Lasers Speed Industrial Coating While Reducing Energy Consumption

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Laser cleaning, stripping, curing, and drying are emerging as transformative technologies for industrial coatings, offering cost-saving and sustainable solutions. For surface preparation or stripping coatings, lasers demonstrate significant throughput improvements, energy efficiency, precision, and reproducibility, all while being consumables-free and reducing industrial waste. This presentation highlights multiple examples of precise, energy-efficient laser cleaning and stripping processes relevant to industrial coatings.

In thermal processing, lasers deliver unparalleled advantages, particularly by enabling "cold" oven processes. Laser energy is precisely directed to the coating, bypassing atmospheric or enclosure heating. The near-infrared wavelength penetrates coatings, achieving high-speed volumetric curing or drying. By selectively heating the coating rather than the substrate, laser curing or drying ensures rapid processing with significantly lower energy consumption compared to conventional convection ovens.

This talk will detail various energy-efficient processes on powder and liquid coatings, demonstrating complete curing or drying in a cold laser oven within minutes. Moreover, comparative cost models will be presented to quantify the economic benefits of laser technology in terms of process time, space utilization, energy consumption, and cost per part.