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Opening photo: A workpiece coated by Remaver.



FOCUS ON TECHNOLOGY

Manual pre-treatment and powder application processes combined with a suitable hanging system: a contribution to flexibility

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One of the tools that enable small and medium-sized companies serving local markets to counter the competition from large companies – which are more and more frequently equipping themselves with plants and devices in line with the Industry 4.0 principles, in order to be competitive – is flexibility seen as a guarantee of quality. In the contracting coating field, small firms must be able to apply

suitable coatings on any type of workpiece, from large steel structures to small metal components. On the one hand, automation contributes to higher productivity but, on the other hand, the use of devices for manual processes can be a significant help, especially in the case of frequent alternation of production batches featuring workpieces with different formats and sizes.



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Figure 1: The sandblasting chamber with a large-sized structure.

Remaver, a powder coating contractor based in Lugo (Ravenna, Italy), is a good example of such small businesses. It was established in November 2010 and it has significantly grown over the years. It currently has a staff of 15 young professionals, with an average age of about 30 years. One of the two founders, Alessandro Rensi, currently manages the company along with Cristina Coralli.

“The primary activity of the company,” Rensi says, “is the powder coating of parts from the most varied sectors, such as agriculture, carpentry, building and plant engineering (Ref. opening photo). In order to fully meet the needs of our customers, however, 3% of our workflow is devoted to liquid and thermoplastic coating. Remaver mainly serves its local market, with Emilia Romagna accounting for 85% of orders due to the presence of numerous multinational companies that export their products around the world.”

Remaver has turned to another Emilian company, Tecno Supply – the division of Ibox Srl dedicated to the industrial coating and corrosion protection fields – for the supply of a sandblasting plant, a hanging system, and a few masking and thermoplastic application devices needed to ensure high flexibility and greater coating quality.



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Figure 2: Manual application of powder coatings.



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Remaver is now equipped with a 10 m long, 5 m wide and 4 m high manual sandblasting plant; this is separated from its coating line, which is made up by a booth and a static oven with a capacity of 10.5 x 4 x 4 m. It also has a small pressurised booth for liquid coating operations, in case a mixed system is required.

The pre-treatment process: sandblasting

The sandblasting plant is used for the preparation to coating of large-sized parts, mainly heavy carpentry structures (Fig. 1). “They needed a manual sandblasting system able to treat any type of carbon steel part,” states Adriano Antonelli, Ibix’ sales manager. “The Ibix 40 portable sandblaster is the ideal solution for companies like this, which require to adapt the treatment to the different formats of their components. The pressure can be adjusted in a range between 0,5 and 7 bar and the tank has a capacity of 40 litres, so as to avoid any constant refilling operation that could be detrimental to the production takt time. This system uses Garnet abrasive, composed of silicon-free quarry sand with a hardness value of 8 on the Mohs scale. The surfaces treated by Remaver achieve a value of SA 2.5. The machine is very versatile and environmentally friendly; it is also suitable for working in outdoor environments, for instance in the construction industry, and it enables to recirculate the material: in this case, that occurs through a manual collection operation with the use of screens.” “We carry out salt spray tests about 3 or 4 times a year to assess the resistance of our coating systems,” Rensi says. “We have noted that, compared with optimal phosphating results equal to approximately 280-300 hours, Ibix’ sandblaster ensures a much higher resistance (500-600 hours) with polyester applied in one coat without any basecoat. Incidentally, we had opted for this technology also because Garnet abrasive slows down the oxidation process on surfaces.”



Figure 3: A frame with small metal components.

Adequate hanging optimises the production flow

“We perform electrostatic powder application processes in one or two coats depending on our customers’ needs (Fig. 2),” Alessandro Rensi explains. “We use mainly polyesters and epoxy-polyester powders; the latter are mainly employed if an orange skin texture is required on components intended for industrial plants. Both types of powder are suitable for products intended for both indoor and outdoor environments.”



Figure 4: Coating thickness measurement with Automation Dr: Nix thickness gauge, distributed in Italy by Tecno Supply.

Attention to “quality” is one of the most important factors behind the application cycles performed by Remaver, as is evident in the firm’s attention to detail. In order to achieve this goal in its production flow, the company has decided to rely on Tecno Supply’s hanging technology. “The protection of threads and other components is one of the most common requests from our customers. In order to meet them, we use high temperature resistant caps, plugs and tapes.”

The loading and unloading of materials is one of the most critical stages in any coating plant. That is why Remaver has cooperated with Tecno Supply to build a system with pushing tracks for the transfer of workpieces, rather than implementing handling trolleys. “The two tracks can carry parts up to 30 tonnes,” Rensi says. “We have preferred a system in which the workpieces are suspended above the ground to avoid any contact that could damage the coating applied during transfer from the booth to the polymerisation oven as well as at the exit of the oven, contrary to what might happen with trolleys (Fig. 3).

For the hanging system devoted to the smallest components, we have asked Tecno Supply a solution that was flexible and could be adapted to workpieces of different sizes: they have offered us their frames with the HSQ quick hanging system to maximise space and enable to use as many of them as possible. This also reduces the time needed for the polymerisation stage, which is the most complex one.

With Hang On’s universal frames, distributed by Ibix, we only need to change the hanging accessories according to the products to be treated.” “The hanging and masking phases are extremely important for us,” Rensi adds. “These are fundamental processes to optimise production. Thanks to the technologies developed by Hang On and Tecno Supply, we are able to fully meet the high quality needs (Fig. 4) of our customers as well as our requirements in terms of flexibility and adaptability to the parts to be coated.” ○