

Optimisation of the pressurised air spraying of traditional and water-based paints on wood: the experience of three Lombardy companies

Alessia Venturi

In the painting process the rubbing of the paint on the nozzle of the gun, and later on the product, creates static. This phenomenon creates various inconveniences also in the non-electrostatic liquid painting with air-mix guns and HVLP: the creation of static, in fact, can compromise the final

quality of the coating, making its spreading, evenness and adhesion to the product more problematic, as well as creating considerable overspray with an uneconomic waste of paint. There is a solution to this problem, and it was developed by Ate in Vighizzolo di Cantù

which, in addition to the technological optimisation of the electrostatic application, has also developed the *Simple Paint* system for the pressurised air painting with water-based and solvent liquids. This is a system that when connected to the mixed air and HVLP paint guns, both high

1 - The MisuraEmme water-based painting system.



and low pressure, treats the nebulisation air of the gun and, by acting on the static charges, renders both the product as well as the paint particles neutral. This provides a number of benefits, including:

- a better nebulisation of the paint
- better spreading, uniformity and adherence of the film
- reduction in the overspray and diffusion of particles of dirt
- a reduction of fumes in the cabin, of sludge and smudge.

Obviously the collateral benefit is a substantial reduction of solvent put into the air when traditional paints are used, and a substantial saving of the paint used, which is around 20% on average.

Stability of the painting and an improvement in the level of quality for MisuraEmme

MisuraEmme in Mariano Comense (Co), one of the leading companies in the high band furnishing sector, has installed two *Simple Paint* systems on two automated painting systems already in use, one which has been working with water-based materials

for some time already (fig. 1) and one which still works with solvent-based paints, but which is in the process of being converted to water-based paints. Accompanied by Simone Barbieri of Ate, I met with Attilio Tettamanti, the person in charge of painting in MisuraEmme, as well as an old friend of VdL, who showed us the benefits that the introduction of this system has brought. «Basically we decided to invest in these two machines when we were developing the water-based painting - Tettamanti explained - since we had problems of the flow and adhesion of the paint on the panels. The Ate retailer in the area, Stiver in Cinisello Balsamo, allowed us to test the equipment and, in the light of the very positive results, we decided to install two of them, both in the water-based line and in the solvent line. The most positive aspect that we have encountered on the water-based line is a greater evenness of the application even in variable environmental conditions.

Before using *Simple paint* (fig. 2) the painting was considerably influenced by the variations in temperature and humidity: now this machine guarantees us



a stable painting process no matter what the environmental conditions».

«We also discovered a reduction in the overspray, and therefore a reduction in the amount of product consumed, but the main gain is the better quality finish – continued Tettamanti – On the solvent line we had a drop in the level of overspray, on this line we are preparing to pass over to water-based technology, also other variable came into play like the use of gloss, and conditions changed so we still cannot perfectly monitor the situation».

2 - The *Simple Paint* equipment installed on the water-based line.



3 - Frames waiting to be painted at VLS.



«The most important thing – concluded the painting manager – is that, although having an in-house air filtering system for restraining impurities and oil, *Simple Paint* has strengthened this cleaning of the air, which is now cleaner and more stable. We are working with a cleaner operating procedure on the level of applications on the individual piece: before it might happen that dust would gather on the gun unit, which when it built up would fall on the panel causing various defects. Now with this machine, which among other things requires little maintenance, the cleaning and the proper distribution of the loads guarantees stability, ease and repeatability of the application».

4 - The pieces hanging.



Great saving of paint with VLS

Founded in 1994 in Flero (BS), this water-based painting company for third-party frames, run by the brother and sister Giovanni and Antonella Antolini, in 2004 transferred to Castel Mella (BS) to a 2,000 m² factory, due to the increase of the size of the work. VLS has been using completely water-based technology for the frames for about six years (fig. 3), using two different cycles according to the quality required: one line provides for the application of the primer, the undercoat and the finish for a higher quality finish, and the other more economic line provides just the finish. The application of

the primer is done using the flow-coating system, followed by manual sanding and later, depending on the condition of the frame, an intermediate coat and the finish is applied. «Because of the usual, well-known problems of emissions into the air, we abandoned the solvent-based cycles and also the mixed cycle in favour of a completely water-based cycle which has allowed us to improve both the working conditions as well as the indoor and outside environmental conditions. After being hung up (fig. 4), the frames enter the heated flow-coating tunnel, dried, sent for the application of the intermediate coat where required, dried for 4-5

hours depending on whether it is coniferous or broad-leaved tree wood, then sanded and cleaned with compressed air. At this point the pieces are ready to receive the finishing coat on the automated plant with a robot or in the manual cabin (fig. 5)». This is the level where *Simple Paint* was inserted, which immediately brought a considerable saving of paint, quantified at a good 20%. «If before the introduction of this machine we consumed 1 kg of paint for each linear metre of frame, now we consume 1 kg to paint 1.30 linear metres – explained Giovanni Antolini – we no longer have overspray and the paint is more even, so we have a better quality finish».



5 - The manual cabin for the water-based painting of the frames.



6 - Giovanni Bani on the left, Roberto Bani in the centre and a collaborator near the *Simple Paint* equipment.



A reduction in the emissions into the air and a saving of paint at Verniciatura Bani

At Treviglio in the province of Bergamo, Verniciatura Bani deals with the painting, polishing and

lacquering of furniture, furnishing components, doors and panels for kitchens, doors, even if in autumn the company will convert to the use of water-based paints.

«Currently we are painting manually in a water film cabin and also au-

tomatically with a system for flat painting that we are using for applying the primer and for the large production runs – explained Roberto Bani, owner of the company together with his father – but in September we have planned for the passage from the poly-



7 - Interior of the automated painting with the spraying unit: we can see how clean the system is.





urethane gloss finish to a water-based finish, first of all for the manual cabin and then for the automated line.

Also Verniciatura Bani installed some time ago the *Simple Paint* application optimisation system (fig. 6) obtaining huge benefits for the environment.

«The decision to install this equipment – Roberto Bani explained to me – was motivated by the urgent need to reduce COV emissions: using much less air than before not only the paint

sprays better and is more even, but we have also considerably reduced the consumption of the thinner by about 20% and also the consumption of the paint: we have reached about 30% less emissions.

Obviously these are not the only benefits: we have reduced costs, we have a cabin that is always very clean (fig. 7), and greater efficiency and stability with the automated application».

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tel. +39 039 629041 fax +39 039 62904208 info@larivistadelcolore.com

