



Application Report

On-line Determination of API Gravity Number

The API Gravity number is an important test parameter in the determination of quality for both crude oil and refined petroleum products. The Anton Paar combination of the DPRn density cell with the mPDS1000 evaluation unit provides for a temperature compensated density which is converted to an API Gravity number by the inbuilt software in the evaluation unit.

This provides for an accurate, cost effective in-line system to continuously monitor the product quality thus ensuring that no slugs of off-spec product are missed as could be the case with off-line testing. It also eliminates the ongoing cost of off-line laboratory testing.

Industries & Applications

Petroleum Refining – Crude and final product quality

Oils and Lubricants – on-line blending control, quality control

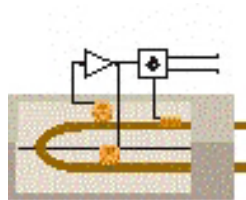
Custody Transfer – ensures you receive the correct specification of product

Fuel Terminals – ensure no change in product quality

Aviation Fuel Quality – ensure quality of fuel supplied to aircraft

How is the Density Measured ?

Inside the DPRn427 transducer is an oscillating U-tube system. It is excited and kept oscillating at its resonant frequency by two coils and an electronic circuit. The oscillation period and sample temperature are measured and transferred to the mPDS1000 evaluation unit for data processing and the result is expressed as an API Gravity number.



The Oscillating U-tube

The mPDS1000 evaluation unit and DPRn427 are provided as a system certified for use in Hazardous Areas (Ex ia). The mPDS1000 provides for a local display as well as mA outputs (temperature and density/API Gravity) and two relay contacts for setting of high and low alarm points. An option also exists for the use of Profibus DP. The mPDS1000 also accepts external inputs (both analogue and digital) which allows for the connection of other instruments (flow, pressure etc).



mPDS1000 Evaluation Unit



DPRn 427S Density Cell

The system can be supplied complete with a stainless steel in-line fitting (sized according to your requirements) to provide for a total package. This ensures correct flow through the sensor for improved accuracy and performance. The system comes pre-calibrated at the factory and will provide an output in API gravity from start up so there is no requirement for conversions on-site. Options also exist to supply the output in either density or SG.

For more information on the API Gravity monitor please contact us at:

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