

# APPLICATION NOTE

## Measurement of Thick Coatings on Pipelines

**On oil pipelines, propylene coatings serve a multitude of important purposes including corrosion prevention and insulation, but they are expensive. In order to ensure appropriate thickness for guaranteeing performance without wasting valuable material, the application process needs to be controlled carefully.**

In the oil and gas industry, it is common to transport the liquid or gaseous goods through undersea pipelines. Insulation is not only necessary to avoid thermal losses, since the oil is mixed with hot steam to improve its fluid properties, but also to protect the pipe from the extreme temperatures (e.g. in the polar regions), high pressure and corrosive waters found at the bottom of the ocean: Any penetration of the coatings can eventually result in leakage and environmental disaster.

Therefore, for both corrosion prevention and insulation, the pipes are typically enclosed in one or more layers (often up to 100 mm thick in total) of polypropylene, a highly resilient thermoplastic polymer that can withstand the harsh deep-sea conditions. To ensure the layers are properly applied – sufficiently thick but without wastage or delamination – rigorous quality inspections must be performed using a highly accurate instrument that can measure coatings of such dimensions.

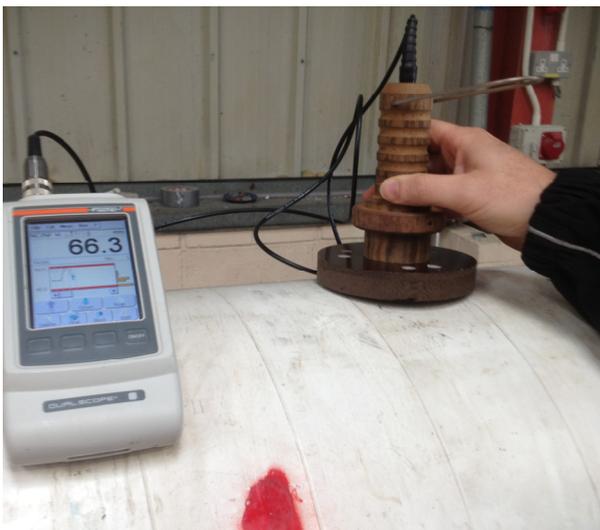


Figure 1: Coating thickness measurement on a pipeline segment with the FA100 probe connected to a DUALSCOPE® FMP100

Especially for these demanding requirements, FISCHER has developed the FA100 probe, which fully covers the thickness range of up to 100 mm. The FA100 can be connected to the handheld instruments of the FMP family, allowing mobile use wherever needed. The handy FMP gauges are available with either a touchscreen or – even more robust – conventional buttons.

Compared to ultrasonic instruments, the FA100 plus FMP combination provides more accurate results and easily handles multi-layer structures without negative influence, irrespective of coating material type. The results in Table 1 below demonstrate the consistency of 26 readings taken on a segment of insulated pipeline.

Mean Value	41.29 mm
Standard Deviation	0.599 mm
Coefficient of Variation	1.5 %
Range	2.35 mm
Minimum	40.5 mm
Maximum	42.9 mm
No. of Readings	26
No. of Blocks	5

Table 1: Results from pipeline inspection with probe FA100

Measuring the coating thickness is as simple as sliding the FA100 probe lengthways or sideways over the sample surface. In automatic measurement mode, the gauge screen shows a graphic representation of the coating thickness, which helps the user to assess coatings for evenness (concentricity/eccentricity). Final results are written to PDF via the powerful DataCenter software. Measurement area pictures and thickness annotations can be stored in application memories assigned to job sections, shifts or operators.

**With the easy-to-operate handheld instruments of the FMP family, used in combination with FISCHER's special probe for measuring thick layers, the FA100, pipeline coatings can be assessed precisely to ensure their quality and performance. For further information please contact your local FISCHER representative.**