

FLOW



- Testing and Evaluations
- Exchange of experience
- Discussion with /visit suppliers
- Feedback to authorities etc.
- Communication with other Users (groups)

FLOW

Minutes of meeting WG- Flow

Date: October-1-2008

Venue: 'De Boerderij' –Dow Terneuzen

Present:

Kees Kaijser	DOW (Chairman and Host)
Jaap van der Bok	SGSI- Moerdijk
John Sneek	ExxonMobil
Jan Peter Sanderse	ExxonMobil
Dick de Wagenaar	KPE-Q8
Harry de Jong	SGSI-Pernis/Moerdijk
Jan van der Linde	AKZO Nobel T&E
Nico Smeets	AKZO Nobel T&E
Rene Stoelinga	SABIC-Europe
Harry Wiersma	SGSI-Pernis
Tom Kuperij	WIB (Scribe)

Guests

Henk Riezebos	Gasunie Gas-transport
Wiel Hupperts	C&Tsi

Guests (PM)

Alex Pijnenburg) Ned. Emissie Autoriteit (NEa)
Roderik de Ridder)

Regrets:

Rob Jansen	TNO
Richard Braal	TNO
Bert Groenheide	SGSI-Pernis
Johan Sterrenburg	Dupont de Nemours
Jack Spits	Dupont de Nemours
Frans van Laak	C&Tsi
Wim Volmer	Nmi

Use of information/Disclaimer:

Any experiences reported below are subject to the following:

- the reporting WIB member stresses that the reported information is confidential and shall not be shared with any third party
- each company should form its own opinion about the reported products and services;
- the reporting WIB member(s) did not in any way intend to influence the other companies in their decision making process with respect to the procurement of such products and services.

•nothing may be inferred from reported experiences.

Agenda:

- 0- Opening/announcements/introductions
- 1- Review previous MOM and action points
- 2- Explanation of the Flow-meter audit methodology by Shell.
- 3- Follow-up Orifice measurements TNO
- 4- Review of NEA status and actions
- 5- Ultrasonic flare meters
- 6- Progress report and initial findings- E&H Prosonic tests
- 7- AOB/ exchange of experience, and date for next meeting

4-NEA- Uncertainty of environmental (CO2) related flow meters

Following NEA's presence at the 20 Feb-2008 meeting together with WIB members, a feedback document was prepared in meeting 26 March and subsequent committee reviews which contained WIB's recommendations and opinions, backed by test data of the 'Infoblad 2007, (pgs: 6 and 7)

6- E&H 'Prosonic' Ultrasonic 2, and 4 path liquid meters project :

Schedule and progress

Since the previous meeting, testing at C&Tsi has started (Feb 1) and yielded good results;

Diagnostics:

Though diagnostics testing is currently not in the scope of work, the meters under test contain all the software for full diagnostics. The main failure modes to evaluate is the loss of one measurement path, and the resulting degree of 'graceful' degradation in performance which will result. A formal proposal and test scope based on testing the effects of single path failure occurrences will be prepared by C&Tsi.

The office will prepare a formal proposal to E&H as soon as firm C&Tsi data is available; Initially it is considered that E&H should bear the full cost of this test, in the light of offering them a strong marketing position with this feature.

Action: C&Tsi / WIB Office

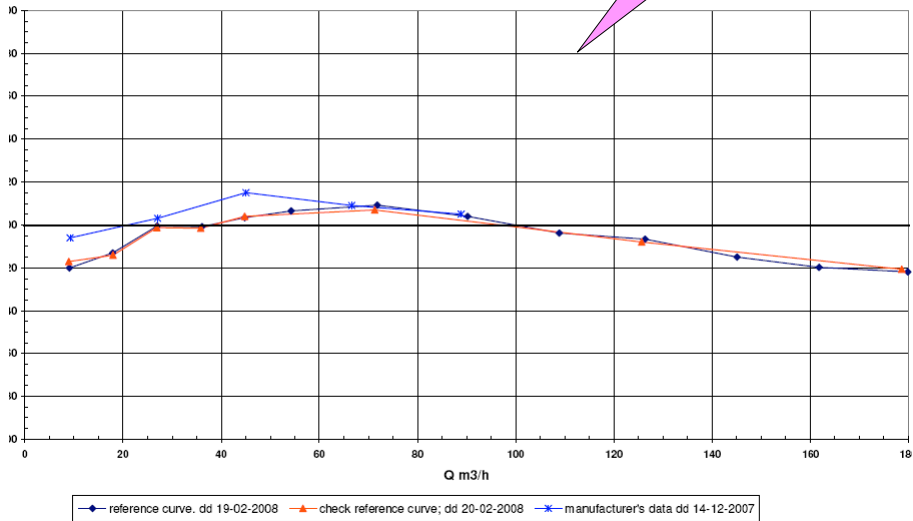
E&H was also asked to supply a technical statement of the diagnostic coverage factor offered by the diagnostic package for use of this meter in a safety (SIS) function.

Action: C&Tsi, E&H

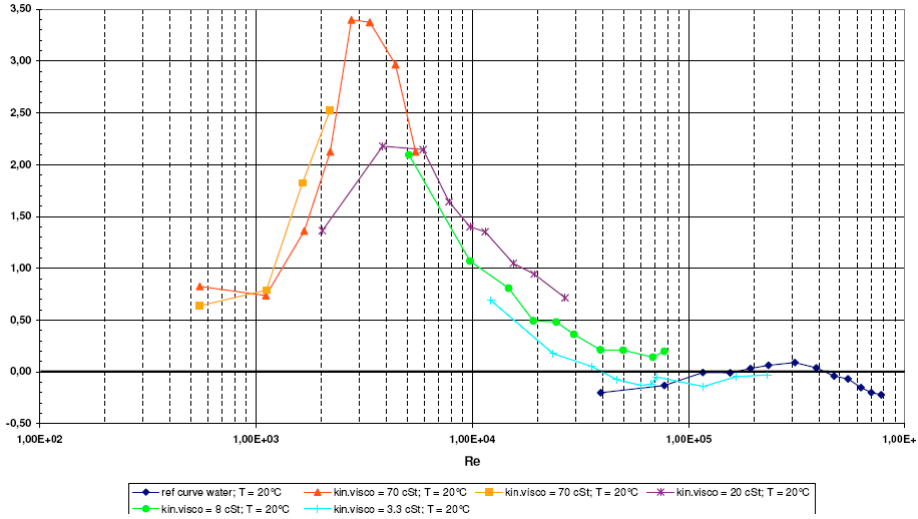
7- AOB/ Exchange of experience and date for the next meeting.

Example of Evaluation

E&H 2path US meter;s/n: 9C000202001;
Reference curve; water 20°C

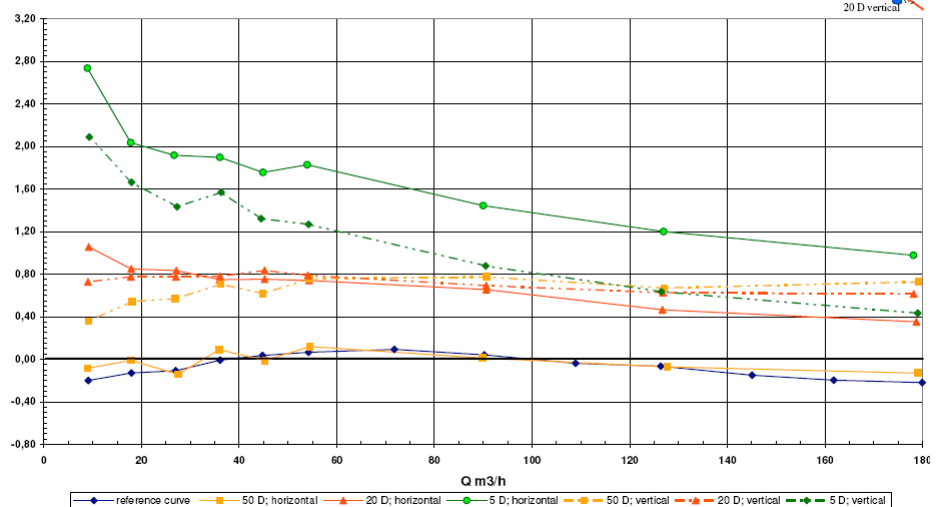
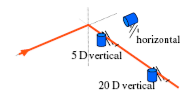


E+H 2path US meter; s/n: 9C000202001
viscosity effect, sugar solutions



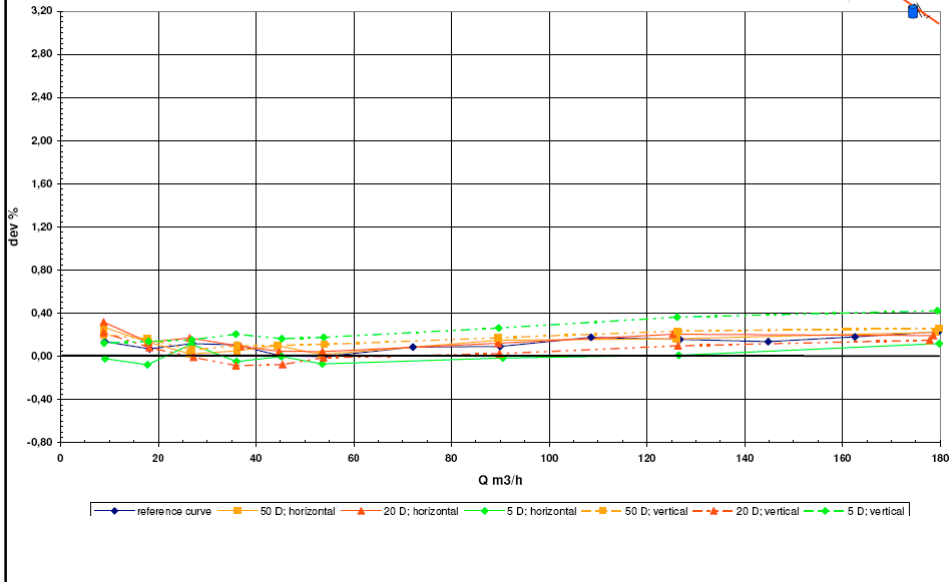
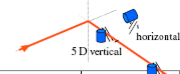
E+H 2-path US meter 92F; s/n: 9C000202001
Profile disturbance; single bend

t 13




part 14

E-H 4-path US meter 92F;s/n: 9C000102001
Profile disturbance; single bend



Meetprincipe	Type	Medium	Onzeketheid		Long term stability		Technology assumptions	Installatievoorschriften	Inspectie-eisen / voorstel
			Best	Worst	Best	Worst			
			% of mass reading		% of calibrated range /per year				
Orifice plate		Vloeistof	0.5	1	0.02	0.05	Best Electronic smart sensors,Worst Pneumat	Conform ISO 5167	check dimensions of orifice / 5 jaar en/of stop periode of steekproef (5% van installatie)
		Gas	0.6	1.2	0.02	0.05			
Venturi		Vloeistof	0.5	1	0.01	0.02	Electronic smart sensors	Conform ISO 5167	check dimensions of orifice / 5 jaar en/of stop periode of steekproef (5% van installatie)
		Gas	0.5	1	0.01	0.02			
DP transmitter		NA			0.05	0.2	Best Electronic smart sensors,Worst Pneumat		check DP transmitter/jaarijks
Ultrasonic inline	1-pads	Vloeistof	1	5	0.05	0.05	Flow calibrated at factory	20D voor 10D na	Diagnostics (zoals VoC, signaal/ruis etc.), visuele inspectie
		Gas	3	5	0.05	0.05			
	2-pads	Vloeistof	0.5	1	0.05	0.05	Flow calibrated at factory	10D voor 5D na	Diagnostics (zoals VoC, signaal/ruis etc.), visuele inspectie
		Gas	0.5	2	0.05	0.05			
	3-pads	Vloeistof	0.3	0.6	0.05	0.05	Flow calibrated at factory	10D voor 5D na	Diagnostics (zoals VoC, signaal/ruis etc.), visuele inspectie
		Gas			0.05	0.05			
Ultrasonic clamp-on		Vloeistof	2	5	0.05	0.05	Flow calibrated at factory	20D voor 10D na check pipediameter,VoC pip ruwheid etc.	Diagnostics (zoals VoC, signaal/ruis etc.), visuele inspectie check couple compound
		Gas	NA	NA	NA	NA			
Vortex		Vloeistof	1	2	0.05	0.05	Flow calibrated at factory	Pulsaties, trillingen, Profielverstoring.	Check sensor spectrum finger print
		Gas	1	2	0.05	0.05			
Coriolis		Vloeistof	0.1	0.5	0.05	0.05	Flow calibrated at factory	Stress vrij installeren	Field check, zero-stability etc. density check. Jaarijks
		Gas	0.2	0.5	0.05	0.05			

	Coriolis-Massemesser (CMM)	NE 132
Anwendungsbereich Bei den NAMUR*-Empfehlungen und -Arbeitsblättern handelt es sich um Erfahrungsberichte und Arbeitsunterlagen, die die NAMUR für ihre Mitglieder aus dem Kreis der Anwender zur fakultativen Benutzung erarbeitet hat.	Scope NAMUR*-Recommendations and -Worksheets are working documents and practical reports prepared by NAMUR for their members. Their application is optional.	

Communication with other Users

Agreed not to duplicate tests

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THANKS on behalf of the WG Flow