2 | 2025 Volume 18 www.ist-surfacetechnology.com

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Application System
Application Efficiency Increased Thanks to New Technology

Real Wood Surfaces
Wood Surfaces With Strong Character From the Printer

Abrasive comparison
The Influence of Blasting Media on Corrosion Protection

Focus: Automotive and Mobility

Top Coat Lines Adapted to Electric Mobility

Optimize Plastic Coatings With Infrared Emitters

Plastics are widely used today, for example, in the automotive industry, mechanical engineering, and electrical engineering. During processing, they are often coated, and this coating must be dried. Heat is excellent for drying, but heat-sensitive plastic materials must not be damaged in the process. Infrared radiation is a solution here. And the technology offers further advantages.

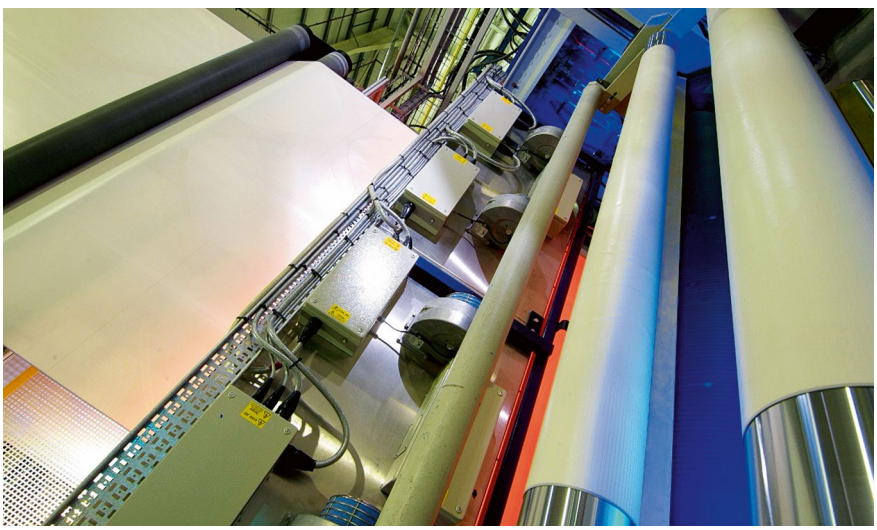
Dr. Marie-Luise Bopp

Bumpers, trim, containers – the list of automotive components made from plastic today is long. Plastics are also the material of choice for many parts in other industries. Infrared emitters offer various advantages for coating these parts, as the following examples show.

Fittings and switches

Plastic components and electronic components cannot withstand heat for very long. Infrared heat provides a lot of energy in a short time and can be directed precisely to where it is needed. The system, the environment, and the rest of the product can remain relatively cool.

A company in the UK manufactures sockets and switches that are coated with colored lacquers or lacquers with a metallic look. These must be completely dry before the components are assembled, packaged, and shipped. Due to increased demand, a new production line was set up, where the speed of drying was crucial for the production speed. After various tests, an infrared system was chosen because it dries faster than hot air, requires less space, and is easier to control.
A Noblelight infrared dryer from Excelitas now supports the supplier in utilizing the full production capacity of the new plant. In addition, the infrared system has proven to be very energy-efficient because, unlike the hot-air oven, it only needs to be switched on when heat is required.



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The use of carbon infrared emitters dries airbag fabric so efficiently that the system pays for itself after coating just ten rolls of fabric.

Airbags

Carbon infrared emitters from Excelitas are helping a British company significantly reduce the scrap rate in the production of airbags. Airbags and other safety materials made from nylon 66 require a silicone coating. This makes the surface more slippery and allows the material to deploy in a fraction of a second.
However, nylon 66 is hygroscopic, meaning it attracts water from the environment and can reach a moisture content of between 3 and 5 %. This moisture must be reduced before coating to ensure good adhesion of the silicone and optimal surface quality of the fabric.
The necessary drying and preheating processes are handled by Excelitas carbon infrared systems, which are individually controlled and regulated.
Optical pyrometers measure the surface temperature of the fabric, and a controller then adjusts the power of the infrared emitters precisely so that the material dries optimally without suffering heat damage. Infrared heat dries silicone coatings on plastic fabrics optimally, ensuring that an airbag deploys quickly in an emergency.
The use of medium-wave carbon emitters heats the airbag fabric so efficiently that the system paid for itself after coating the tenth roll of fabric.

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An infrared system in front of a hot-air oven dries coatings on plastic bumpers much faster.

Bumpers

A Noblelight infrared oven equipped with fast medium-wave infrared emitters from Excelitas is helping to make the production of coated vehicle bumpers more efficient in the UK.
During production, the bumpers were coated with three layers. First, a primer was applied and evaporated in a hot-air oven. After cooling, another coat of paint containing the color pigments was sprayed on and dried. The bumper was cooled again before a clear coat was applied and finally dried in a hot-air oven.
To speed up the process, the possibility of pre-drying the paint before it reaches the hot air oven was investigated. Tests showed that fast medium-wave infrared emitters do this very efficiently.
A tunnel oven was installed immediately in front of the hot air oven for the paint. The tunnel is equipped with 19 emitters, each with a rated output of 3 kW. The emitters are arranged in the tunnel so that the heating power ensures fast and efficient drying. Seven emitters are located in the roof area, four in each of the two vertical zones, and one emitter is directed at each angle. Three optical pyrometers measure the temperature at specific points on the bumpers as they leave the tunnel.
The installation of the new infrared system has increased production efficiency. At the same time, space has been saved compared to other possible solutions for accelerating drying. Last but not least, the new system is very energy-efficient because the infrared emitters can be switched on and off quickly.

© Excelitas

Heat-sensitive components are heated quickly yet gently by switchable infrared systems.

Infrared heat in combination with hot air

Modern infrared modules are so compact that they are well suited for upgrading or supplementing existing ovens. One example of this is an infrared booster in front of a hot air drying system, which helps to accelerate the process.
For complicated parts, hot air and infrared radiation complement each other advantageously. Infrared emitters preheat, allowing hot air to reach even hidden corners. Modern infrared emitters can be perfectly adapted to the product and process in terms of wavelength, power, and even the shape of the emitters. In any case, it is worthwhile to precisely match the process and material to the heat source, as this not only increases production speed but also improves quality, reduces the scrap rate, and thus saves costs. //

Author

Dr. Marie-Luise Bopp
Senior Manager Marketing
Excelitas Noblelight GmbH, Kleinostheim (Germany)
marie-luise.bopp@excelitas.com
www.noblelight.com