

Haas' semi-automatic powder coating plant is able to treat workpieces up to 21 metres in length.



FOCUS ON TECHNOLOGY

Haas Strahlcenter GmbH Chose Italian Technology for the Largest Powder Coating Plant in Germany by Parts' Size

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The boost to innovation of Haas Strahlcenter GmbH & CO KG, a service contracting company that offers coating among other services located in Ulm (Germany), found a concrete application in the technology provided by Eurotherm, an Italian company specialising in design and installation of painting systems. This supplied the German company with a semi-automatic powder coating plant considered the largest one in Germany.

Sometimes, the most brilliant ideas and the most disruptive products arise from the clash, or encounter, between two apparently opposite mentalities that actually share the same vision, passion, and intent – innovating, that is. In 2015, for example, the encounter between a German coating contractor, specialising in the heavy-duty treatment of large-sized metal parts intended for different industries, and a renowned Italian coating plant manufacturer led to the installation, in November 2019, of what can safely be considered the largest semi-automatic powder coating plant in Germany.

For over twenty years, Haas Strahlcenter GmbH & CO KG has been a competent, reliable, and flexible industrial coating partner for the aesthetic and conservative surface treatment of large metal parts. Its aim has always been to adapt its range of surface treatment services to the long-term requests of its customers. That is why this German contractor has offered metal sandblasting and glass bead blasting, spray galvanising, and liquid painting services since the beginning in 1998. Very soon afterwards, the company introduced its own logistic service with owned trucks to offers its customers transportation services. In 2003, Haas Strahlcenter integrated its offer with two further processes: application of passive fire protection coatings and on-site sandblasting and coating. However, inspired by his own ambition to become a full-service supplier, founder and current owner Peter Haas realised that he had to add powder coating to his company's portfolio in order to achieve his goal. Therefore, he started looking for a supplier to implement his pioneering project: building a powder coating plant that could handle the same working-piece dimensions of his liquid spraying plants, while at the same time meeting the highest technical and environmental standards possible (in fact, the current system guarantees a reduction by 90% in solvent consumption and by 80% in energy costs). This is when the encounter took place between Haas Strahlcenter (based in Heidenheim and sited in Ulm, both located in the federal state of Baden-Württemberg) and Eurotherm (Turin, Italy), specialising in the in-house design and construction of manual and automatic liquid and powder coating systems.

"No German plant builder was able to provide me with what I had in mind: a very large-sized coating plant able to paint workpieces up to 21 metres in length," states Peter Haas. "Everyone offered me booths and ovens up to a maximum of 17 meters. And yet, I was convinced that a technological solution existed to meet my needs. I realised I had to turn to an Italian manufacturer, more flexible and willing to design and build something that had never been designed and built before. I got to know Eurotherm through an advertisement in a technical magazine and, as soon as I made contact with it, and especially with Joe Kaut, commercial manager of Eurotherm Lackieranlagen GmbH, I knew that I would have achieved my goal. In Eurotherm, I found a technically expert, but



From left to right: Anna Dicke from Eurotherm Commercial Department for Germany, Eurotherm Project Manager Rocco D'Aloia, Eurotherm CEO Paolo Ghiazza, Haas CEO Peter Haas and his son, Benjamin Haas.



The new plant installed by Eurotherm Spa.

also visionary partner willing to take risks with us."

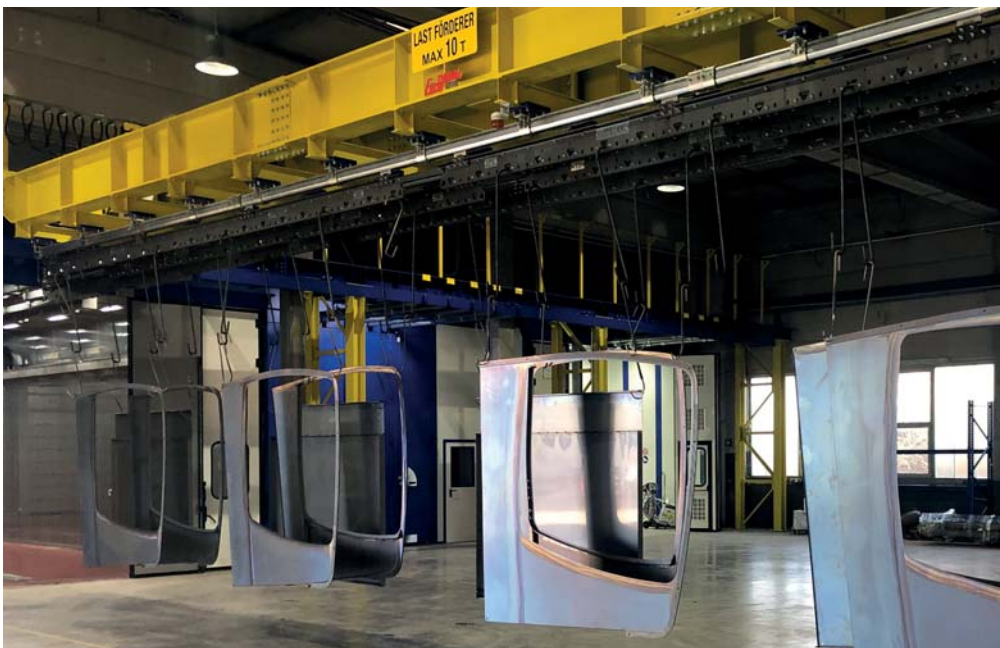
The result is visible to anyone visiting Haas' factory in Ulm. In November, Eurotherm completed the start-up of a plant co-designed with Peter that handles, pre-treats, dries, powder coats, and cures metal parts in steel and aluminium with a length between 8 and 21 metres. This makes it the plant with the largest coatable workpieces' size in Germany.

Haas Strahlcenter GmbH – The magic triangle

Established in 1997 as a small sandblasting contractor with only five operators, over the last two decades Haas Strahlcenter has become one of the major players in the coating contracting industry of southern Germany. Its first growth steps were opening a second production plant in the industrial area

of Ulm (on the border between Baden-Württemberg and Bavaria) in 2010 and relocating its headquarters in the city of Heidenheim/Nattheim in 2014. In 2018, it acquired Sandstrahltechnik Scherschel GmbH (in Kirchheim unter Teck, near Stuttgart and in the centre of the one of the largest industrial areas of southern Germany), specialising in metal stress-relieving heat treatments and subsequent automatic shot blasting and shot peening operations. This brought the number of its production sites to three within 100 km. Currently, Haas is equipped with 7 manual liquid coating booths for large mass-produced workpieces, 4 manual sandblasting booths, 5 automatic shot blasting systems, 1 mobile sandblasting and coating plant, different passive fire protection application systems, 1 heat treatment furnace, and 1 semi-automatic powder coating plant. The latter allows treating both large series of medium and small parts and oversized individual components, all with the same quality degree.

"Thanks to its customer-oriented sales and growth strategy, Haas is



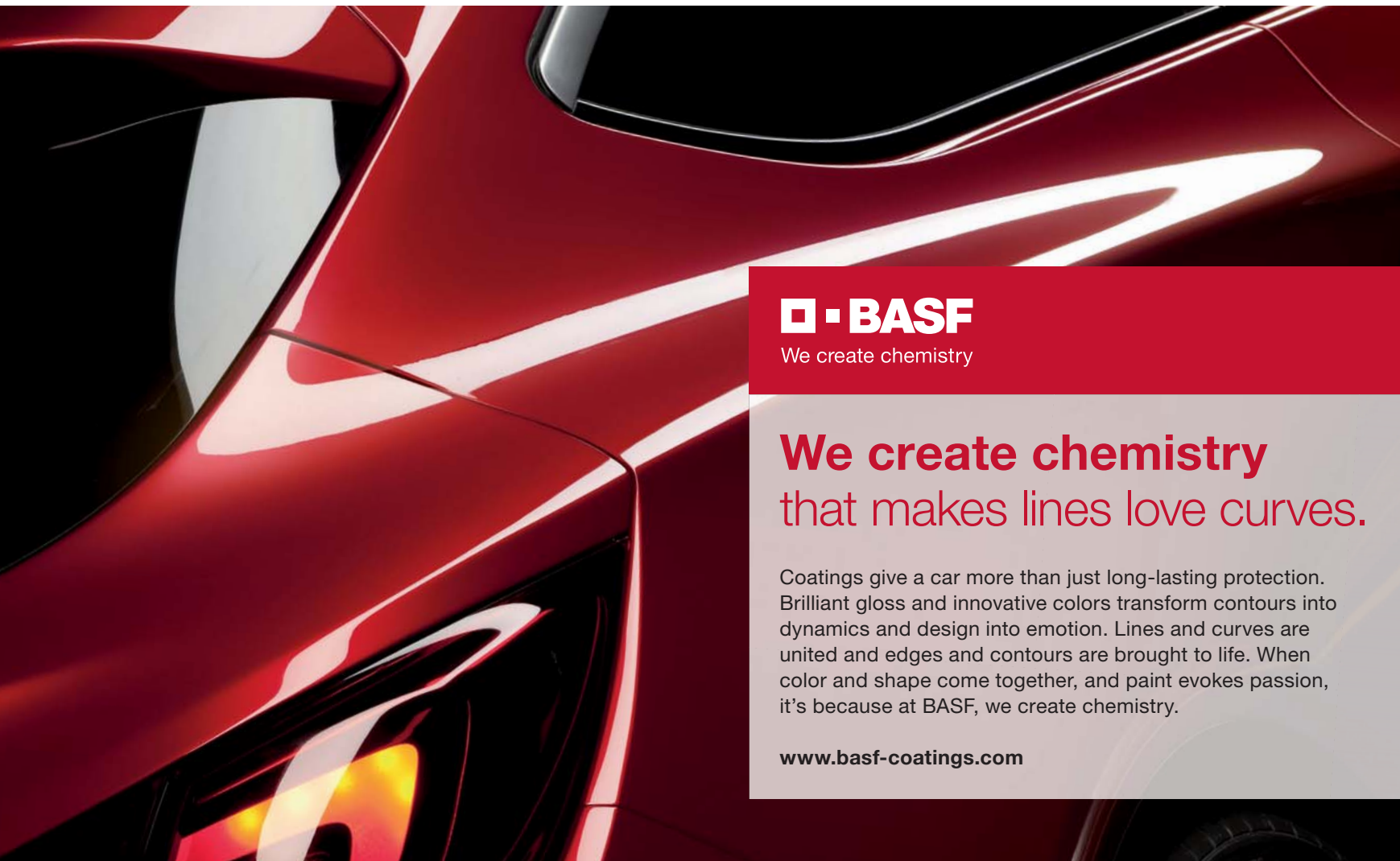
The conveyor handles workpieces with weights up to 15 t.

a partner in great demand by the metal industry for the sandblasting, chemical pre-treatment, and coating of oversized workpieces, as well as the heat treatment of components from the first metal processing phases to final assembly,” says Haas Assistant Manager Richard Moser. “We are a powerful, experienced company with seventy employees, combining the expertise of three different sites; their location close to highways and their use of their own means of transport also speed up collection and delivery operations to and from our end customers. All this enables our customers to rely on a single-source supplier, thus saving time, energy, and management costs.”

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The sorting buffer.



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The workpieces' entrance into the plant.

Characteristics of the powder coating plant

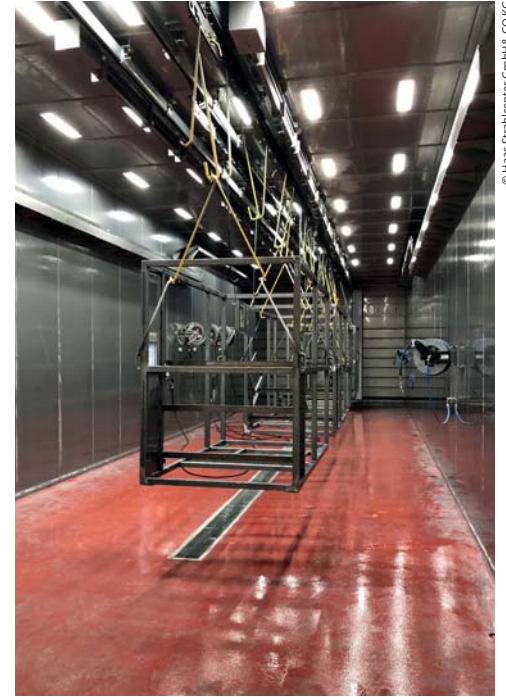
The powder coating plant designed by Eurotherm consists of as follows:

- Overhead conveyor with an automatic trolley and a lifting station for loading and unloading the parts;
- Central buffer for the sorting of incoming and outgoing components, which can house up to 15 racks;
- One-chamber manual cleaning tunnel with a suspended, automatic rollover washing system and waste water recovery and filtration skids;
- Drying/curing oven between the cleaning and coating booths;
- Powder coating booth with two manual application stations and latest generation Gema equipment.

As is well known, the most difficult phase of a powder coating process performed on such large parts is curing. In order to heat parts with a significant mass and reach a uniform surface temperature of 180° C without consuming huge amounts

of energy, a perfectly insulated and defect-free oven is required, capable of guaranteeing uniform circulation of hot air. The static oven supplied by Eurotherm has an indirect, forced air circulation heating system with a hot air generator featuring a combustion chamber in stainless steel and methane gas supply. The oven chamber consists of self-supporting sheet metal panels. This structure is intended to support the insulation of the oven on the outside and to house the air recirculation ducts and the combustion chambers on the inside.

The insulation consists of modular panels in galvanised or coated sheet metal, arranged to form an internal and an external layer not thermally connected to each other, so as to avoid thermal bridges. On the inside, three layers of high-density (100 kg/m³) rock wool panels, with a total thickness of 150 mm, are an effective barrier to heat dispersion.



The rollover washing system.



The interior of the oven.

Two combustion chamber burners, arranged inside the air recirculation duct, heat up the air within the oven chamber. The air heated by the combustion chambers is sucked in by recirculation fans and conveyed to the distribution plenum, from where it is blown into the oven through special slits; air is then recovered through the grills on the inner wall at the bottom of the oven and recirculated again. Forced air circulation with reciprocal oven chamber-combustion chamber movement takes place by means of four centrifugal fans suitable for high temperatures, with a statically and dynamically balanced, high-efficiency steel impeller. The motor is mounted externally on a spacer lantern and equipped with a cooling fan for the

shaft and with high-temperature bearings. The oven has a vent with a fume extraction system, operating at the end of each cycle and complete with an adjustment shutter, in order to remove any gases that could form during heating. Another highlight of the Eurotherm plant is its skid for the recovery and filtration of waste water, installed on one side of the cleaning booth. It includes a tank for the mixing of the phosphodegreasing product with an automatic dosing pump, two mains water tanks for the rinses preceding the passivation phase, two tanks containing the multi-metal passivation product, and an osmosis system for the production of osmotic water necessary for the last rinse.

As for the application of powder coatings, mainly polyester or hybrid, Haas chose two latest generation manual, feed-from-the-box units designed by Gema. The system is managed by a touch-screen Siemens PLC enabling to monitor production progress. The operators running the plant take on the orders and assign each of them a coating program. It is possible to adjust parameters such as pre-treatment specifications, RAL colours, number of racks for each order, and amount of powder to be used. The system is also able to detect any quality problems that may occur during the coating cycle, so as to trace the parts concerned and stop delivery.

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The powder coating booth.



One of two burners with which the curing oven is equipped.

Conclusions

By starting activities in 2020 with an advanced plant, which integrates advanced, clean and digital technologies and which is probably the largest semi-automatic powder coating plant in Germany by size of the treated parts, Peter Haas has concluded the ambitious expansion program he has pursued for the past ten years. This has created a crisis-proof company, ready to face any future industrial challenge. "For this purpose, I have relied on the typically Italian characteristics of creativity and flexibility: Eurotherm has proved an expert and reliable technological partner. I have also established a fruitful and friendly technical and cultural exchange relationship with its CEO, Paolo Ghiazza." ○



The waste water recovery and filtration skid.