



# Think Big: Powder Coating of Heavy Duty Parts

Powder coating parts economically  
in automotive quality

Giga Coating GmbH | Germany

*Performance by design*

 **Nordson**

# Uniform coating of complex geometries and powder savings

Giga Coating GmbH was founded to reliably protect trailer and semi-trailer chassis with a length of up to almost 16 meters from corrosion. The largely automated, high-performance powder coating system is also available to external customers with large components as a job coater.



Truck semitrailers and trailers travel around the world and are subject to many years of hard use. Maximum corrosion protection plays a central role in the long service life of these vehicles. System Trailers, a company based in Germany, relies with great success on the innovative combination of cathodic dip painting and powder coating. To this end, the medium-sized company has founded its own coating company Giga Coating GmbH and has built a state-of-the-art plant for surface finishing in two construction phases.

## The Challenge

Maximum corrosion protection plays an important role in the durability of trailers and semi-trailers. To be able to produce them economically despite high automotive requirements, System Trailers relies on a high degree of automation and optimized manufacturing processes.

After powder coating by a job coater had become a challenge in production, managing director Ralf Saatkamp resolved by founding Giga Coating GmbH in autumn 2015 as an in-house coating company for large-format components in automotive quality.

An approximately 8,600 sqm hall was built on the company premises, in which very large and very heavy workpieces are made corrosion-resistant by means of cathodic dip painting KTL and powder coating. Right from the start, the capacities were designed to also process external orders.

## The Solution

Researching for a suitable partner for their new powder coating system, managing director Ralf Saatkamp got in contact with Nordson - and with its dense-phase technology. The soft powder cloud of Nordson's dense-phase technology with the Encore® HD spray system and the patented HDLV (High Density Low Velocity) pumps ensures full coverage in corners, recesses, and delivers powder to the spray system with a minimum of air offering the independent control of the powder and air volumes.

Further advantages of the technology are maximum process control, a very high degree of automation and repeatability of the coating quality at the highest level. "This gave us the secure feeling of having found the right partner in Nordson, so that Nordson was awarded the contract," says Mr. Saatkamp.

Since the new plant was established in 2018, a sophisticated conveyor system has been handling the workpieces, which can be up to almost 16 meters long and weigh up to 9 tons, through the 11-stage pre-treatment process of blasting, degreasing, zinc phosphating and cathodic dip painting before they arrive at one of the two ColorMaxE powder coating booths, ("E" = Engineered) built to customer specifications. The installation of the second powder coating system followed in 2020, additionally equipped with the highly efficient Dynamic Contouring System for complex product geometries.

Thanks to their compact design, the booths are engineered for fast color change processes to minimize lengthy production interruptions with multiple color changes (usually batch size 1) per shift. The Nordson Spectrum® HD powder feed center provides a complete powder management within the powder coating system. The entire system is operated via the icon-based touchscreen interface of the PowderPilot® HD control system. The operator can call up the status information of all modules at any time and - for example in case of a color change - be shown step by step where his attention is needed. Thomas Maubach, coating operator at Giga Coating, says: "With the excellent coating result, the simple operation and the fast and very easy color change, it is a pleasure for me to go to work every day".



The Nordson Dynamic Contouring Mover (DCM) System combined with the soft spray increases the automatic coverage of complex forms and achieves the highest process control.

Product geometries are scanned with the highest level of accuracy detecting protrusions larger than 5 mm at a line speed of up to 5 m/min\*. The information is quickly processed by the PowderPilot HD system controller and sent to the DCM.



In each booth, 22 Encore® HD automatic powder guns efficiently ensure uniform powder application with maximum process control over a long period of time.

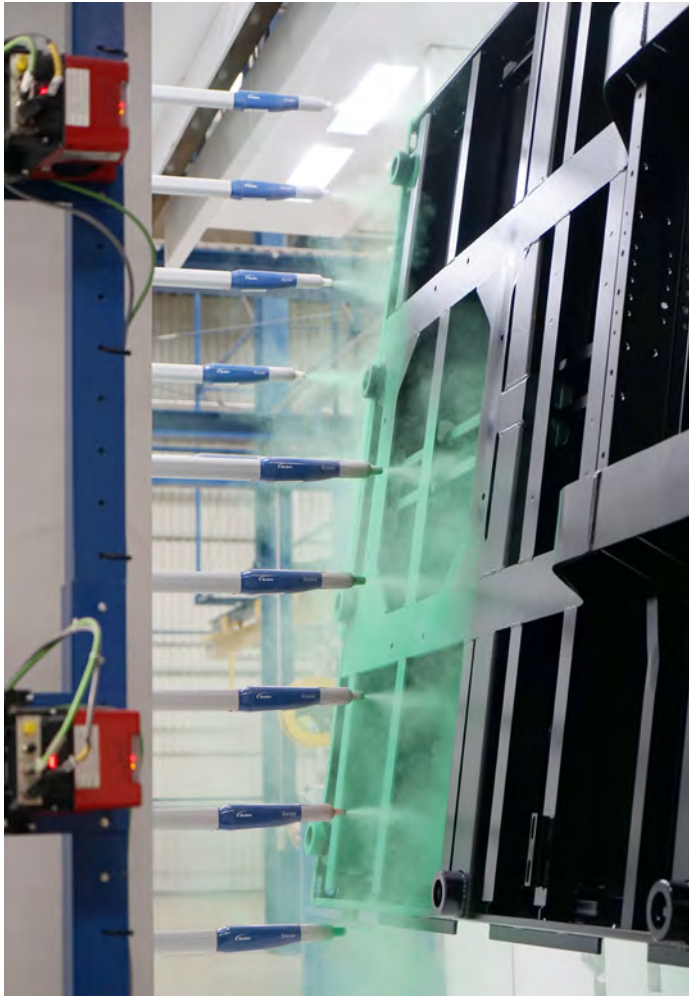
Two Encore HD manual guns are also available for coating very special shapes. The manual coating stations are equipped with lifting platforms for better access up to 2.7 meter high components. The first booth without Dynamic Contouring naturally requires a little more post coating than the latest booth with the Dynamic Contouring system.

The second ColorMaxE booth, equipped with the innovative DCM (Dynamic Contouring Mover) system, provides even more precise control of the powder guns - without any programming. Scanners in the booth's entry area detect the geometry of the incoming part. They transmit the data via PowderPilot HD to the DCM system to bring the powder guns to the optimum distance from the workpiece. The result is an even more consistent coating of the complex geometries, even lower powder consumption, less post coating and higher productivity. The system thus operates up to 95% automatically. The system control is also integrated into the in-house ERP system "Giga-IT".

## The Benefit

After Giga Coating commissioned the first of the two powder coating booths in 2018 and the second in spring 2020, Managing Director Ingo Wildermann draws a thoroughly positive conclusion. "The decision to bring the coating into our own hall and automate it as much as possible has massively increased our production. And further optimizations are being carried out daily. The required powder quantity per rack is stored in our Giga Coating ERP system and is analyzed daily. Mr. Wildermann is also completely convinced of the coating quality. "We work according to the strict specifications of the automotive industry and even exceed them. A salt spray test, which we carried out here on our own initiative, we stopped after 3,000 hours because nothing corroded yet. The DIN EN ISO 11997-1 standard specifies only 1,000 hours!"

The construction of the powder coating system worked well right from the start - even though Giga Coating certainly had to put in a great deal of effort to get a complete production line up and running in a short time. "In the first week after the installation of the line, we already produced 20 chassis with the desired coating thicknesses between 80 and 120  $\mu$  - practically on the side while the line was being adjusted", Mr. Wildermann remembers the successful start-up phase. "We now have the capacity for around 50 trailers per day!"



The smooth operation of the DCM System has a positioning speed of up to 500 mm/sec and accuracy of  $\pm 1$  mm to bring the soft spray to the optimum distance of the target product surfaces.

In the environment of a "batch size 1 production" with maximum powder recovery, this is only possible if the frequent color changes, including careful cleaning, can be accomplished within minutes.

The trouble-free operation of the plant encouraged Giga Coating to start contract coating for external customers after only one year. These are mainly customers who, like Giga Coating, are looking for fast throughput times with very high quality and who, with their large-format, corrosion-prone components, contribute to good utilization of the annual capacity of around 1.5 million sqm of coating in three-shift operation.

## Nordson Dense-Phase Technology

Nordson patented HDLV (High Density Low Velocity) pumps deliver powder to the spray system with minimum of air offering the independent control of the powder and air volumes.

This allows to achieve very soft spray for maximum powder application efficiency. The HDLV pumps have no wear parts affecting the powder output.

Delivering maintenance-free performance with high output stability over a long period of time. The soft powder cloud delivers unmatched deposition rate and recess coverage even at high output. Long-lasting internal spray system and pump components minimize maintenance downtime and operating costs.

- Highest application efficiency with soft spray
- Unmatched productivity with stable powder output of up to 450 g/min\*
- Superior coverage of recessed areas through optimised spray velocities
- Over a long period of maintenance-free pump operation for minimum operating cost and maintenance downtime
- Automatic purge and high-quality color change in seconds

# GIGA COATING

## Nordson Industrial Coating Systems

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