



Zürn Harvesting manufactures headers for harvesters of all brands.



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Italian Technology for the Semi-Automatic Powder Coating Installation with a High Throughput installed at Zürn Harvesting

Alessia Venturi **ipcm**

Zürn Harvesting, a German manufacturer in the field of agricultural machinery, decided to internalize the coating of its production to get full control over the coating quality, to reduce logistics costs and the environmental impact of its activity and to increase the throughput of its production process. Today, thanks to the installation in 2019 of a semi-automatic powder coating line designed and manufactured by Eurotherm, an Italian company, Zürn has reduced the lead time of the coating phase from 15 to only 2 days.



The overhead conveyor system.

Manufacturers in the field of agricultural machinery and attachments have two options for the finishing of their products: one is wet painting, which today is always more often a direct-to-metal mono-layer paint; the other is powder coating, which can be a single coat or include a cataphoresis primer. Both options are valid, what is going either to enhance or to impel the final quality of the finish is the system used to apply this finish. With the lack of a good coating installation, especially designed for the requirements of this field (i.e. pieces with a high mass and large dimensions that ask for a precise regulation of the coating parameters

and for a good surface preparation to ensure optimal adhesion and durability of the coating), including top performance coating products could fail.

The choice of Zürn Harvesting, a German manufacturer in the field of agricultural machinery with 135 years of activity behind, has been to internalize the coating of its production to get full control over the coating quality, to reduce logistics costs and the environmental impact of its activity, and last but not least to increase the throughput of its production process. Actually, Zürn used to have different job coaters, some of them located more than a hundred of km away from its



Buffer with semi-finished products.



The blasting chamber.

premises: this meant a processing time of its products up to 15 days. Today, thanks to the installation in 2019 of a semi-automatic powder coating line designed and manufactured by Eurotherm in Turin, Italy, Zürn has reduced the lead time of the coating phase to two days.

135 years of passion for agricultural machinery

In 1885, Johann Zürn founded the Zürn company as a blacksmith shop in Westernhausen, Germany. At the beginning of the last century,

Johann Zürn started the production of farm trailers, harrows and other agricultural equipment. After starting the dealership of agricultural machinery produced by the German manufacturer Eicher, first, and John Deere-Lanz after, in 1965 Zürn moved to the current headquarter in Westernhausen. It was during the Eighties that Zürn started the production of agricultural machines with its own brand, in particular of rapeseed harvesting equipment. Zürn developed soon into a harvesting specialist and made combines even



The filtration skid.



The cleaning booth.

more efficient.

For over 30 years, Zürn has been developing and producing attachments for combine and forage harvesters for all manufacturers. Its wide portfolio of products ranges from header attachments for rape and sunflower harvesting to the direct cutting ProfiCut header - a universal header for the harvesting of whole crops with powerful forage harvesters – and the high-performance PremiumFlow belt header for combines. Header transporters complete Zürn's portfolio.

"At present Zürn Harvesting GmbH sells its machinery worldwide with a special focus on Europe and North America" Florian Löckle, marketing and product manager at Zürn says. "We supply all the major brands in the agricultural sector, like Claas, CNH, John Deere, and especially with the latter we are working very close".

Today, Zürn runs two factories, the manufactory in Hohebuch, specialised in the production of plot combines for field research, and a production plant in Merchingen, where last year Zürn Harvesting created a new surface treatment centre with a modern powder-coating facility supplied by Eurotherm.

Zürn's is now one of the largest powder coating installation in the region.

"Our components can be up to 14 metres long, so it was difficult to find somebody who could paint them. In addition, we had many logistics problems," Florian Löckle explains. "These problems got bigger as we extended our portfolio in the last years, so we decided



Cleaning booth and curing oven.



The manual powder application.

that it was time to install our own powder coating system. Today I can assert that we are very satisfied of the investment because Eurotherm coating system ensures the best possible finishing quality of our machinery. In addition, as the system has a bigger coating capacity than our requirements we can offer the coating service to third parties. Besides achieving our goals in terms of quality and savings, with this investment we were able to open a new business for Zürn”.

A production with a complete vertical integration

Thanks to its many years of production and service experience, Zürn can supply its customers with high-performing, reliable machines and attachments, which are designed for use in all conditions. At its production site in Merchingen, about 85 employees are currently working for the engineering, finishing, assembly, logistics, administration, marketing and sale of its high value-added agricultural machinery.

Zürn's production process is vertically integrated and goes from steel construction with automated welding in all common procedures (MAG/WIG) to powder coating on the semi-automatic line recently installed by Eurotherm, to assembly and logistics.

Surface Centre in Merchingen: Zürn coats your parts

Zürn powder coating plant pre-treats, dries, powder coats, and cures metal parts in steel with a length up to 14 metres and weighing up to 4 tons.

The powder coating system comprises:

- Overhead conveyor with a trolley and a lifting station for loading and unloading the parts coming from the welding shop;
- Central buffer for the sorting of incoming and outgoing components, which can house up to 20 racks. The large storage areas offer enough space for loading and unloading trucks directly in the paintshop;
- Blasting chamber with automatic filtration and complete recovery of the blasting media for parts up to 10 tons;
- One-chamber cleaning tunnel with a suspended, automatic rollover washing system equipped with waste water recovery, osmosis and filtration skids;
- Powder coating booth with two manual application stations and latest generation Wagner equipment;
- Wet painting booth used as a back-up;
- Drying/curing oven between the cleaning and coating booth. Curing time and temperatures can be adapted to the single component's requirements.
- Air handling unit for air compensation inside the paintshop.

Washing chamber, oven and painting booths has the following internal dimensions: 15 length x 5 width x 4 m height. “We wanted a machine that could wash automatically our large pieces and Eurotherm was the only engineering company in Europe to be able to supply such a large installation,” Martin Filz, director of Zürn surface centre says. “Eurotherm fully met our requirements and we worked really well together”.



The pieces leaving curing oven.

Improved corrosion resistance with an optimized pre-treatment cycle

One of the coating stages that Zürn mostly focused on was the pre-treatment.

"Together with our supplier Haug Chemie and Eurotherm we studied a pre-treatment cycle able to improve the corrosion resistance of our products," Martin Filz explains. "The system performs a first iron-phosphating and degreasing, then two rinses with tap water, one rinse with deionized water and a final no-rinse passivation. The combination of iron phosphating and passivation ensures both optimal adhesion and improved corrosion resistance of the powder coating film. In addition, we can perform two-coat systems, if a higher corrosion resistance is required. We can offer a powder primer + topcoat in any RAL colours as well as different gloss levels (matt, silky, silk glossy, glossy), special effects and textures".

"As for the powders, we apply polyesters with a 70 microns thickness. The film has high UV-, impact and scratch resistance," Florian Löckle, marketing and product manager at Zürn, explains. "We have many different suppliers of powder coatings but as we also offer the coating service to third parties, we are often asked to use powder coatings certified by the end customer. The number of colours is increasing together with the number of parts we coat: at present we have 40 different colours on stock, while the standard colours of our production are only three."

Conclusions

"One the key strength of Eurotherm's coating system is the very good technology they have for the pre-treatment stage of such large pieces" Martin Filz ends. "In addition, the system is very accessible and easy to maintain than other systems we saw before closing the deal with Eurotherm. The main thing is that we really worked well together, they have an excellent customer service and, most of all, we have saved time, costs, and improved our quality." ●



Martin Filz, director of Zürn surface centre.