Powder Coating Aluminium Electrical Cabinets

From a Manual to a Fully Automatic Coating Process

Rising production levels and a growing variety of colours prompted a Swiss manufacturer of aluminium electrical cabinets to invest in a new powder coating system. The new machine enabled the company to move from manual coating to a cost-effective fully automatic process.

"Our electrical cabinets do not rust and are light in weight," says Franz Gihr, a member of the management team at ASS Alu-Schaltschränke AG in Engwilen in Switzerland. But why is light weight an advantage for an electrical cabinet? "Companies, particularly in the field of IT, are reorganising their premises, moving to new buildings or setting up temporary facilities more and more often. In situations like this, a lightweight electrical cabinet is more flexible. And because we make our cabinets from aluminium, which does not rust, they are ideal for use in a wide range of industries."

ASS has been using a manual coating system since the 1980s. Until two years ago, this was a reliable solution for coating parts, although it operated in spray-to-waste mode. Recovery of the powder was possible, but the cleaning process was costly and time-consuming.

Coating between production and assembly

As a result of the expansion of the business, a decision was made to invest in a new plant. The company's existing facilities had reached the limits of their capacity, partly because of the growing volume of products and partly because of the increasing variety of colours. In 2009, ASS began planning a new building for the production of electrical cabinets. As part of the planning process, the company took a detailed look at all its production and logistics workflows. As Franz Gihr explains: "We came to the conclusion that the coating system had to be located between the production and assembly areas."

In 2010, the ideas were put into practice and the complete system, including pre-treatment and powder coating, was replaced. "For us, a high level of automation and a clean and quick colour change process were very important. In addition, the new system had to be extremely cost-effective and meet high environmental standards. At that point, we were only familiar with manual coating machines and a rapid colour change system represented completely new territory for us," says Gihr.

J. Wagner AG had been ASS' supplier of application systems for many years and the company was pleased with its services. "That doesn't mean that we were simply promised the contract. We had plenty of competition," says René Kühnis, Wagner's head of sales for Switzerland. The specifications of the new machine were clearly defined. Parts that were 2200 mm in length and height and 500 mm wide had to pass through a fully automatic colour change system. The machine had to fit in the existing building, as the new building was reserved for the assembly department and the huge sheet metal forming machine could not be moved.

"Our compact SuperCube booth and new SuperCenter powder logistics system met all the requirements in full," explains Kühnis. The system has five automatic spray guns arranged vertically on each side, together with a manual precoating area.

A total of 40% of the ASS product range is made to customer specifications from welded components which have to be pre-coated. In order to give the coaters easy access to the tall parts, the pre-coating area was equipped with a lifting platform.

At the heart of the powder coating system supplied by Wagner is the new powder logistics system (SuperCenter).
It includes the central control system for the machine, manages the automatic colour change process, documents powder consumption and allows for short changeover times. “We were impressed with the concept of the SuperCenter the first time it was presented to us,” explains Gihr. “And after using it for only a few months, we knew that we had made the right choice.”

**Clean colour changes**

During the planning phase, Gihr visited various different machines belonging to other users. When he compared the products of the different suppliers, he noticed that no dust was produced by Wagner’s machines during the colour change process. “The colour changes were clean, which was exactly what we wanted,” he says.

In Wagner’s application laboratory in Markdorf in southern Germany, tests were carried out in collaboration with ASS to verify that the concept designed on paper was what the company required. The results met the expectations of ASS in full and the go-ahead was given for the implementation. “Although we can convince customers of the benefits of our concepts during visits to other users, we generally also carry out application tests in our laboratory,” explains Kühnis. “This gives customers a reference point for the performance of their individual systems.”

**Short routes for coaters**

The engineers responsible for planning powder coating systems often find that integrating them into an existing building represents a major challenge. Generally, there is very little space available and no possibility of changing the columns and beams that are already in place. This was the case at ASS and the situation was made more difficult by the fact that the existing machinery could not be moved.

As the automatic spray booth had to be accompanied by a manual booth, the conveyor system is large and complex. “We needed to come up with some good ideas about the ideal positions for the cyclone, the after-filter and the SuperCenter, because for us the decisive factor when planning a machine is ensuring that the coaters do not have to walk far. This is the only way of completing colour changes quickly and efficiently,” explains Kühnis. The compact control unit (ProfiTech) is the perfect solution. All the controls and parameter settings can be displayed and implemented on a 15” touch screen.

The coaters do not need to monitor a separate control unit for each spray gun and the control cabinet can be located in a position where it does not interfere with the production workflows. As Gihr says: “The machine is very compact and ergonomically designed. It’s obvious that our coaters are enjoying working with it.”

Months after the machine came into operation, Gihr is still pleased with the results of the complex planning process. Wagner met all the preset deadlines, the cooperation with the engineers who installed the machine was very good and the training took place during the commissioning process.

Gihr highlights one aspect in particular: “We were surprised about all the small details included with the machine. For example, ear defenders are supplied with the cyclone, a central vacuum cleaner is connected directly to the ventilation system and even the overshoe for wearing in the spray booth are provided without comment. This is real added value and a very special service, because these details were never mentioned during the planning process.”

Because of the very positive results, the paint spray booth, which was created from the former powder booth and is now used mainly for priming, was equipped with a modern TempSpray paint system from Wagner. In contrast to conventional airmix systems, no thinner is needed. The paint is heated to 40°C and applied relatively thickly, which means that no mist is produced and the system is more efficient. It also allows the coaters to work without wearing a mask.

Gihr put his heart and soul and a great deal of energy and time into planning and implementing the new powder coating system. Would he do it again in the same way? “Definitely,” he says. “Wagner’s concept functions just as we imagined it would. The SuperCenter in particular allows for fast, clean colour changes and enables the coaters to work in a relaxed but efficient way.”

The new machine has plenty of reserve capacity to accommodate future production increases and an even greater variety of colours. ASS is well-equipped to face the future with its carefully designed system. The changeover from manual coating in spray-to-waste mode to fully automatic powder coating has been a complete success.

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