WWO, referring to the product quality of the OptiSense equipment. “

“We do not only check the layer thickness on the hardened part, but measure it contact-free with the PaintChecker mobile immediately after the booth while it is still soft.”

Oliver Weist,
Managing Director

A useful advantage of the new version is the ability to trigger the measurement either directly on the LED sensor or on the controller. With the carrying strap, the PaintChecker can be easily carried around in the production floor.

Our coating staff can conveniently trigger the non-contact measurement with the extreme lightweight sensor gun at the touch of a thumb, even in the tightest or hardest-to-reach places. OptiSense has an excellent sales force that is always on hand to help with any problems and keeps us regularly updated on new developments.

WWO summary
Looking back, WWO's managing director Weist is very satisfied with his decision to use OptiSense's non-contact coating thickness measurement system.”

We have been working very intensively on process optimization and quality improvement for years. WWO thus acquired a unique selling proposition early on and, above all, created added value for us and our customers.”



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