

Datasheet:

Flow Measurement Consultancy

CBM Utilising Uncertainty

Introduction

The Oil & Gas Authority (OGA) has a stated view that as part of a wider approach to reduce operating costs, strategies for the maintenance of flow measurement instrumentation should account for the likelihood and consequences of measurement error.

In the 'Time Based Maintenance Section' of the OGA Measurement Guidelines, operators are 'strongly encouraged to consider' abandoning time-based strategies in favour of a 'risk-based or condition-based' approach, or a strategy combining elements of each.

KELTON provide a service that can:

- Provide system uncertainty calculations utilising KELTON UNCERTAINTYPLUS.net modules which provide a powerful method to demonstrate compliance with commercial agreements and government legislation.
- Review and revise current maintenance activities against uncertainty to identify where a relaxation in maintenance can be achieved, i.e. relaxing a pressure transmitter verification check from 3 monthly to 12 monthly, whilst maintaining system uncertainty. This could also include assessing historical calibration data of instruments, the ability to tighten calibration tolerances or reviewing process data to optimise the range/span of an instrument.

Dynamic Uncertainty

KELTON have developed a live uncertainty calculation application enabling metering system uncertainty to be monitored in real time.

The traditional method of uncertainty delivery has been either as a report or in spreadsheet form where users could update various parameters and recalculate uncertainty based on prevailing process conditions or the selection of instrumentation in use.

The purpose of this new approach is to deliver uncertainty calculations as a compiled and controlled application which can be run stand-alone or integrated with KELTON MeterManager which will enable system uncertainty to be run dynamically and automatically thus providing a window on system performance in real time.

Utilising Uncertainty as part of a 'Risk Based Strategy'

Objective

The objective is to identify which maintenance activities can be relaxed while keeping within the agreed uncertainty budgets of your metering system. The uncertainty can be calculated for actual volume, mass and standard volume flowrates and it can be demonstrated that the system still complies with the requirements of agreements or legislation. To achieve this, the following are recommended:

About KELTON™

Fully accredited, KELTON is the leading independent measurement consultancy and software developer for the oil and gas industry. For well over two decades, KELTON has helped many international and national operators to ensure their full compliance with industry regulations. Whether clients require inspection, auditing or certification as part of System Compliance, uncertainty calculations for System Assurance or System Support – in KELTON they find a partner they can trust.

Services include:

- System Compliance
 - Inspection
 - Audit
 - Certification
- System Assurance
 - Design uncertainty
 - Modelling uncertainty
 - System uncertainty
- System Support
 - Manual/guidelines
 - Procedure generation
 - Educational
- Measurement Software
 - Desktop applications
 - Database applications
 - Pipeline applications

KELTON encompasses ISO/EN 9001 & 14001, BS/OHSAS 1800 and UKAS type 'C' Accreditation, is Microsoft Certified and is recognised as an Investor in People. Support is available from three strategic locations; UK, Qatar and Abu Dhabi.

If additional information is required visit:

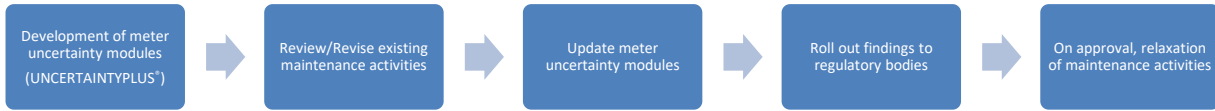
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Greater emphasis is required on assurance of system performance when maintenance activities are relaxed. Even though the relaxation of the interval for some maintenance activities have minimal effect in the overall uncertainty of a system, the confidence to deliver accurate measurement may be impacted and reliability of the system may also be compromised.

Typical Results

The following table demonstrates typical results on the overall effect on uncertainty of metering systems with the relaxation of pressure and temperature maintenance routines:

Measurement System	Budget Limit %	Current		Extended		Maximum	
		Maintenance interval months	Uncertainty at typical mass flow rate (%)	Maintenance interval months	Uncertainty at typical mass flow rate (%)	Maintenance interval months	Uncertainty at typical mass flow rate (%)
Export Condensate (Turbine)	±0.25	3	0.22	12	0.23	24	0.24
Export Gas (Orifice Plate)	±1.0	3	0.87	12	0.88	24	0.9
Separator Wet Gas (V-Cone)	±5.0	12	1.93	24	1.96	60	2.17
Test Separator Condensate (Coriolis)	±5.0	12	0.41	60	0.41	N/R	N/R
Test Separator Wet Gas (V-Cone)	±5.0	12	1.76	24	1.77	60	1.81