

Technological innovation and environment-friendliness to paint very high quality radiators

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Radiant heating elements, heated towel rails, fireplaces: heat enters homes in differing ways and in increasingly innovative forms, expressions of research and design projects.

No longer objects that are merely functional to heating rooms and that thus need to be minimised, with Antrax It, a company set up recently in Resana, in the province of Treviso, radiators have finally come into their own as design objects. Set up in 2002 and specialised in manufacturing radiators and fireplaces, this Treviso company has made quality the primary target of its business, immediately making use of cutting-edge production technologies and working with internationally famous designers like Peter Rankin, Massimo Iosa Ghini, Francesco Lucchese and Andrea Crosetta. Aesthetics and quality have ensured that Antrax, in just five years, has achieved considerable success at in-

ternational level, multiplying its product lines. It is currently one of the leading companies in the designer heating trade, expression of the undisputable style of Italian products.

Antrax radiators are not just form but also substance, because from the very beginning the company has staked its success on experimentation and technological innovation, in finishing too, a strategic phase for a company that has placed itself in a top market segment with a very high quality product. Recently, in fact, it has introduced pre-treatment nanotechnology and has installed Atimix equipment to optimise electrostatic spraying made by Ate in Cesano Maderno (Mi).

The production cycle

"All the radiators we manufacture are constructed with the most advanced technologies and using the very latest generation of machinery that have permitted us to obtain excellent results," explained Alberico Crosetta, head of marketing, who met us in the offices at the Resana plant. Our radiators are made in the highest quality steel that guarantees immediate diffusion of heat and makes it possible to use heating systems at low temperatures, considerably increasing the well-being of the people living where they are installed.

From the production point of view, almost all our processes are performed in-house: the raw material, that is the tubing, is transformed, machined, painted, packed and shipped at our plant. The only processes that we outsource are galvanic coatings and aluminium castings, contracted out to outside foundries. The decision to carry out all production in-house was crucial to

1 - Partial view of the paint plant installed at Antrax.



keeping production and the quality of the products under constant control.

Given our policy for design and quality, we could not rely on low cost foreign workers, as can those who choose to make standard items, because our quality, in addition to the product itself, is based to large extent on service: for example, we guarantee very short delivery times despite the extreme personalisation of our products. For this reason, we do not fear international competition."

Nanotechnology pre-treatment

In 2007 Antrax replaced its old finishing systems, modified and improved the paint system (fig. 1), replacing the phosphate treatments - highly pollutant - with the introduction of nanotechnology (fig. 2 and 3). "We are the first Italian company in this industry to have introduced this technology," explained Luigi Crosetta, head of production, "contrary to the opinion of those who thought that phosphate pre-treatment had achieved the highest level of quality, the use of nanotechnologies has brought a great many quality, environmental and ethical as well as industrial advantages."

Introduction of nanotech products, in fact, has brought with it immediate positive visible changes, for example:

- improved pre-treatment cycle quality
- low process costs
- more simple operation
- excellent performance results without any production waste
- elimination of environmental impact.

"It is important to underline precisely this last aspect," continued Luigi Crosetta, "great care for environmental protection and friendliness. The new equipment permits us to work without producing phosphates, sludge, heavy metals, nitrites and nitrates, all pollutants that are difficult to dispose of. In a highly competitive and constantly evolving market it is vital that a company should aim to achieve its targets while maintaining a correct ethical attitude, complying with all the social, moral and environmental values that today play an increasingly important role, considering above all that radiators are in themselves very eco-friendly products because they can be 90% recycled."

The finishing cycle

As already mentioned, the finishing phase is essential both to the final appearance and to the life of radiators.

The painting cycle comprises the following phases:



2 - Entry of radiators into the nanotech pre-treatment tunnel.

- degreasing
- two rinses
- rinse with demineralised water
- nanotechnology conversion treatment
- rinse with demineralised water at ambient temperature



3 - Exit of radiators after drying and before entering the booth.

4 - The Atimix equipment installed in one of the two manual powder coating booths.



- oven drying at 120°C
- manual painting with high quality polyester powders
- baking in a hot air bell oven at 180-200°C.

The range of colours offers a choice of over 200 shades: 45 or so shown on the colour chart, and extra shades that can be chosen from the RAL range, according to availability of powders on the market, or metallic and wrinkle effects and so forth.

A single coat of powder paint is applied manually with manual colour change, despite the high range of finishes offered, because the company does not generally make standard models, but works to order, without a warehouse, and the whole cycle is custom-managed, even where large-sized lots for building sites are concerned. Colour change is manual because the company principally paints small lots.

“Even though we supply highly personalised products to most of our customers,” said Crosetta, “we also have some standard products which, in any case, have a much higher quality than those of our competitors, 90% of whose production is standard. For us, however, standard products are only a very small part of our business; our forte is flexibility, especially with regard to colour and size.

Our paint plant is certainly oversized as compared to our production capacity; it is currently

used only two days a week, so it does not work in a continuous process. When it was designed, we planned ahead for the company’s growth potential: we currently have 3 production lines while the paint plant could cope with up to 8 production lines. The investment was made because it is the painting that guarantees the quality of the finished products giving them added value, and above all we sell product quality linked to service.”

Optimisation of electrostatic spraying

Another innovation that aimed to further increase product quality was the introduction of equipment to optimise electrostatic spraying, more specifically Atimix by ATE. “Painting radiators is not easy,” explained Luigi Crosetta, “both due to shapes that are sometimes rather “intricate” and due to parts that are difficult to reach, that is the welds. The Faraday cage effect impaired the quality of the film, because the powder accumulated on the outer parts of the articles, impeding the uniformity of the paint because where it is thicker the powder tends to produce a textured finish. This effect, moreover, was much more accentuated when applying metallic paints, which react more strongly to electrostatic charges. Additionally, the most difficult part to paint was the weld to the manifold, where the paint film was often very thin due to the difficulty of reaching the weld itself: this problem did not regard just the appearance, therefore, but also the life of the radiator, because where the film is too thin, the radiator may rust.”

“Our primary need with regard to quality of the aesthetics and performance,” Crosetta went on to explain, “was to guarantee a minimum thickness of 70/80 microns without differences between inner and outer surfaces. We therefore decided to install Atimix (fig. 4), after a free trial that convinced us because of the remarkable results both when applying coloured paint with Corona spray guns and when applying white with Tribo spray guns. We obtained good results in terms of savings on powder (around 10-15% with Tribo guns, a little more with Corona guns / colours, because Corona spray guns use a higher static current and therefore can make better use of Atimix’s yield) because the powder is no longer dispersed inside the booth, but is all directed onto the product to be painted, despite the fact we use stainless steel booths which strongly attract the charged particles.

To give a practical example, there was a metal-

lic colour with which we were unable to achieve good results either with Tribo or with Corona spray guns because it was too highly charged and produced an orange peel effect: when we installed Atimix we managed to solve the problem, because we succeeded in distributing the current more evenly and therefore achieved a more uniform coating of powder on the radiators."

The company therefore achieved better results in terms of:

- quality
- savings on powder
- improved paint shop environment (cleaner).

The equipment - one unit for each booth - was adapted to the existing booths, without need for any further changes because it is not invasive machinery and it does not create problems when connected to pre-existing equipment.

and personalisation, as well as the steady presentation of new products and an attractive communications strategy, means that its target customers differ from those of its competitors: interior designers, architects, showroom managers and not plumber's shops. The appearance and quality performance of the radiators therefore become fundamentally important for reaching this target, and the investments that the company has made in finishing have proved to be successful.

Conclusion

Antrax It's view of radiator production is young, dynamic and innovative. The focus on design

ATIMIX SYSTEM (PAT.)

IMPROVING USE OF ELECTROSTATIC CURRENT!

(Many problems or limits of painting are due to the physical characteristics of static charges).

- **SAVINGS OF UP TO 20% ON PAINT**
- **PERFECT QUALITY:**
 - a more uniform and even application (reduction of orange-peel effect)
 - improved penetration (reduction of Faraday cage)
- **LESS PAINT DISPERSION (over-spray)**
- **LESS EXHAUSTED POWDERS TO BE DISPOSED OF**
- **LESS SMUDGE AND SLUDGE**
- **LESS TIME NEEDED TO CLEAN THE BOOTH**
- **LESS SOLVENT**
- **LESS POLLUTION**

THE ATIMIX SYSTEM reduces the defects produced by the electrostatic current during painting (uneven thickness, edge build-up and running, Faraday cage, orange-peel) improving transfer and deposit of the paint onto products.

It can be applied to any ELECTROSTATIC SPRAY GUN and used with all powder and liquid paints.



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