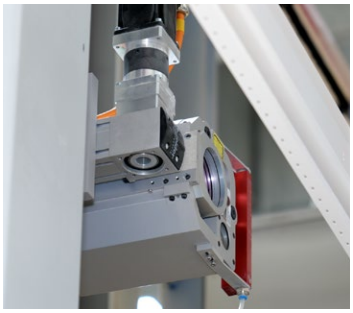
CONTROLLING THE THICKNESS OF POWDER COATINGS IN-LINE

Precise monitoring and control of powder coating thickness via laser photothermal technology

uickly, precisely and non-destructively measuring the layer thickness of powder coatings before or after curing is still a challenging task for existing sensor technologies. But now Precitec offers a breakthrough technology with laser photothermal sensors.

In a wide variety of industries, including automotive, appliances, furniture, and architecture, powder coating involves the application of a dry, powdered material onto a surface, which is then cured using heat to form a hard and smooth coating. Controlling the thickness of this coating layer is crucial for monitoring the quality and performance of the coating process and thus the coated product, ensuring a consistent and uniform coating thickness, improving the quality and conformity of parts, reducing powder consumption since power coatings can be expensive, and complying with the applicable regulations or standards. The existing contact techniques cannot be implemented in-line and are unable to non-destructively measure the layer before curing.



PRECITEC ENOVASENSE TECHNOLOGY

The laser photothermal technology offered by Precitec Enovasense brings a unique new dimension to powder coating applications. This technology enables non-contact, non-destructive, non-intrusive, one-sided, non-radiative, fast, repeatable and easy-to-integrate measurements, while also enabling easy and cost-effective in-line measurement.

IN-LINE MEASUREMENT

The Precitec Enovasense sensor technology can measure paints, varnishes, enamels and all other types of powder coatings. RMS repeatability levels down to 0.5µm can be achieved on a typical 60 µm thick layer. For powder paints on aluminum parts, hundreds of paint colors are measurable with a pre-set unique calibration.

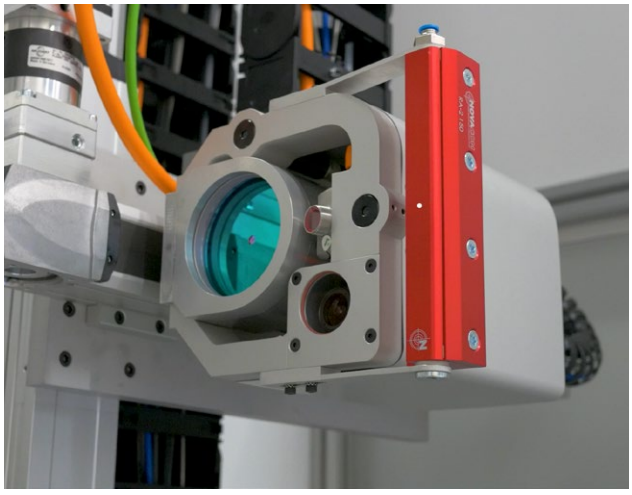
The sensor head can easily be integrated into the powder coating line thanks to its ultra-compact dimensions and low weight (as little as 150g), high distance tolerance, and independence of part vibrations or temperature. As it is a fully non-contact technology, the powder coating layer can even be measured before curing, thus enabling earlier monitoring and a faster reaction to any thickness non-conformity.

A long-distance module allows parts of varying sizes to be measured with a very high standoff distance range of 150-250 mm. Full measurement booths with part size and shape detection and automatic sensor positioning and measurement are also available.

HOW YOU BENEFIT

- Improved quality process thank to automated in-line measurement
- Non-conformities detected earlier through measuring before curing
- Powder consumption monitored to save raw material

The measurement data are automatically stored and archived, with the data streamed live to the line controller. A comprehensive human-machine interface, featuring live analysis, an alarm that sounds when a pre-set tolerance is crossed, and a record of historical measurements from past months of coating orders is also available.



Enovasense sensor head with long distance module for in-line powder coatings control

PARTNERING WITH YOU

Enovasense is an innovative French company and a member of the Precitec Optronik Group, a German manufacturer of highly innovative sensors and optical probes. The Enovasense® product line sets the standard in contact-free layer thickness measurements. Enovasense and Precitec products deliver in-process, in-line and offline measurements of the highest precision on all materials and measurement ranges from nano- to millimeters.

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