

Thickness monitoring underneath Mascoat thermal coatings using Inductosense WAND sensors

Overview

Thermal insulative coatings are an essential tool in helping industry operators control their processes by mitigating heat dissipation on valuable assets. The application of thermal coatings helps to optimize energy efficiency whilst simultaneously working to protect personnel from injury.

However, once the coating has been applied, asset integrity monitoring of the underlying structure becomes a challenge. Wall thickness measurements using conventional ultrasonic testing (UT) probes cannot be performed without removing the coating to expose the bare metal. Furthermore, if the structure needs to be inspected frequently, the process of removing the coating each time incurs significant costs over time.

Inductosense has worked with the pioneering industrial coatings company, Mascoat, to develop a solution to this challenge. Inductosense's permanently installed thickness monitoring sensors are wirelessly activated; and their low-profile design makes them ideal for embedding underneath material. A series of tests have been carried out by Mascoat to validate that the sensors can be used underneath their Industrial-DTI thermal coating to acquire thickness readings, without needing to remove the coating itself...



The results from the tests show that:

- ✓ Inductosense sensors can be installed underneath Mascoat thermal coating, and wall thickness readings from these sensors can still be wirelessly acquired using the WAND data collector, without needing to remove the coating
- ✓ Thickness readings from sensors installed underneath Mascoat thermal coating could be successfully acquired at elevated temperatures, and after long term exposure to elevated temperatures. The sensors perform well to specification within their temperature range of -40°C to 130°C (-40°F to 266°F)

The testing, at a glance...

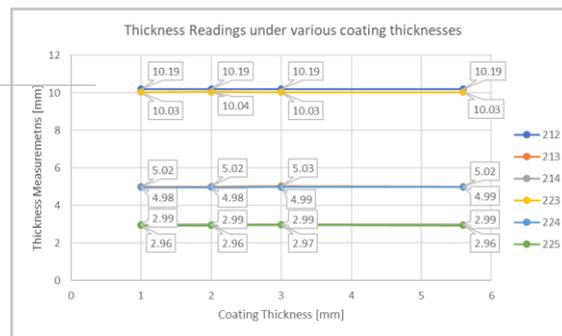
- 1 Inductosense WAND sensors were installed on two step-machined metal panels; wall thickness readings were acquired from the uncoated sensors using the WAND handheld data collector.
- 2 Layers of Mascoat Industrial-DTI thermal coating were then applied in incremental stages, up to 6mm, where thickness readings from the sensors were acquired at each increment
- 3 Thickness readings were then collected from the coated sensors at elevated temperatures, and then heat aged over a period of a few weeks, where readings were taken again



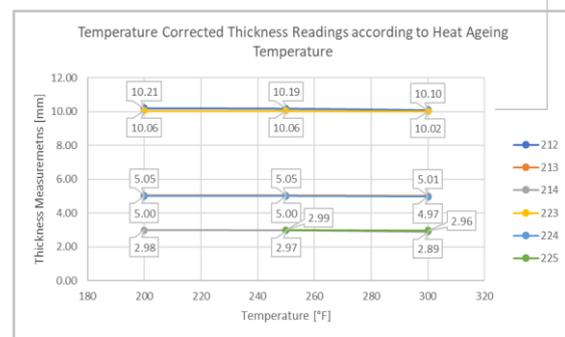
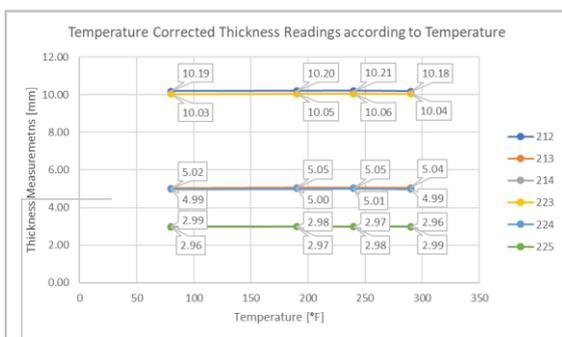
Panel Number	Sensor Reference	Nominal Thickness [mm]
1	212	10.16
	213	5.02
	214	2.99
2	223	10.02
	224	5.00
	225	2.96

WAND sensors installed underneath a layer of Mascoat Industrial-DTI coating

Data shows wall thickness readings are not affected by presence of Mascoat layer, nor the coating thickness



Sensors perform well within accuracy specifications following heat aging, up until the upper temperature limit of 130°C (266°F) is reached



Results are within accuracy specifications of the sensors across the temperature range, even beyond the upper temperature limit of 130°C (266°F)

Inductosense Ltd.
 Unit 3, Kings Business Park,
 Feeder Road, St Philips,
 Bristol, BS2 0TZ
 United Kingdom

T: +44 (0) 117 403 4047
 E: info@inductosense.com
 W: www.inductosense.com

Inductosense Ltd is registered in England and Wales with registered number 09689612 and VAT registered number 227006245