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COATINGS

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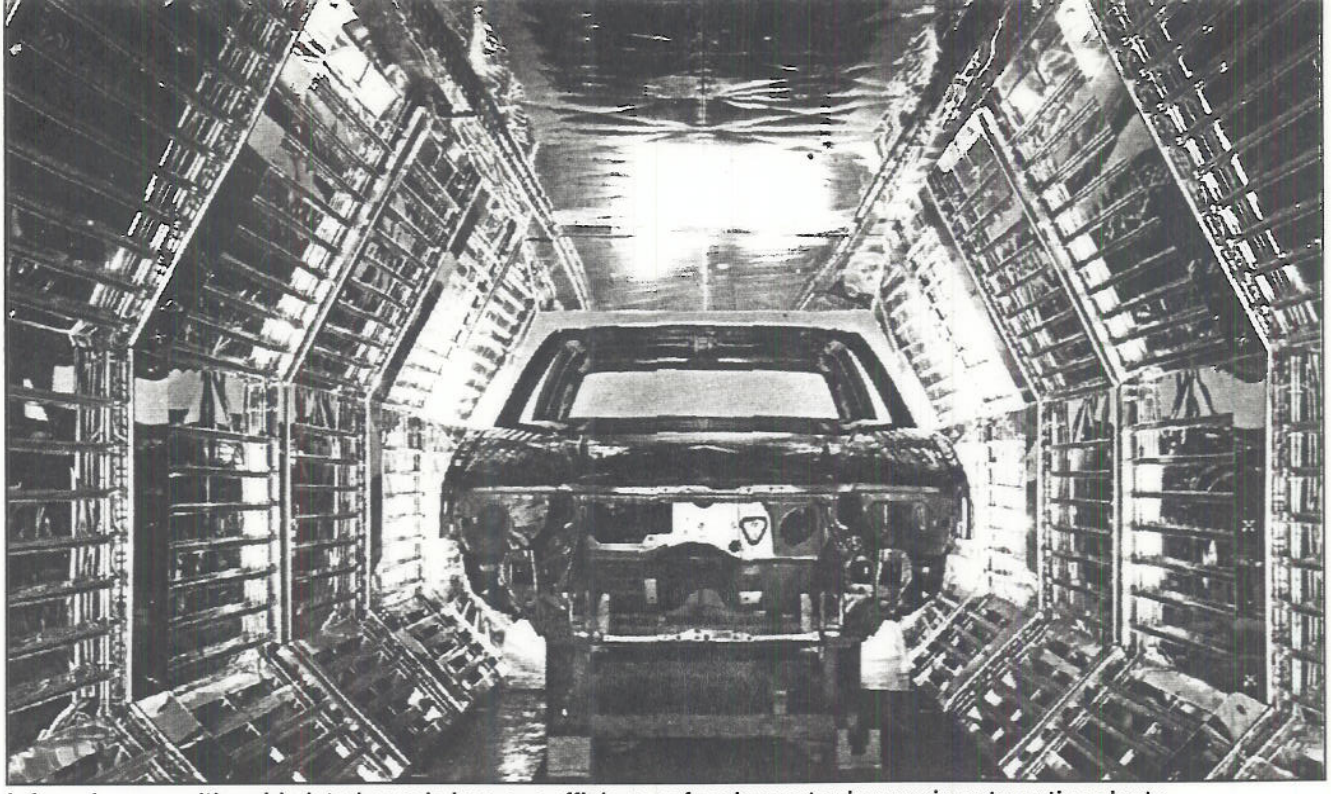
FORD PAINTS FIRST CARS ON $440 MILLION ROBOTIC LINE

BASF, BEN MOORE OPEN NEW PAINT PLANTS

POWDER AND WATER BORNES



Infrared ovens with gold plated panels improve efficiency of curing water-bornes in automotive plants.

Gold

Gold plated ovens are the most efficient for waterbornes.

by Mary Scianna.
assistant editor

The automotive Big Three have struck gold — in their curing ovens that is. General Motors (GM), Chrysler and Ford have discovered a technology that improves efficiency in drying of waterborne paints — gold-plated ovens.

GM has installed 20 gold-plated ovens in several of its U.S. plants. Chrysler has installed one in its Jefferson, MI plant. Ford is currently testing the technology and plans to install the oven if test results at its Wixom, MI plant are positive.

The gold coating technology is not new. Many automotive plants began plating the back of tubes in their ovens in the early 1980s. What is new is that gold is being used to plate oven panels.

Gold is the best reflector of infra red energy. Flash off ovens in many automotive plants are infra red. The combination of the infra red energy with the gold works more efficiently in drying waterborne paints.

Since waterborne paints emit fewer VOCs than solvent-based paints, more automotive companies are switching over. The problem is, waterbornes take much longer to dry. So DuPont, a paint supplier to General Motors, invested in a gold-plated oven in 1987 to test it's efficiency in drying paints.

"We are a total supplier," explains John Monahan, senior research engineer at Du Pont's Automotive Finishing Lab in Troy, MI.

"We will sell a can of paint and the process by which to use it. So, to be able to prove out this process and this new technology, we've made the investment of this oven and said, 'hey look, this is the can of paint and this is how we recommend processing it.'"

Infra-red flash off ovens, used after the base coat has been applied and prior to application of the clear coat, are similar to microwave ovens in that they contain an electro magnetic wave length. The wave length rotates the water molecules quickly, exciting them and flashing them out of the pigments. This speeds up the dyring process and enhances the cosmetics of the paint. Since gold is 95-98 per cent reflective to infra red, it keeps IR wave lengths bouncing within the chamber (emitted waves reflect off the gold panels). Instead of being absorbed by the walls, they're reflected off the walls and are absorbed by the surface of the vehicle, thereby drying it more efficiently. The continual bouncing also helps keep the wave length pure,preventing it from becoming "dirty" (which causes blistering or bubbling of paint).

The gold-plated oven at Du Pont's Automotive Finishing Lab was built by

Thermal Innovations. The gold coating, known as Laser Gold, was supplied by Brooklyn-based Epner Technologies. While Epner is the only supplier of gold coating, not all the ovens were built by Thermal Innovations. Thermal Devices of Mount Clemens, MI, is another company that has built ovens for GM and Chrysler. Vice President of Sales, Gene Buer, estimates Thermal Devices has built 20 ovens for GM and Chrysler.

President of Epenr Technologies, David Epner, says the name Laser Gold was derived from its initial use — plating for pump cavities in military lasers. As well, Epner's facility gold plates aerospace and defense hardware such as the guidance system of TOW antitank missiles and electronic countermeasures on fighters and helicopters used in the Persian Gulf War.

"I can guarantee if we coat or change the reflectors in certain ovens, the power use drop will be 25 per cent. We're about to do a test at the Ford plant in Wixom, but I do not expect such dramatic results since the oven they're using already has gold plating on the lamps. I'm projecting a 10 per cent power reduction."

The Buick, Oldsmobile, Cadillac plant in Wentzville, MO was GM's pilot plant where three gold-plated ovens were installed in April 1990, the same time the plant made the switch to waterborne paints. Senior Plant Engineer Jim Sitarski says the gold-plated ovens have improved efficieny in the paint process.

The Cadillac plant in Hamtramck, MI has eight gold-plated ovens, however,

Given the right situation, gold plating will provide efficiency increases of at least 25% or the supplier will provide discounts.

Senior Plant Engineer Gary Kopka says the plant has not made the switch to waterbornes. The ovens are currently being used on solvent-based paints, and while this was not the intended use, "they're working sufficiently. But we will be using waterbornes in the '93 model year, he added."

Gold plating cannot be applied to all ovens in automotive plants. Epner says the ideal application is one where there is an infra red oven with aluminum or stainless steel behind the lamp or heating element.

If such a situation exists, Epner guarantees an increase in efficiency of 25 per cent "If we don't, for every per cent less than the 25, I'll take $2,500 off my price. For every per cent more than 25, you take it as a present. That's the kind of confidence we have in the right application."

Installation cost can range anywhere from $10,000 - $100,000 depending on the size of the facility and the amount of product to be processed. If a company does not have an infra red oven, it can become expensive. Ovens can range in price from $250,000 to $300,000 depending on the length (15 — 25 feet).

Epner plates the panels which are sent to his facility by Thermal Innovations and Thermal Devices. The gold panels (which make up interior wall of the oven) are then sent back to the oven manufacturing facility where they are installed with protective wrap. The oven is then shipped to the automotive plant. Thermal Devices sends out some of its representatives to prepare the oven for final installation, says Buer.

"We actually snap the emitters (gold-plated panels) in and take the transit material off them. We don't actually install the oven. Typically, a general contractor or a spray booth manufacturer installs the booth."