



© Luxe Coat



FOCUS ON TECHNOLOGY

SPECIAL ISSUE ON ARCHITECTURE & DESIGN



A Two-Step Transition From Chromate Treatment to a Chromium-Free Cycle on an Aluminium Coil Coating Line

Giorgia Ricchiuti **ipcm**[®]

Five years ago, its entrepreneurial vision led Luxe Coat, a company specialising in the development and production of aluminium components and pre-coated coils, to start a collaboration with DN Chemicals (Milan, Italy) for the supply of chromium-free pre-treatment chemicals. Recently, continuous research into development and innovation and its ever-vigilant eye on market trends have convinced Luxe Coat to once again rely on the Milan-based company to renew its pre-treatment stage in terms of both process and product used, with a view to greater sustainability, quality, and repeatability.

“Reducing production time and increasing product quality:” this is the philosophy with which many entrepreneurs aim at growing their businesses – the same that has helped Luxe Coat Srl in Bazzano (L’Aquila, Italy) establish itself in the pre-coated aluminium market over the last five years. Founded by Luxe Perfil (Valencia Spain), this firm is part of a strong group formed by Alu Cofer (Albacete, Spain), Luxe Perfil, and Luxe Coat. These three companies have many years of

experience in the design, development, and production of all types of aluminium components for façade cladding, in particular pre-coated aluminium alloys, interior panels, roller shutters, sealing panels, sectional doors, and insect screens.

Over the past three years Luxe Coat, which ipcm[®] visited in 2018 on the occasion of its “Aluminium Special” No. 53, has expanded its departments and increased the number of its employees. “In 2018, there were 12 of

us: currently, we are a team of 65 people and we are in the process of hiring 20 more," says Alfredo Calvano, the technical and plant manager of Luxe Coat. "After a few ups and downs, we were able to acquire the entire Bazzano factory at the end of last year and we are now officially the owners of both its buildings and assets," he adds. "In addition to many organisational changes, we acquired a 60-tonne melting furnace, a non-reversible rolling mill with a production capacity of 60,000 tonnes, and a tension levelling machine capable of detensioning material with thicknesses from 0.2 to 4 mm," the technical manager indicates.

In 2016, in order to penetrate the Italian and international markets, the company also equipped itself with two coil coating lines, which have recently undergone a revamping process. The first line carries out liquid coating on metal coils with thicknesses between 0.25 and 1.5 mm and the second one is a unique hybrid system performing both liquid and powder coating processes, capable of treating coils up to 3.05 mm thick. As for the pre-treatment phase, Luxe Coat immediately chose a process that would suit both its product quality requirements and the different technical configurations of the two lines.

Thanks to the collaboration with DN Chemicals (Milan, Italy), specialising in the production of chemical products for the treatment of metal surfaces, it was able to implement a pre-treatment phase with chromium-free products, guaranteeing the same cleaning efficiency, corrosion resistance, and paint adhesion properties as traditional chromate treatments. In 2018, DN Chemicals integrated Luxe Coat's lines with prototypes of spraying bars for the passivation product used in the last stage of this pre-treatment cycle.

From top to bottom:

- **Overview of the continuous-flow hybrid (liquid + powder) coating line installed at the premises of Luxe Coat in Bazzano, L'Aquila.**

- **The 60-tonne melting furnace.**

- **One of the two continuous casting casters.**





NEW YORK, US
SOLAR CARVE
TOWER

Well done



TIGER 075/70258
highest UV stability
4000 hours of weathering
zero VOC emissions
96% recovery



The two spraying bars of the nebulization module installed at the chromium-free nanotechnology conversion stage, supplied by DN Chemicals.

These devices offer numerous advantages, including uniform and consistent application of the conversion product, optimisation of the product (always applied fresh and not recirculated), increased corrosion resistance performance, and full control of dosing and mixing parameters.

Recently, Luxe Coat's strong focus on continuous improvement and on enhancing the corrosion protection action of its chromium-free product have led it to invest in a further upgrade of its coil coating lines' pre-treatment process. It has thus confirmed its partnership with DN Chemicals, with whom it is now assessing the implementation of a new, advanced pre-treatment product with scalable properties, and it has installed a special device for atomising the surface conversion product, developed in line with the plant's revamping requirements and the special features of DOLLCOAT TZ 73 and other products under development.

A new pre-treatment method and the importance of sustainability

The deep understanding that has characterised the collaboration between the two companies for years has led Luxe Coat to integrate the Soft Rain atomising system into its pre-treatment line in order to achieve consistent pre-treatment quality and minimise waste water consumption and disposal costs. The process installed in spring 2021, therefore, perfectly combines effectiveness, efficiency, and





The Soft Rain device's circuit that feeds the ever-fresh passivation product to the spraying bars.

sustainability: as explained by DN Chemicals sales director André Bernasconi, "We installed this final conversion product atomisation system to avert any kind of pollution issue due to dragging or reaction by-products, thus guaranteeing constant quality, well-defined consumption, and the possibility to use even higher-performance products in the near future. This is the first time in the world that an atomisation module has been installed on a continuous-flow coating line. It has already proved that it can offer the same advantages – in terms of reduced product and water consumption as well as consistent pre-treatment quality without any degradation of the bath's effectiveness – that it has always offered on conventional coating systems."

"Replacing chromate treatment with DN Chemicals' chromium-free process has meant that we no longer have to employ toxic products in our factory, without having to step through the use of trivalent chromium cycles (a path chosen by many aluminium processing companies, Ed.). The inclusion of the atomisation module has further enhanced the sustainability degree of our new pre-treatment process, in line with our goal of greening the company within three years," explains Alfredo Calvano. "We are increasingly becoming accustomed to associating the term 'sustainability' with a corporate context, focusing on the impact companies have on the environment and the well-being of the people who work there," states Luxe Coat's technical manager. "In fact, our goal is to become a zero-impact

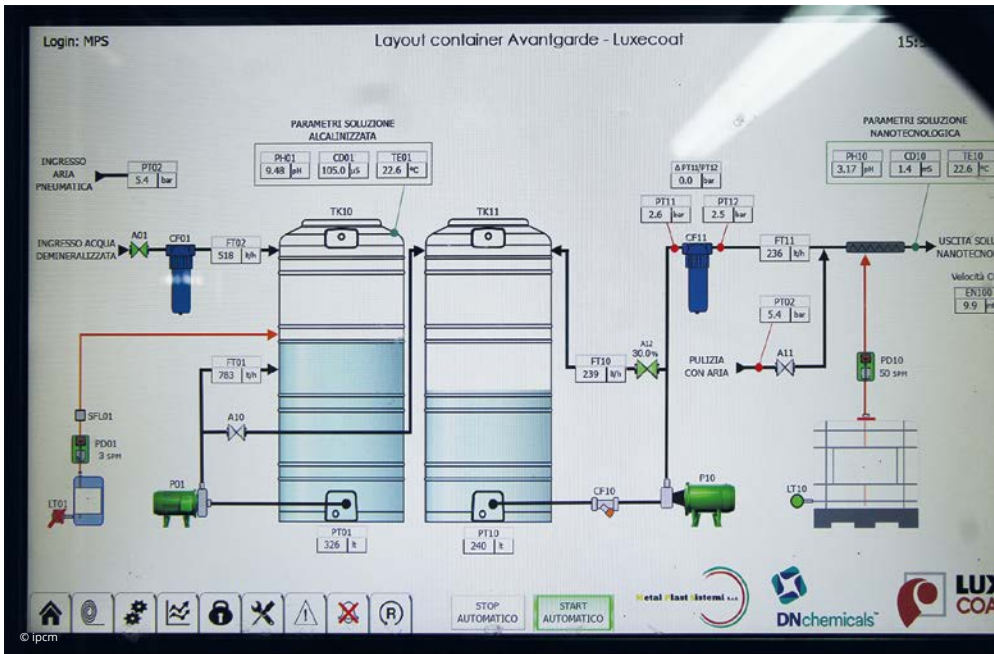
WHEN IT
HAS TO BE
PERFECT

CHOOSE



HIGH PERFORMANCE
POWDER COATINGS





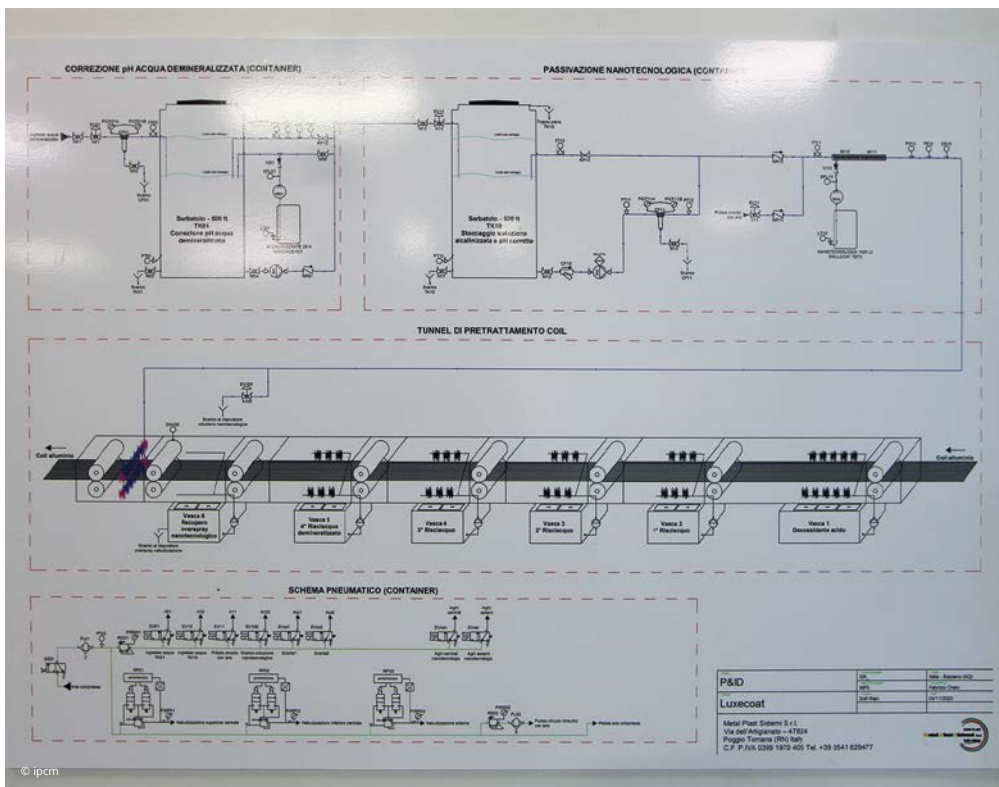
The layout of the nebulization module's working circuit.

factory – a complex goal, given the heavy machining operations we perform. I am referring to sustainable use of energy, water, and chemicals, with the latter in particular being certainly not easy,” says Alfredo Calvano. “We would like to soon be running a system wasting less and less drinking water through the recirculation of process water. Of course, pre-treatment greatly influences the ‘workload’ of a water treatment plant, and the fact that our cycle is already chromium-free is a big advantage,” states Luxe Coat’s technical manager.

A successful partnership: the second phase of the pre-treatment process’ innovation

“Until two years ago, we used to export 80% of the products we produced,” explains Alfredo Calvano. “For the past two years, thanks to an agreement with company Alluminio di Qualità, to which we have given exclusive sales rights for all our products in Italy, sales have increased by 120% and Italy now accounts for about 30% of our market. Our target sector, on the other hand, remains metal architecture. This year, we will be exhibiting at the Aluminium trade fair in Düsseldorf, the world’s most important event for the aluminium production and processing sector, which will be held on 27-29 September.”

Luxe Coat is well aware that, in order to best compete with its competitors, it must necessarily and constantly innovate. This is why, together with its partner DN Chemicals, it is already in the process of developing a second innovation. “We are very soon going to replace their final conversion product, Dolcoat TZ 73, with Dolcoat TZ 75, a newly developed product containing activators that guarantee higher conversion weight and higher corrosion protection within the same pre-treatment time,” explains André Bernasconi. “Moreover, unlike all conversion products that call for pH correction in order to work in the proper acidity range, this one is ready-to-use: it simply



The synoptic table of the coil pre-treatment tunnel, with the detail of the nanotechnology passivation and demineralised water production stages.

has to be diluted to the desired concentration without any pH correction operation – and the conversion result will be better with all parameters being equal. Finally, in the near future, Luxe Coat’s plant will be able to use the two-component products that are currently at an advanced stage of development.”

A partnership can be considered successful if the two parties are willing to collaborate again for future projects and developments, and this is certainly the case with Luxe Coat and DN Chemicals. “We have been collaborating with this supplier for years now. In addition to offering the best solutions for all our needs, it also acts a true partner that helps us make the right choices and supports our company’s growth,” states Alfredo Calvano. ○



DN Chemicals placed all devices related to the Soft Rain Avantgard system in a container on board the line.

verind

Say goodbye to masking

Overspray-free paint application with EcoPaintJet

Revolutionary precision in automatic application brings efficiency to product customization. Dürr’s solution **EcoPaintJet** applies sharp-edged paint lines on surfaces, pushing the limits for efficient and resource-saving coating: No overspray, no more masking of your product.
www.verind.it

DÜRR GROUP.