

# API increases operational efficiency and improves measurement accuracy using Micro Motion® Coriolis fiscal measurement system

## BENEFITS

- Overall Equipment Effectiveness (OEE) increased by approximately 10 per cent
- Measurement accuracy improved by up to 0.3 per cent
- Minimal maintenance enables increased availability
- Enhanced safety by eliminating requirement to send operatives onto tank roofs



## CUSTOMER

The Falconara Marittima (Ancona) refinery is located on the Adriatic coast of Italy. Built in 1950 the refinery is part of API Group (Anonima Petroli Italiana SpA). The site covers an area of over 700,000 m<sup>2</sup> and the refinery has a capacity of 3,900,000 tonnes per annum. Access to the refinery from the sea is provided by marine terminals which can accommodate tankers from 1,000 to 400,000 tonnes.

## APPLICATION

Metering system based on Coriolis mass flow measurement. The system is used to provide accurate measurements of hydrocarbon deliveries from large storage tanks at the refinery to waiting tankers at the sea tanker loading terminal.

## CHALLENGE

The fiscal measurement of deliveries was being calculated by monitoring tank levels. Although the company had installed the latest level measurement technology, the measurement errors were considered to be unacceptable. The inaccuracies were affecting both taxes paid and profit margin, with the average margin of error calculated by API at 0.5%. API needed a turnkey metering solution that would increase the accuracy of fiscal measurements at the tanker terminal.

## SOLUTION

Emerson provided a metering skid based on its Micro Motion® Coriolis mass flow meters. The skid was provided fully complete,

*“Emerson’s metering system has increased our Overall Equipment Effectiveness (OEE) by around 10 per cent”*

**Dr. Paolo Mangialardo,**  
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requiring API to only construct a base and connect the inlet and outlet manifolds.

The design paperwork and certification were provided by Emerson as well as technical support throughout all phases of the project. Emerson liaised directly with the Italian government's Metric Office, who provided final verification that the measurement accuracy complied with the relevant legislation. The full range of Micro Motion ELITE® meters have also been certified in accordance with the new MID (Measurement Instrument Directive).

Coriolis meters are ideally suited to fiscal applications since they measure mass and not volume, and the results are not affected by environmental influences such as temperature. The Coriolis meter can also convert the mass reading into a standardised volume using temperature from an external RTD.

Coriolis meters also provide improved performance under entrained gas conditions and can also measure bidirectional flow, eliminating the need for bidirectional manifolds, motor-operated valves, strainers, and air eliminators.

Emerson's skid based solution is extremely user-friendly for operators and it has simplified procedures for fiscal declaration. It has also made it much easier to create the documentation to accompany shipments and reduced the overall amount of paperwork to be processed to a bare minimum.

API is extremely satisfied with the results obtained and is currently working on a project to rationalise its sea shipment procedures. Based on this success the company plans to install Emerson's Micro Motion measurement systems to handle all load sizes.



**“API is extremely satisfied with the results obtained from Emerson’s Coriolis metering solution”**

**Dr. Paolo Mangialardo,**  
Advanced Control Engineer  
API, Raffineria di Ancona

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