



Picture: Miele



Improve powder coating with “soft powder cloud“

Significant improvements on quality, flexibility and cost-effectiveness

Performance by design



Powder coating quality comes first

Miele is investing in a new powder coating system at its Lehrte plant and switching from Venturi pump technology to HDLV dense phase technology - with significant improvements on quality, flexibility and cost-effectiveness.



Picture: Miele

The Challenge

At its factory in Lehrte, Germany, Miele develops and produces appliances for commercial laundry care. This is supplemented by troughed ironers, household ironing systems, air purifiers and components for other Miele facilities. In addition to stainless steel fronts, powder coated surfaces are in particular demand for these appliances. A variety of product types and shapes combined with individual customization and comparatively low unit volumes are just a few unique challenges that Miele faces in this sector. This is why it was so important that Miele switch from a single-color to a multi-color booth.

“Consistency of high quality is a clear promise from us at Miele,” says Andreas Eichbaum, technical project manager at the Lehrte plant. “In the laundry care sector, a lot of work is done with alkalis and bleaches, which can also come into contact with the finish. Therefore, we have to prove the corresponding resistance and also guarantee it to the customer. “At the same time, we have a strict visual aesthetic requirement i.e., i.e. coatings are expected to look their best and must be professionally coated.” And Mr. Eichbaum adds: “We want to ensure that components are coated uniformly and precisely every time. “That also requires tight film-thickness specifications, i.e. having the right amount of powder on every part of the product.”

The Solution

“When we were planning the new system, we familiarized ourselves with the current market and compared various providers” says Rainer Freier, responsible at Miele for purchasing in this segment. “In the end, two criteria were crucial. Of course, Miele stands for quality, or rather the quality of the powder coating. This comes first, followed by the price, which was comparable for all suppliers.” The quality of the powder coating, the mechanical and chemical resistance, but also how the design is reflected was very important in the procurement of the new powder coating system. In recent years, the design of commercial surfaces has changed from a glossy coarse structure to a finer structure with a matte finish. Those specific coatings and finishes require very different processes and process control than the slightly glossier finishes. “That’s where we consider the very clear advantage in the new Nordson dense phase coating technology over the Venturi pump technology,” adds Andreas Eichbaum. “This also matches the recommendations of our powder supplier, which we incorporated into our decision.”

Tests at Nordson’s lab in Erkrath, Germany, were also decisive for the purchase decision. “Our products, which we produce at the Lehrte plant, have a very high variance. We went to the lab with reference components that reflect our broad spectrum. We cross-refer-

enced the results and discovered that Nordson delivers the most advanced coating results. On the one hand, this related to the coating thickness, which was the highly uniform, and on the other hand, the component geometries, which are difficult to coat,” reports Johannes Reimer, production manager at Miele & Cie. KG in Lehrte.

The powder coating system consists of the standard ColorMax3 fast color change booth, the Spectrum® HD powder feed center and PowderPilot™ HD control system, eight Encore® HD automatic guns, after filter and twin cyclone. The system was installed at Miele in March 2021.

“We had a very ambitious schedule for the entire project,” says Andreas Eichbaum, “partly because we replaced the system during ongoing operation. It turned out that we ran production in two shifts per day, and in the third shift the system was converted. The coordination with the team of Nordson went very well both leading up to and during the two-week set-up phase. In the third week, the first programs were tested, the system was ramped up, and we were able to start a trial run relatively quickly. We had a very clear schedule and after a total of six weeks we went into series production as planned. We were very well supported by Nordson the whole time and the assembled system, delivered and commissioned, fully met our requirements.”

The Customer Benefit: maximum process control

The new powder coating system is used to coat several hundred different components which are always recurring. Corresponding coating programs have been set up for the surface finishing of the component clusters, which always achieve the same precise results with repeatability. Maximum process control is made possible by the dense phase transmission of the powder, so that programs only have to be created once for the different components. Similarly, coating deep recess components has become much easier due to the soft powder cloud of the HDLV® dense phase technology. The products are not only coated on the front, but also the top and side surfaces are coated as well. “The door on our washing machines is a very important component, also for the end customer. This was always a component, which was traditionally coated manually. Now with the new system, we have succeeded in completely automating the powder coating,” says Andreas Eichbaum about his initial experience with the new powder spray system. “On the one hand, this is due to the fact that the component has to be coated from both sides and it has very deep geometries on one side, which makes it difficult to electrostatically charge the component. Due to the soft powder cloud, both sides of the component are coated with the required uniform coating thickness from now on,” and he concludes, “The powder spread has been significantly reduced compared to before, which of course also saves a lot of powder.”



Picture: Miele

The doors of the washing machines were traditionally always coated manually and could be converted to automatic coating by the new coating system.



Coating deep recess components has become much easier due to the soft powder cloud of the HDLV® dense phase technology. The products are not only coated on the front, but also the top and side surfaces are coated as well.



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Nordson HDLV Dense Phase Technology

Nordson's patented HDLV® pumps, called Encore HD Pump, use dense-phase technology with high-density powder, low-velocity air to pump more powder to the spray gun with a minimum of air, and maximum process control.

This results in superior efficiency, unmatched coverage, and reliable self-clean color change, boosting productivity and reducing operating costs.

With more than 15 years of field-proven experience, Nordson remains at the cutting edge of dense phase pump technology in the powder coating industry.

- Powder output stability and process control, for precise applied coating thickness and significant powder savings
- Highest application efficiency with soft spray pattern
- Superior coverage of recessed areas through optimised spray velocities
- Unmatched wear life of the internal pump components significantly reduces maintenance downtime for maximum productivity
- Contamination free color change of the entire spray system due to an automated purge clean system

For more information please visit: www.nordson.com/hdlv

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