

**UPM 17070**  
**Wet Gas Flow Facility Inter-Comparison**  
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**Abstract**

Inter-comparisons of flow meter laboratories are an important check and balance to the performance claims of each facility. Inter-comparisons help build trust in participating laboratories by giving their performance claims more integrity.

Wet gas flow metering has become important to the hydrocarbon production industry. Wet gas meter technologies are now widely used. However, most wet gas flow meter technologies have been developed on the relatively few multiphase wet gas flow test facilities available. Many wet gas meters have their performance characterized by testing at a wet gas test facility while others are acceptance tested at a wet gas test facility. The inherent assumption is that a wet gas meter tested at any wet gas flow test facility will have the same performance as at any other wet gas test facility, and the same performance as in the field. An inter-laboratory comparison would be beneficial in helping prove this. However, compared to single phase flow facilities there is a dearth of wet gas flow test facility inter-comparisons. In this paper, such an inter-comparison is discussed.

A horizontally installed 6", 0.6 $\beta$  ISO compliant Venturi meter was tested at the CEESI multiphase wet gas test facility at Nunn, Colorado, USA. This meter was then tested at the DNV GL multiphase wet gas test facility at Groningen, Netherlands. A set of different ISO compliant Venturi meters had previously been tested at TUVNEL in East Kilbride, UK, and a wet gas correction factor published. This correlation is now adopted by ISO (TR11583). As a correlation represents a data set in the form of an equation, this ISO correlation indicates the wet gas performance of Venturi meters at TUVNEL. In this paper the Venturi meter wet gas performance at CEESI and DNV GL is directly compared, while both facility data sets are compared to the TUVNEL published correlation. This achieves a rare inter-lab comparison.

Along with this laboratory inter-comparison, the CEESI and DNV GL wet gas data points which lie outside the ISO correlation give interesting lessons on the effect of extrapolating the ISO correlation.