The Brückner Group

Since 1949, the engineering company has been developing, producing and selling machines and complete production lines worldwide for finishing technical as well as apparel textiles, fiberglass fabrics, nonwovens and floor coverings. The market and technology leader also designs special machines and systems for heat recovery and exhaust air purification.

The Brückner Group founded a technology center in Leonberg in 2013. In 2018, it established the production plant in Tittmoning. Around 420 employees generate annual sales of over 100 million euros at the two German sites. Since 2020, there has also been an office in Shanghai.

Brückner Textile Technologies relies on OptiSense quality control

"Our employees really love the PaintChecker"

In Brückner Group's ultra-modern surface coating center, in-house manufactured sheet metal and steel parts are wet painted or powder-coated.

In addition, there are many contract orders. The company had to painfully learn that the devil is often in the details when it comes to large-volume orders. The customer specified a new type of powder coating for which it was difficult to maintain the required coating thickness. Since the coated components could only be tested after baking, scrap was inevitable.

In order to avoid such problems in the future, the Brückner Group was looking for a way to measure coating thickness much earlier in the process – and found it in the new PaintChecker mobile from OptiSense.

Case Study Brückner Textile Technologies

Multi-million investment in the new surface coating center

The textile industry's demand for ever larger and more powerful equipment has also changed the range of products offered by machine manufacturer Brückner. The family-owned group invested 40 million euros to expand its facilities and replace existing machinery with state-of-the-art equipment.

The new production facility in Tittmoning covers an area of around 25,000 square meters and can even manufacture and pre-assemble XXL parts – including the pre-treatment and coating.

The high-tech powder coating facility

The new powder coating line can handle the ever increasing part dimensions. It includes a plastic powder booth with 14 automatic guns (7 per side), another two floor guns, and a manual applicator for finishing. A bypass section for double coating is also included.

Benedikt Seidel, master painter and responsible for painting technology at the Brückner plant in Tittmoning, explains "The powder coating plant is designed for large workpieces up to six meters in length and weighing up to 1,000 kilograms. But of course we can also coat small parts here, just the size of a hand."

The heart of Brückner products are the stenter frames

When asked why Brückner, as a wet paint expert, invested in powder coating, Seidel explains: "The parts are made of galvanized steel, hot-dip aluminized sheet, black steel, cast steel and stainless steel. The finished products are exposed to a very acidic and aggressive atmosphere every day in our customers' plants – these are harsh conditions causing rapid corrosion. For this reason, we have been powder coating machine parts since 2018. It enables us to meet the very high requirements regarding resistance against corrosion and chemicals."

Another advantage is that powder coating is solvent-free. A comparable quantity of wet paint would contain around five tons of volatile organic compound (VOC).

> ## The PaintChecker mobile makes work much easier – Our staff really loves it.
>
> **Benedikt Seidel**
> Master Painter & Head of the Painting Technology Department at Brückner Textile Technologies

As an example of a powder application, Seidel refers to the "heart" in textile finishing, the stenter frame from Brückner.

Such a frame has a working width of up to seven meters and is 20 to 30 meters long. "It is developing more and more into a multifunctional tool for the production of technical textiles and other web-shaped materials. Every day, all over the world, countless meters of the most diverse types of fabric are stretched, dried, heat-set, functionalized and coated with such devices".

The stenter frames must meet the highest quality and performance requirements. The individual parts for the frames are powder coated in our own factory. We have specially installed a new powder coating line for this purpose: The Wagner powder coating system with its automatic guns handles about 80 percent of the job. The remaining 20 percent – the hard-to-reach areas – are treated manually by our coating staff.

To get an idea of the size of the parts to be coated, Seidel explains: "The giant transversal frames require the entire length of the coating line, while two of the side frames fit on a single beam."

Coating thickness testing in automation

"The PaintChecker mobile is a virtual teacher. New employees, some with little experience, can check the quality of their powder coating work themselves." The coating thickness of the stenter frames needs to range between 80 and

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Department at Brückner Textile Technologies

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.

100 μm and the finishing coater is responsible for quality assurance. "He checks whether the frame parts have been coated properly and detects if a nozzle is clogged or the area to be coated has not been reached by the automatic guns", says Seidel.

The parts of the Brückner machines are coated in the standard colors light and signal gray. The head of the Painting Technology Department is happy: "With these automated powder applications, the process runs smoothly. The coating thickness is uniform and stable. Only for parts with many undercuts or if the part geometry forms a Faraday cage, random tests are required. In these cases, it can occur that the powder has not been evenly applied". Therefore, the Paint-Checker is also regularly used in the fully automatic powder line.

The coater checks whether the minimum thickness of 80 μ has been achieved. If not, additional powder is applied manually. "At-line testing is significantly less expensive and also significantly less time consuming. If a part is found to have an improper coating thickness only after it has passed through the baking oven, it has to run through the entire line again. Without the PaintChecker's early warning, expensive recoating would be inevitable", says Seidel, recalling the tricky coating job that triggered the introduction of

Case Study Brückner Textile Technologies

The cutting-edge coating line from Brückner Textiles

The PaintChecker mobile from OptiSense measures in even the smallest corner

the new OptiSense quality control system at Brückner.

The right amount of powder is the key

In 2020, Brückner Group received a large-volume order to coat insulation panels with a conductive paint. The insulated 60x60 cm panels are used in exhibition stand construction and in clean rooms of hospitals and laboratories and were to be coated in the white colors RAL 9010 and 9016. The customer had defined the tolerance limits of the coating thickness as 80 and 100 µm and the specified powder coating material was a new product on the market.

"Each powder needs to be treated differently. Even identical color tones require different amounts of powder, depending on the manufacturer. It is a continuous learning process on how much powder needs to be applied to achieve the 80 µ coating thickness", says Seidel. "At that time, we could only measure the components after baking. It was then no longer possible to recoat manually. Undercoated or overcoated parts had to be disposed of", recalls Seidel. "Due to the large amount of scrap, the order did not pay off at all. After these bad experiences, we immediately started looking for a device that would let us measure the coating thickness even before baking."
Seidel quickly found what he was looking

for: The PaintChecker mobile from Opti-Sense appeared to be a promising solution. Sales Manager Sascha Schmidt soon presented the device in Brückner Technologies' new surface coating center. The 16-member coating team then had the chance to test it in the real production environment for two weeks.

> *Thanks to the PaintChecker's early warning capability by measuring before baking, we were able to significantly reduce cost-intensive rework.*
>
> **Benedikt Seidel**
> Master Painter & Head of the Painting Technology Department at Brückner Textile Technologies

"Yes, there was a competitor. But the device produced a bright flash with each measurement. If an operator takes 200 measurements, he will see stars before his eyes at the end of the day. He also could not use the device close to the coating booth, because the flash immediately triggered the fire extinguishing system." Thus, the decision for OptiSense was quickly made.

The PaintChecker as a virtual teacher

In automated coating processes, only random samples of "tricky" parts are

checked with the PaintChecker mobile. However, with hand coating, quality control is much more intensive. "This is quite obvious, because these are usually special parts that are coated with a wide variety of powders, some of which are completely new. For special machines and special colors, the ideal coating thickness ist 60 µm for the primer and 80 µm for the topcoat. There simply is no standard process.", says Seidel. In manual application, the coating thickness gauge has yet another function: The PaintChecker is a virtual teacher. New employees, some with little experience, can check the quality of their powder coating work themselves. The operator checks the coating immediately after manual application – while the powder is still soft – and can correct it quickly and easily.

The old stagers in Seidel 's team also rely on the PaintChecker. They check the raw coating At-Line and know that if the thickness of the soft powder layer is OK, it will also fit after baking. "For validation, we performed control measurements with a contacting measuring device – the PaintChecker mobile measurement values and the contact-based reference measurements agreed 100%."

Our staff really loves the PaintChecker

The measurement batches from the mobile handheld device are stored on PC.

In 2018, the Brückner Group invested around 40 million euros in a production facility with an area of over 25,000 square meters in Tittmoning (Traunstein district)

This documentation serves as proof for Brückner in case of possible complaints and also for the customer for his records. The data is also evaluated with regard to powder consumption.

Seidel: "We need about 35 tons of powder per year and could significantly reduce powder consumption by taking early measurements with the Paint-Checker. Less scrap means less powder and therefore lower costs." Asked for a summary, Seidel smiles: "The Paint-Checker mobile makes our work much easier – Our staff really loves it."