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Nitrogen Spray System Shows Promise

Will your next painting system be a nitrogen gas? A painting system that had gained wide acceptance in Europe may be the next big thing here in America.

As collision shops face the prospect of switching to waterborne paint to meet new environmental regulations, shop owners have been searching for ways to offset the increased cost of these paints, and accommodate the longer flash times that waterborne typically requires. One solution comes from Europe.

Known as NitroTherm, the spray system (which is manufactured by Eurosider) uses nitrogen gas as the propellant for the paint spray. The system was originally introduced in Europe, and made its US debut at the International Autobody Congress and Exposition (NACE) event a few years ago.

Nitrotherm uses heated nitrogen instead of oxygen as the spray propellant, and can significantly improve transfer efficiency for waterborne and solvent-based paints, cut flash times, and reduce the amount of materials needed by 20-30%, according to a US importer, Managed Air Systems.

Nitrogen is anhydrous, meaning it doesn't contain any water, so shops in humid areas could have an easier time using waterborne paints even in a moisture-heavy environment. Heating the nitrogen reduces the viscosity of the paint, which, in turn reduces the need for solvents.

Nitrogen, an "inert" gas, is used because of its low density and low fusion and boiling temperature compared to air spray systems.

In the NitroTherm system, the traditional fluid carrier (compressed air) is replaced with nitrogen-enriched air (up to 99.5%) which is cleaned, ionized and dried to be ready for optimal application and evaporation of the layer of paint sprayed. Nitrogen, having a low specific weight, does not in any way alter the flow of the spray gun.

Because nitrogen is anhydrous, pre-treatment of the surface to be sprayed can be eliminated. The nitrogen tends to negate the presence of any humidity on the surface to be sprayed.

Because the nitrogen is pre-heated to temperatures over 106°F (50°C) it has a liquefying effect on the paint, permitting the amount of the solvents, therefore reducing overspray. It is estimated that 90-95% of the spray remains on the vehicle. The extremely low dew point means there is an instant elimination of any residual humidity present on the surface, eliminating the problem of blistering.

In comparison to the traditional systems of spray painting, the advantages claimed by the manufacturer of the NitroTherm spray system include:

- Clean, dry carrier fluid: extracted by means of selective permeation, is free of dampness and impurities (dust, oil and oil fumes or other chemical contaminants present in the feed air) that could react or interact with the paint;
- Reduction of the overspray and rebounding particles: the paint particles, which are no longer electrically charged due to the ionized, heated nitrogen, tend not to be lost into the air as they are not attracted to static surfaces (spray booths and operators). The majority of the paint goes onto the surface of the piece, which reduces spray booths filter maintenance costs;
- Reduction in fumes in the spray booth and of dripping: the heated nitrogen carrier reduces the driving pressure of the paint bringing advantages like a reduction in solvents (from 40% down to 7-10%), a reduction in harmful emissions into the atmosphere, higher gloss finish with fewer coats, reduced risk of dripping and sags.
- Elimination of “orange peel”: to be able to have a high gloss finish all the solvents must have evaporated before the surface hardens, otherwise it fills with micropores that give an overall opaque effect. By spraying with heated nitrogen this problem is eliminated as the amount of solvent used is considerably reduced. Also the regulating of the outlet temperature of the ionized nitrogen in any climatic condition helps the evaporation of the paint, cutting paint time and costs of flash off.

The US distributor for Nitrotherm, Managed Air Systems, estimates there are currently 200 such systems in use in the US. For more information contact Managed Air Systems at (877) 706-4719 or visit www.managedairsystems.com.