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Finishing

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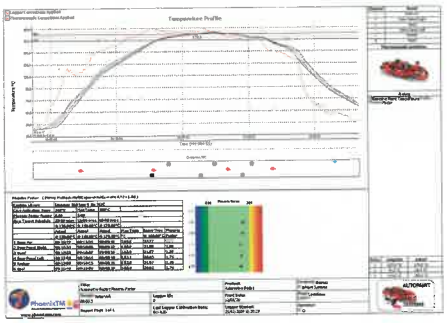
Do you know what happens in your paint oven?

PhoenixTM add the excitement back into watching paint dry!



The basic concept of thru-process temperature profiling remains very similar to the systems developed in the 1980's, a thermally protected data logger is passed through a cure oven measuring via thermocouples the product temperature throughout its journey to provide a temperature profile. Evolution and automation in the automotive manufacture process, including painting operation, has driven a constant need for innovation in temperature profiling and process monitoring.

Safe Monitoring in ATEX classified areas

Over the year's regulatory compliance and health and safety has become a critical aspect of day to day

manufacturing. One important requirement of this in the paint operation has been the need for classification of areas and zones on the paint line against potential explosive risk (e.g. ATEX classification in Europe). A need to identify the explosive risk in key areas and therefore restriction on the type of equipment that can be used in that area brings technical challenges.

To perform a temperature profile on a solvent or water-based coating line requires that the profiling system be passed through zones / areas that are classified as potentially hazardous. These areas may include the paint booth, flash off zone and even the paint curing oven itself. In such areas potentially explosive gases / volatile organic compounds (VOC) may be present from solvents such as Acetone, Toluene and Xylene, used in and released from the coatings or as cleaning agents. In a powder coating line, the build-up of dust layers and dust clouds can also create an environmental explosive risk.

Phoenix Temperature Measurement (PhoenixTM) has introduced the Epsilon-x a unique intrinsically safe 20 channel profiling system. The PTM1520 data logger is certified against the ATEX European standards as Group II category for safe operation in gaseous and dust environments (ATEX Zone 2 and 22 respectively) allowing safe operation of automotive paint and powder coating applications.

The PhoenixTM Finishing monitoring system allows efficient safe and accurate monitoring and validation of your paint line. Choose from magnetic thermocouples for traditional steel or clamp thermocouples for Aluminium. A choice of Silicone free thermal barriers provides the thermal protection you can trust, typically 3 to 5 hours at 200 °C. The Thermal View Finishing software allows paint process conclusions and actions to be made quickly but with confidence. Including the new Phoenix Factor index of cure analysis tool, accurate cure confirmation against paint supplier specifications for all your different coatings is now possible. The final profile report gives you the comprehensive certified monitoring record to allow fully traceable validation of your paint operation.

Optical Profiling a products eye view

Thru-process temperature profiling provides a great understanding of what temperatures the product sees travelling through the cure oven. In terms of paint quality though, in particular cosmetic finish and paint defects, this is not the complete story. During the journey through the oven the painted car body can experience many problems that are not temperature related that can affect the quality of the cured paint. Problems such as paint runs, drips, paint or rinse entrapment or condensate contamination can only be detected post process without any specific knowledge of the root cause / location of problem. If only you could see a video of the car body travelling through the oven to allow identification and location of such issues.

The PhoenixTM Optic system has been developed specifically to allow such paint defect detection using Optical Profiling. Adapting the thermal barrier technology used for temperature profiling a high-resolution video camera can safely travel through the paint oven with an independent torch recording video footage of what the product sees. The system is just like your car 'Dash Cam' the only difference being that the journey is through a cure oven operating up to 200 °C. The Optic system can be mounted on a test body allowing monitoring of the exterior of a separate production body shell or potentially directly on a production body itself.

In addition to paint defect detection the Optic system can be helpful in detecting other process problems specifically relating to the oven and conveyor system operation without physically having to access the oven. Identifying oven damage, badly adjusted ducting, faulty fans, failing jerky belt drives can allow pro-active corrective action and prevent lengthy down time and lost productivity.

Whether temperature or optical monitoring PhoenixTM your Finishing Oven to find, fix and forget those paint cure problems!