



The machine guarding solutions from Axelent.



## FOCUS ON TECHNOLOGY

# Axelent's New Powder Coating Plant: Efficiency, Flexibility, Innovation, and Sustainability

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Axelent has recently launched a new in-house automated powder coating plant designed by Moldow, that leverages the hanging systems from HangOn and the cutting-edge application technologies of Gema. Running on green energy sources such as thermal, wind and solar power, it has also allowed the Swedish manufacturer to increase production, improve paint coverage and enhance the final product quality.



**The machine guarding solutions from Axelent protecting its own manufacturing department.**

In the ever-expanding world of industry and production, there are companies that manage to stand out not only for their products and services, but also for their ability to change the sector and its norms. Axelent, a leading Swedish manufacturer known for its mesh walls for machine guarding, warehouse automation products, and recently developed crash barriers, represents a reference for this market not only for the quality of the solutions that it delivers to its customers, but also for the constant investments in production optimisation and sustainability.

As a matter of fact, it has recently launched its in-house powder coating plant, developed by Moldow as the result of a strategic collaboration with HangOn for its hanging systems and Gema for its powder coating application technologies. The new line immediately demonstrated to be successful, allowing the company to increase the production output, improve the coverage, optimise the energy use, and enhance the overall final quality of the products.

#### **Axelent: security first, since 1990**

Axelent's journey began in 1990, from three brothers and a cousin with a shared goal: to become a global supplier right from the beginning.

As a matter of fact, the company has grown exponentially ever since. In 2001, Stefan and Johan Axelsson, alongside with Mats Hilding, took over management. At that time, the company had a turnover of about €5 million and was already operating in ten countries. However, it also began to further expand outside Europe, developing its activities in the United States of America and in Asia.

Nowadays, Axelent boasts a €120 million turnover and operates in over sixty countries all around the world, with subsidiaries in Europe and the U.S.A. and warehouses in Thailand, Japan, and Australia. All production activities, however, are still concentrated in Hillerstorp (Sweden), within a manufacturing cluster that fosters cooperation and innovation among local businesses.

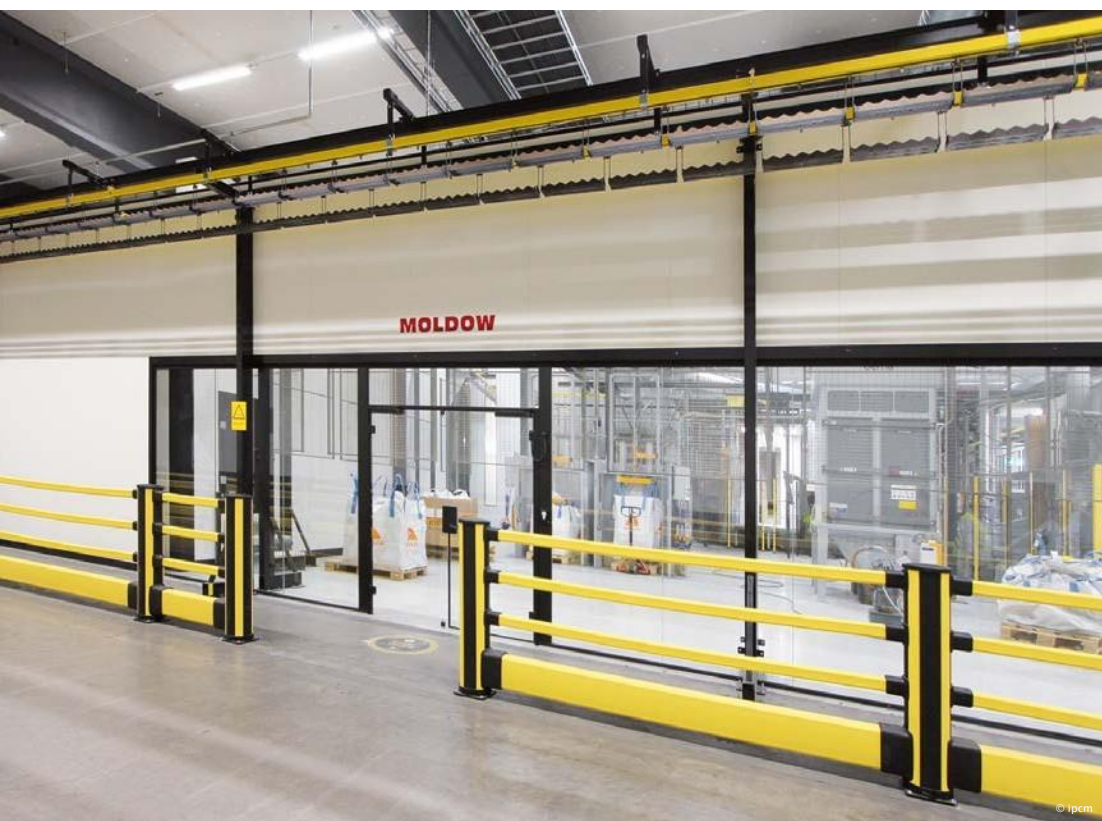
#### **Production 100% made in Sweden, from raw materials to powder coating and assembly**

“Although we are considering establishing a production facility in the U.S.A., in order to better serve the expanding North American market, all our manufacturing operations are currently based in Sweden, where we produce mesh walls and panels for machine guarding and warehouse automation solutions like anti-collapse shelving and pallet racks (which



account for 70% of the production), as well as a local Scandinavian product called storeroom (i.e.: a special storage required by law in Swedish apartments, where people can store their winter and summer equipment). Furthermore, the company recently ventured into producing crash barriers, made from extruded plastics, for the protection of bollards and walkways,” explains Stefan Axelsson, Axelent’s Global Account Executive. Axelent produces more than one million mesh panels each year with a single shift, thanks to five lines dedicated to the fabrication of several components with state-of-the-art machinery for cutting, forming and bending the raw materials, such as steel coils and sheets. However, the forecasts predict that the company will soon increase its shifts, in order to satisfy the rapidly-growing demands.

“Our manufacturing operations are mainly dedicated to the mesh panels, which are our core product, with dimensions ranging from 250 to 2,500 millimetres,” adds Johan Axelsson, the Technical Manager of Axelent. “Although some smaller parts like square and rectangular tubes and wires are manufactured by local sub-suppliers that are located nearby - with the maximum distance being seventy kilometres - all the other operations are carried out in-house, including powder coating and assembly of the final goods with locks and electrical wires, ready to be shipped to customers worldwide.”



**From top:**

**The warehouse of Axelent.**

**The entrance to the paint shop developed by Moldow.**



The exit of the seven-stage chemical pre-treatment spray tunnel and an example of the hanging solutions provided by HangOn.

### The new customised in-house coating department developed by Moldow

Axelent previously relied on the external job coater Leba AB<sup>1</sup> for its coating needs, but the company's growing volume and the need for sustainability and efficiency led to the decision to develop an in-house coatings department. So, it requested Moldow to design a new fully-automatic powder coating plant that could combine application efficiency and finish quality with reduced energy consumption and environmental sustainability.

The new coating line features an overhead monorail conveyor divided into two parallel tracks, A and B, that can run independently of each other with a speed of 4 metres per minute. It has been specifically designed to ensure the future automation of the loading and unloading operations: as a matter of fact, the Axelent staff manually hangs the workpieces on the frames provided by HangOn, but the company aims to automate also this procedure. Currently, the coating process of Axelent requires both tracks to proceed parallelly into the seven-

stage chemical pre-treatment spray tunnel, including two degreasing steps, two rinsing steps with tap water and one with demineralised water, followed by a nanotechnological conversion with Chemetall's Oxsilan technology - succeeded by a final DI rinse. Once the items have been cleaned, they enter an electrically-heated drying oven, followed by a cooling zone. Here, the substrate of the metal parts is ready for the application of the industrial polyester powder coatings supplied by Axalta Coating System. The conveyor then splits into two separate tracks, each equipped with a pre-touchup robot, a Gema booth and a 20 m long preheating tunnel for gelling the powders, in order to avoid cross-contamination. The conveyor then reunites its two rings and leads the frames into the curing oven (that is also electrically-heated). After the cooling phase, the components are unloaded from the conveyor and moved towards the assembly line.

### Increasing hanging density without sacrificing efficiency

HangOn, a Swedish developer of hanging, masking, and handling solutions, plays a pivotal role in Axelent's coating efficiency. Its innovative

<sup>1</sup> "Eight Automatic Powder Coating Lines for One of the Largest Job Coaters in Northern Europe: Leba AB" in ipcm®\_international Paint&Coating Magazine n. 32 – March/April 2015

hanging systems allow companies to maximise line density, reducing energy consumption and boosting sustainability.

“By increasing hanging density, the company is able cut energy consumption by up to 70%,” highlights Andreas Orre, the Commercial Manager of HangOn AB. “We have a number of products in stock that Axelent can requested and immediately use, without having to assemble anything. In addition, since the company will soon leverage robots - developed by its robotic division, that is located in a building nearby - we are jointly studying new solutions that could further facilitate the hanging operations and improve its density, without compromising the efficiency of the pretreatment or the application phases.”

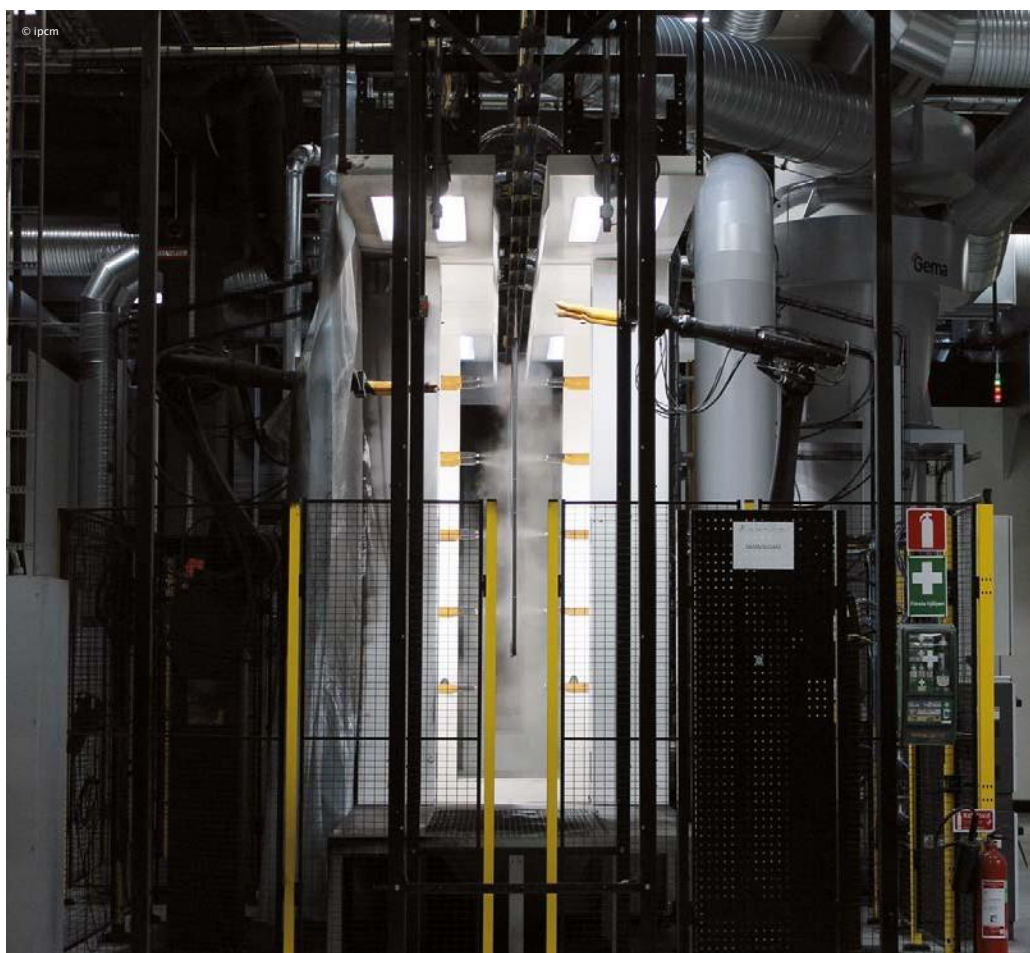
#### Improved coverage on all corners and geometries

Axelent’s new coating plant leverages the state-of-the-art application technologies provided by Gema. It features two MagicCompact EquiFlow BA04 booths with cyclone technology, equipped with two reciprocators each with ten OptiGun GA03 automatic spray guns per side. These booths are designed for quick colour change, with each

booth dedicated to one colour (black or grey), while special colours are still applied by Leba. The coating process begins with two pre-touchup robots equipped with Gema guns to ensure complete corner coverage, followed by the automatic application of Axalta’s industrial polyester powder coatings. Gema’s MagicControl 4.0 system control, equipped with the GemaConnect Dashboard, manages the entire process, offering an intuitive interface for operators to create standardised programmes and adjust film thickness as needed. “Finally, the OptiSpray AP01 dense-phase technology application pumps and the OptiCenter OC07 for excellent coating quality and fast colour change also brought us three advantages right from the outset: increased powder penetration, improved film distension, and reduced powder consumption,” clarifies Stefan Axelsson.

#### Immediate results: flexibility, consistency, reliability, and sustainability

Axelent started its powder coating operations at the beginning of April 2024. After an initial testing phase, during which the operators learned



**The Gema powder coating booth.**

how to precisely perform all the related tasks, the coating plant is now fully operational and allows the company to achieve a more accurate powder application that ensures a more performing and aesthetically-appealing finish, besides sustainable and economic advantages as well.

“We were very satisfied with Leba’s quality and its services. As a matter of fact, we still collaborate with this job coater for special colours and effects. But two lorries full of our products went back and forth daily. Since carbon reduction is one of our main goals, we wanted to find an alternative,” continues Stefan Axelsson. “So, also in order to optimise production flow, we then decided to bring the coating operations in-house”.



**The touch-up robot in front on the coating booth.**



The coating facility runs in fact entirely on green energy, sourced from a geothermal system and solar panels installed on the factory's roof. Additionally, Axelent has invested in windmills, producing all the electricity needed for its operations. The company also employs five heat pumps that recover thermal energy to heat up the pre-treatment water and cool down the cooling areas of the plant, as well as the whole production department.

"We try to keep as much energy as possible within the system," says Johan Axelsson. "It's a combination of green energy technologies, and we even have our own wastewater treatment plant with vacuum evaporators that eliminates the need for chemical-physical treatment, removing the sludges and recovering the entirety of the water in a closed loop circuit."

"The entire process, from the initial meeting with the plant developers from Moldow to the final handover with the technicians from all the partners involved, has been characterised by a very smooth cooperation between everyone. For example, during the planning stage we considered opting for a Power&Free conveyor. But the solution proposed by Moldow ensures us to reach the exact level of customisation and flexibility that we need for our coating process. The new powder coating plant is a shining example of the results that it is possible to achieve by combining efficiency, flexibility and sustainability: we have increased the production output, optimised energy use, and enhanced the quality of our products", concludes Stefan Axelsson.



**From top:**

**The OptiCenter OC07 powder centre.**

**Coated workpieces exiting the curing oven.**