Efficient and very consistent powder coating

Highest quality, more flexibility and economy

Linak Profiles A/S, Denmark
Linak Profiles relies on modern metal processing and finishing technology

Four years ago, Linak Profiles, known until 2018 as AKK Industri ApS in Sønderborg, Denmark, converted its production to solve its growth-related capacity requirements for lifting columns while at the same time increasing production efficiency. LINAK Lifting Columns are hi-tech electrical devices able to convert rotational motion in low voltage DC motors into linear push/pull movement. In the newly built hall, state-of-the-art robots and production facilities have since then ensured extensive automation of the processes involved in the manufacture of lifting columns for height adjustment of contemporary office desks.

The Challenge

“In order to be able to raise or lower the desk, precisely machined profiles are required,” explains Kim Paulsen, plant operator at Linak Profiles. “Also to meet the high demands on design, it is necessary to be able to provide these profiles in a wide variety of shapes and colors. In addition, the sliders of the multi-part columns have very narrow tolerances and must be coated very uniformly for perfect functioning.”

The Solution

The company Linak Profiles decided to build a completely new production hall in 2016, equipping it with state-of-the-art technology and relying on a high degree of automation to achieve higher efficiency and throughput. On a production area of around 6,500 m² in Sønderborg, around 50 employees have been developing and producing up to 20,000 lifting columns of the highest quality every week since then. Welding is carried out by robots with extreme precision and high speed, and in powder coating the Venturi spraying system is replaced by the high-performance dense phase technology with Nordson HDLV® pumps.

The efficient powder coating system is divided into pre-treatment, heating, powder application and finishing areas. After pre-treatment, the parts are transported to the cubed ColorMax® coating booth. The total of seven Encore® HD automatic spray systems apply uniform coating efficiently and with the highest level of process control over a long period of time to ensure extremely consistent powder application. The Nordson Encore HD spray system delivers powder to the products with a minimum of air resulting in a soft spray and high application efficiency. This avoids manual reworking of this geometry and results into more efficiency. An Encore HD manual spray system is also available for coating special shapes.

The ColorMax® booth is designed for fast color changes in order to minimize lengthy production interruptions during up to ten color changes per shift. The application efficiency is maximized due to the combination of the soft spray delivered by the Encore HD spray systems and high density of the products loading on the line. The minimal oversprayed powder is recovered through a twin-cyclone system with over 95% reclaim efficiency.

The Spectrum® HD powder feed center offers a clean coating environment and optimum powder handling conditions for production confidence and also reducing operator interaction. The powder coating system is controlled by the PowderPilot® HD control system. An icon-based touch screen user interface provides the operator with relevant information about the status of individual system modules as well as step-by-step instructions when – during a color change, for example – operator intervention is required.

Four years have passed since the technology upgrade and the powder coating system leaves no desire for modernization or renewal.

“Compared to the previous system in the old plant with venturi pump technology, we save powder material of around 30%. Throughout our 3-shift operation we coat consistently day in, day out with a layer thickness between 80 µ ±10 µ – which is crucial for assembly of the products,” explains Kim Paulsen. “The sliders of our multi-part columns have such tight tolerances that an uneven coating would complicate assembly and cause stuttering during the testing, leading to damage and malfunction.” Mr. Paulsen adds.

The Benefits:

“Highest quality, more flexibility and economy

“Building a new facility and then renewing all the production components at the same time was a challenge for everyone involved,” recalls Kim Paulsen. “Once the robots for cutting, punching and welding moved in and the new powder coating system, conveyor, pre-treatment and ovens installed, it still took about a year before the many automated modules worked together perfectly and everything ran smoothly. But the plant operator also reports one
exception. “Our Nordson representative kept his word. Peter Johansen of Lakteknik ApS promised a trouble-free and on-schedule installation of the powder coating system, and the very professional and experienced Nordson team was successful in getting that right: The entire system worked exactly as it should from day one!”

In addition to the efficiency, flexibility and robustness of the system, it is particularly easy to operate. Although Linak Profiles use two operators per shift, this is purely a safety measure – for example as a backup in the event of illness. “The powder coating system from Nordson is easy to program, easy to use and all surfaces that are to be cleaned or maintained are easily accessible. Even with our seven to ten color changes per shift, this can easily be done by one person alone,” says Kim Paulsen, summarizing his experience. “We are very pleased with our decision to partner with Nordson. With their unmatched customer service, we feel confident that Nordson will continue to make powder coating easy for our operations. The benefits we see are very clear, we couldn’t be happier” states Mr. Paulsen.

Finally, he adds: “I am very excited to see what further great technologies Nordson will develop in the future!”

The fast color change system includes the Spectrum HD powder feed center with PowderPilot HD control system, ColorMax³ powder booth and seven Encore HD automatic powder guns.