Third Party Manufactured Diagnostic Ready Cone DP Meter Performance

Compared to the Predictions of the New ISO 5167-5 Standard

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In 2015 ISO added cone DP meters to the DP meter designs discussed in the ISO 5167 DP meter standard. This ISO standard used massed data from the few established cone meter manufacturers to predict the meter performance. Although cone meters have been used for many years without a standard the release of ISO 5167-5 facilitates third party (new) cone meter manufactures and the comparison of such manufacturers meters design and meter performance with a recognised standard.

The Malaysian hydrocarbon production industry has been a proponent of cone DP meters for many years. Whereas traditionally Malaysian industry has only procured cone meters from foreign suppliers, the existence of the new ISO cone meter standard has been an aid for localized cone meter manufacture. In this paper the geometry and performance of four large Malaysian manufactured cone meters are compared to ISO 5167-5.

Two 26” and two 20” cone meters manufactured in Malaysian in 2015 for a natural gas production installation were calibrated across a wide flow range at the CEESI Iowa gas calibration facility. The calibration results are shown and compared to the predictions stated in ISO 5167 – 5.

These four cone meters are fully diagnostic capable. The CEESI Iowa calibration also set the diagnostic baselines for the new DP Diagnostics developed diagnostic suite ‘Prognosis’. This paper describes this diagnostic system and uses the CEESI calibration data to shows multiple examples of the diagnostic system is operation. These examples include the diagnostic system reaction to the common field problems of incorrect geometry keypad entry, incorrect flow coefficient keypad entry, DP reading errors etc.