



# A New Powder Coating Plant Installed in Europe's Largest Bicycle Factory

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In 2021, bicycle manufacturer Sport Mechanical Workshop (Timisoara, Romania) opened an important bicycle factory in cooperation with French multinational company Decathlon. VISA Impianti (Triuggio, Monza Brianza, Italy) was among the protagonists of this ambitious project with the supply of a new powder coating line.

Romania occupies second place on the podium of the main bike producers in Europe, only surpassed by Portugal and followed by Italy. This is what emerges from the latest report published by Eurostat<sup>1</sup>. Indeed, what has been defined as one of the largest bike factories in Europe was recently inaugurated in Romania, specifically in Timisoara. The protagonist of this ambitious project was Sport Mechanical Workshop. SMW was established in 2016 by three associates with solid experience in the bicycle industry and a deep understanding of their sole partner: Decathlon, the French multinational company specialising in the sale of sports goods.

"We are Laszlo Nyaradi, the owner of ALLCOLORS, a coating contractor based in Tirgu Mures (Romania) that painted the bicycles marketed by Decathlon up until the opening of SMW; Francesco Russo, a former Decathlon executive; and Vittorio Olagnero, the owner of Telai Olagnero, an Italian company specialising in the production of bicycles also on behalf of Decathlon itself," explains Russo.

"The idea to found SMW stemmed from our willingness to assemble and paint bicycles on behalf of Decathlon while supplying it with these products within a reasonable geographic distance to limit the costs, logistical problems, and pollution related to the transport of goods. SMW is located in a very strategic area that enables Decathlon to cover the whole of European territory: it already had a partner in the Iberian Peninsula and one in Italy, and now SMW allows is to also cover Eastern Europe."

<sup>1</sup> <https://bit.ly/3HdX7aD>

This is how, in 2021, what has been defined as one of the largest bicycle factories in Europe came into being. It occupies a total area of around 25,000 m<sup>2</sup> and it will soon produce and paint up to 2 million bicycles each year.

As for painting, SMW decided to rely on VISA Impianti, which supplied a fully automated, green powder coating plant that integrates the technologies of several leading Italian manufacturers: Futura Convogliatori Aerei (Robecco Pavese, Pavia), Ecoteam (Scandicci, Florence), Cioldi (Ganaceto, Modena), Wagner Italia (Valmadrera, Lecco), and Chemetall (Giussano, Monza e Brianza).

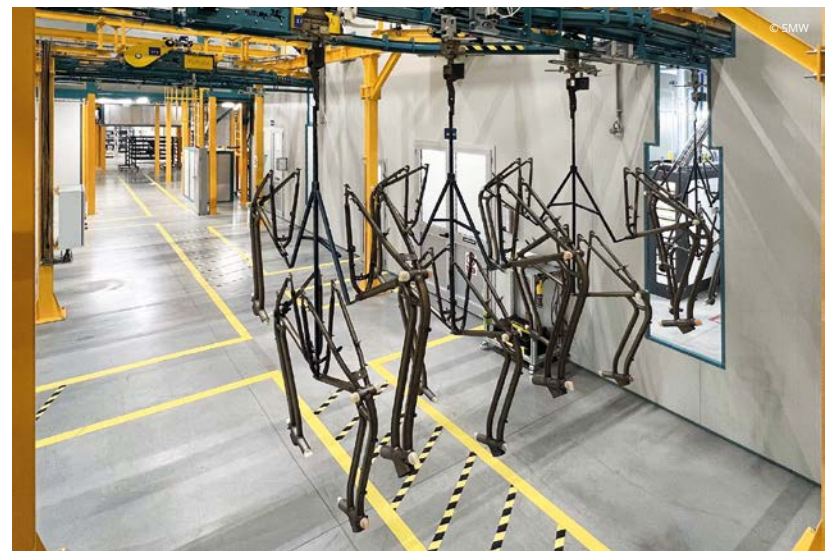
### The production and coating cycle

Sport Mechanical Workshop manufactures a wide range of bicycles mainly in aluminium and steel: from 14" children's bikes up to the most complex and structured e-bikes. "Decathlon's catalogue includes a huge range of bicycles. SMW does not produce this entire portfolio for the time being, but our factory was conceived to be able to manufacture the entire range of bikes marketed by Decathlon in the near future."

SMW's production phase begins directly with the surface preparation and coating operations. "The customer provides us with all the required components, including tyres, frame components, and other parts. We store them in our 10,000 m<sup>2</sup>-wide warehouse and then take care of coating the frames, assembling the wheels, and preparing the products to be sent back to the customer."

The coating cycle starts with the pre-treatment phase, which includes the following stages:

- Pre-degreasing
- Degreasing
- 2 rinses with mains water
- 1 rinse with demineralised water
- Nanotechnology passivation
- 1 rinse with demineralised water.



**From top:**

**SMW assembles and paints a wide range of bicycles mainly in aluminium and steel.**

**A section of the paint shop.**

**The components at the entrance to the pre-treatment tunnel.**



**From left to right: Overview of the pre-treatment tunnel; The booths are housed in an air-conditioned clean room; Wagner's SuperCenter Evo booth.**

Pre-treatment is performed with chemicals developed by Chemetall. It is followed by a blow-off and drying phase. The frame is then transported by means of a power&free conveyor to one of the two coating booths for the application of powder products. "Depending on the colour to be applied, the operator chooses which of the two booths to use for each product. This optimises timing and reduces the time needed for colour changes. Both booths, of the Wagner SuperCenter Evo type, are air-conditioned and located inside a clean room," explains VISA Impianti owner Paolo Massari. "As far as paint application is concerned, we exclusively use polyester powders. We cooperate mainly with two suppliers, Adapta Color and Tiger Coatings. After powder application, the components enter the curing oven for about 24 minutes at 180 °C and finally reach the cooling tunnel", states Nyaradi.

### The flexibility of the new coating system

One of the manufacturing steps that truly enable to customise each bicycle is the application of stickers and decals. Therefore, SMW's plant is designed to perform two alternative processes:

- The frame is unloaded, stickers are applied, and then the frame is reloaded onto the conveyor for the application of a second layer of clear coat.
- The frame is unloaded only after colour, clear coat, and sticker application.

The takt-time is 37-40 minutes per load bar.

"The difference between these two processes lies in the type of decals that the project requires. Some stickers need to be applied before coating, others between colour and clear coat application, and others, such as phosphorescent stickers, in the final stage after clear coat," explains Nyaradi. "This step posed a significant technical challenge in terms of system design, because we required the greatest possible flexibility to be able to handle all these peculiarities efficiently. At the same time, in addition to flexibility, we were also looking for a plant that guaranteed high productivity. With VISA Impianti, we have obtained both benefits," states Laszlo Nyaradi.

"The coating plant was conceived to work in three shifts, although we currently work in two shifts with around 70-80 operators. As many employees work on the assembly lines," explains Russo.

### A digitised and green plant

The plant was designed not only to ensure high flexibility and productivity, but also to meet all SMW's sustainability and energy-saving requirements. "Our factory is equipped with some significant green technologies, including a photovoltaic system on its roof. At SMW, we are very aware of environmental issues. As a consequence, it was of paramount importance that our coating system was also in line with our corporate values," notes Francesco Russo. "The plant does not discharge water but rather treats it with two evaporators in order to recirculate it. Ecoteam also installed a water purification unit."

“Moreover, the system boasts a heat recovery unit that uses the fumes generated by the curing oven to heat the drying one. However, there remains a significant amount of residual heat, which can be recovered in future to heat the factory as much as possible. The paint stripping oven, supplied by Ciroidi, is also prearranged for the installation of a heat recovery unit to obtain even more energy,” discloses Massari.

“Our long-term goal is to recover as much heat as possible to heat our entire 10,000 m<sup>2</sup>-wide warehouse. This will guarantee a very important benefit in terms not only of environmental protection, but also of reduction of energy-related costs.”

The coating plant and the entire production department were also designed to meet the Industry 4.0 requirements. “Through our ERP software, we are able to control every data and parameter of each production and painting stage, thus achieving a high degree of traceability. Within our paint shop, we even have an automated powder storage warehouse,” says Nyaradi.



Powder application inside the booth.

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After powder application, the components enter the curing oven for about 24 minutes at 180 °C and finally reach the cooling tunnel.



A detail of the coating system provided by VISA Impianti.

### The valuable collaboration with VISA Impianti

“For this project, VISA took care of the supply of every plant component, collaborating with numerous leading Italian companies: the conveyor was provided by Futura Convogliatori Aerei, the zero liquid discharge and duplex demineralisation plant was designed by ECOTEAM SpA, and the hook paint stripping oven was supplied by Ciroidi SpA.”

“We opened our paint shop at the beginning of 2022 and we have only been using it at full capacity for a little over six months. However, our collaboration with VISA Impianti had already started in 2015. I own a contract coating company located approximately 300 km away from Timisoara, which painted bikes on behalf of Decathlon prior to the foundation of SMW. This is where we installed the first plant supplied by VISA, which enabled the treatment of around 750,000 frames per year, as well as three other lines for coating aluminium profiles,” states Nyaradi. “Since then, for us VISA Impianti has become a point of reference for everything painting. The powder coating line in Timisoara

is therefore the fourth plant we have designed together and we are already planning to install a further one.”

### Future projects

“VISA Impianti will definitely be part of SMW’s future, as we plan to install another new system, this time for liquid coating, at our Timisoara site,” adds Laszlo Nyaradi. The opportunity to expand the factory’s capacity and production area will also be assessed in the years to come. “Currently, our company has a production capacity of about 1.5 million units, depending on the type of bikes produced, but our plant was developed to be able to treat around 2 million frames per year. For 2023, we expect an increase of 4-5%; in general, it will be an important year for the bike market. We are therefore going to be ready for any increase in sales during the current year. Finally, we have an additional 15,000 m<sup>2</sup> available to expand our production facility even further, according to future needs,” says Nyaradi. ○