



CONTROLLING COATING THICKNESS IN COIL-COATING PROCESSES

Precise monitoring of coil-coating thickness and weight via laser photothermal technology

Quickly, precisely and non-destructively measuring coatings deposited through coil-coating processes is still a challenging task for existing sensor technologies. But now Precitec offers a breakthrough technology using laser photothermal sensors.

In industries such as construction, automotive, appliances, battery manufacturing or packaging, coils made of various materials are continuously finished through an automated coil-coating process. Coil coating is a highly efficient process used to apply a thin protective coating to metal coils that are typically made of steel or aluminum. Determining the thickness of the coating is essential for several reasons: protection (e.g. against corrosion, oxidation, UV radiation, chemicals and other environmental factors), the aesthetic appeal of the finished

product (e.g. in automotive applications), extended durability and performance (e.g. scratch resistance), and cost efficiency (e.g. to avoid excessive coating of an expensive coating material). Controlling the thickness or the surface mass of these coating layers is also crucial to guarantee a homogeneous layer across the whole width and length of the coil. The existing radiative techniques involve high safety constraints and authorizations, have short lifetimes, and are difficult to integrate into in-line production processes.



T060 ultra-compact sensor head

PRECITEC ENOVASENSE TECHNOLOGY

The laser photothermal technology offered by Precitec Enovasense brings a unique new dimension to coil-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 OR AT-LINE MEASUREMENT

The Precitec Enovasense sensor technology can measure all kinds of coatings – paints, resins, varnishes, polymers, organic, adhesives and metallic coatings – with an outstanding level of precision. RMS repeatability levels as low as 0.1 μm can be achieved on a typical 30 μm thick layer.

The sensor head can be easily integrated into the coil-coating process thanks to its ultra-compact dimensions and low weight (as little as 150g), high distance tolerance, and independence of coil vibrations or temperature. What's more, the whole system is very easy to operate thanks to the single-sided sensor and no need for reference measurement before coating.

HOW YOU BENEFIT

- ▶ Improved quality process thank to high precision
- ▶ Compact, simple, safe – easy-to-measure coating thickness in-line
- ▶ Long-lifetime sensors performing reliability in all line conditions

Depending on the coating material and thickness, this measurement technology can be implemented on lines moving at speeds of up to 150m/min. 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.



HKL 2 control station

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.