

Section



MISURE FISCALI

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The multiple faces of a Custody Metering Project



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Riccardo Cremascoli

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- Skid Assembly / Metering System
- Very Distant target
 - Plan the Site works
 - Plan the Erection
 - Plan the Construction
- Design / Design Reviews

Close out Face

- Site works
- MID verification



Key message of the Presentation:

- Project is made by People
- Engineering is the lead = people
- Communication is the key





Qualification Face : background









Qualification Face : background

On December 2nd 2014, Turkish Republic Ministry of Customs and Trade **issued a change in the customs regulations** stating: **"All netroleum products** (including LPG) entering and exiting the denots **shall be measured by measuring systems** on mo

"All petroleum products (including LPG) entering and exiting the depots *shall be measured by measuring systems* on main pipelines according to the specifications of regulation (EK-81/A)"

EK-81/A regulation has a clear reference to EU MID (Measurement Instruments Directive MI-005 Accuracy Class 0.3)

The transition time for installing the measurement systems is given by the law as 15 February 2015 with extension option **up to 02nd December 2015** (one year after law enforcement date). **Otherwise the Depot licenses of the companies will be aborted**, preventing them to import oil and gas products.







Qualification Face : Customer Need

According to existing regulation, the government is taxing the imported products by tank gauging systems.

Now government will use skid mounted mass measuring systems for tax purposes.

Due to the catastrophic impact of loosing import licenses Companies started the bid processes more or less immediately.



The specific market demands was for 30-37 metering skids, to be build, installed and certified in 8 months.

>>>> a very fast track project!!!







The multiple faces of a Custody Metering Project

Development Face



Barry Clark Flow Metering System Specialist

Lütfü Bilgen Managing Director SC_TR

Bora Sarihan Sales Manager SC_TR

Andrea Calo' Sales Manager Solutions

Development Face : quickwins

- Experience in the management of fast track projects (engineering, procurement, fabrication)

- Local presence in the market

- Knowledge of metrological aspects

- Technology Owner

- Proposal of Coriolis Mass meter as measuring principle

Associazione Italiana Strumentisti

Development Face : quickwins

BUT DETAILS ARE IMPORTANT!

Definition of technical details such as piping class, vent& drains, hook up etc. are left to the execution.

Strumentisti

Qualification Face : Normative requirements

There is no worldwide agreement on the total uncertainty for custody metering however it would be fair to say that a custody system should achieve at least ± 0.35 %. European OIML R117-1 is the only standard which specifies target accuracy class for different metering applications, API does not

Class	Type of measuring system	
0.3	 Measuring systems on pipelines (see 5.7) (With exemption for what is stated for accuracy class 1.0 and 1.5) 	Accuracy class 0.3 means that the total
0.5	 All measuring systems, if not differently stated elsewhere in this table, in particular: fuel dispensers for motor vehicles (other than LPG dispensers) (see 5.1, 5.9, and 5.10) measuring systems on road tankers for liquids of low viscosity (see 5.2) measuring systems for the unloading of ships' tanks and rail and road tankers (see 5.3) measuring systems for milk, beer, and other foaming liquids (see 5.6) measuring systems for refuelling aircraft (see 5.8) 	uncertainty of the system will need to be at least \pm 0.3 % this can be considered as the best available system accuracy

All the standards provides guidance to guarantee that the total system uncertainty is maintained during the whole operation

The multiple faces of a Custody Metering Project

Tobias Linsner Proposal Manager Solutions

Emre Erensoy Industry Manager SC_TR

Quotation Face :

Daniel Sturm Proposal Engineer Solutions

Alp Camci Project Manager

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The multiple faces of a Custody Metering Project

>>>> Negotiation is also FAST

Quotation Face : Award

<u>Shell and Turcas Petrol A.S.</u> Two locations Antalya and Derince, each with : 2x50% dia 6" – 150 metering lines with 6" Coriolis Flow Meter for Diesel Oil

Cekisan Depolama Hizmetleri Ltd.

Location Antalya Nos. 1 1x100% dia 4" – 150 metering lines with 4" Coriolis Flow Meter for Jet A1 Nos. 1 1x100% dia 6" – 150 metering lines with 4" Coriolis Flow Meter for Diesel Oil

Quotation Face : Award

BP Petrolleri A.S

Two locations Gemlik and Atas Mersin nos.1x100% dia 6" – 150 metering lines with 6" Coriolis Flow Meter for Diesel Oil (Gemlik) nos.2x50% dia 10" – 150 metering lines with 10" Coriolis Flow Meter for Diesel Oil (Atas Mersin)

Petgaz A.S

One location - Mersin nos.2x50% dia 10" – 300 metering lines with 10" Coriolis Flow Meter for LPG

Quotation Face : Award

Ipragaz A.S.

for LPG (Yarimca)

Three locations M. Ereglisi, Dortyol and Yarimca nos. 2x100% dia 6" – 300 metering lines with 6" Coriolis Flow Meter for LPG (Ereglisi) nos. 2x100% dia 6" – 300 metering lines with 6" Coriolis Flow Meter for LPG (Dortyol) nos. 2x100% dia 6" – 300 metering lines with 6" Coriolis Flow Meter

Endress+Hauser 🖾

Socar / Foster Wheeler AMEC

Two locations in Aliaga nos. 2x100% dia 12" – 300 metering lines with 10" Coriolis Flow Meter for Gasoline nos. 2x100% dia 16" – 300 metering lines with 12" Coriolis Flow Meter for Reformate

The multiple faces of a Custody Metering Project

Execution Face :

Alp Camci Project Manager

Onder Yildirim Head of Project and Service

Silke Diewald Project Logistic

Riccardo Cremascoli Head of Project Operations

Tolga Cabuk Project Engineer

Christophe Gautier Project Engineer

Mario Bertolotto Project Engineer

Yu Zhao Project Engineer

Nadia Shultheiss Project Administrator

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Execution Face : a very fast supply!

Task Name	Duration	Start	Finish	10.11 24	Dec '14	Jan '15 2.12 05.01 19	Feb '15	Mar '15 02 02:03 36:0	Apr'15 3 30.03 13.0	May '15 6 27.04 11.0	Jun 115	6 22:06 06.	5 A	15 09.09 17.06	Seo '15 31.08 14.0	011	5 No 2.10 26.10	20115 2011-12	Dec '1	2 21 12 04
ROJECT	257 days	Wed 10.12.14	Tue 15.12.15																_	
QG1 "Go for Project"	1 day	Wed 10.12.14	Wed 10.12.14	4 Q	81 0 .10.1	2														
Develop Opportunity	25 days	Thu 11.12.14	Thu 15.01.15	1	- *	_														
Tender (Rfg) from clients	15 days	Pri 16.01.15	Thu 05.02.15	1																
QG2 "Go for Bid"	2 days	Pri 06.02.15	Mon 09.02.15				Q62 6 08.0	2												
Create Proposal	5 days	Tue 10.02.15	Sun 15.02.15				.													
QG3 "Engagement"	1 day	Mon 16.02.15	Mon 16.02.15																	
Award Shell	1 day	Thu 26.02.15	Thu 26.02.15	1																
Award Cekisan	1 day	Mon 02.03.15	Mon 02.03.15																	
Award BP	1 day	Thu 12.03.15	Thu 12.03.15	1		_														
Award Petgaz	1 day	Sun 05.04.15	Sun 05.04.15	1		\cap	no Va	oar in	Tota	ا د										
Award Ipragaz	1 day	Tue 07.07.15	Tue 07.07.15	1		U			1016	1										
QG4 & Handover Shell	1 day	Wed 04.03.15	Wed 04.03.15																	
QG4 & Handover Cekisan	1 day	Wed 04.03.15	Wed 04.03.15																	
Kick Off Meeting with Shell	1 day	Thu 12.03.15	Thu 12.03.15	1																
Kick Off Meeting with Cekisan	1 day	Pri 13.00.15	Fri 13.03.15					11												
Kick Off Meeting with BP	1 day	Tue 24.03.15	Tue 24.03.15	1																
Kick Off Meeting with Petgas	1 day	Wed 25:03:15	Wed 25.03.15																	
Engineering	100 days	The 05.00.15	Tue 21.07.15	1				*					_							
Procurement	80 days	Mon 20.04.15	Fri 07.08.15	1																
Costruction	90 days	Mon 01.06.15	Fri 02.10.15	1																
Testing	10 days	The 01.10.15	Wed 14.10.15																	
Packing & Delivery PCA	4 days	The 15,10,15	Tue 20.10.15	1					7 14		f						4 20.50			
Transport, custom and DOP	15 days	Wed 21.10.15	Tue 10.11.15							onths	ior exe	ecutio	n					-		
DOP	5 days	Tue 10.11.15	Mon 16.11.15															-		
Installation	5 days	Tue 17.11.15	Mon 23.11.15															_		
Commissioning	5 days	Mon 07.12.15	Fri 11,12,15	1																
QG5 "Customer Acceptance"	1 day	Mon 14.12.15	Mon 14.12.15																0.05	14.12
QG6 "Project Completed"	1 day	Tue 15.12.15	Tue 15.12.15																Q66 .	15.12
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Execution Face : skid assembly

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Execution Face : Metering system

The product is entering first into the air eliminator. Here the air is separated from the air and evacuated from the top nozzle.

The fluid is than sent into one / two metering streams, each one equipped with:

Execution Face : Metering system

Each metering stream can be connected with a Master Meter. This can be done by closing the stream outlet double block and bleed valve And opening the double block and bleed ball valves to / from to the master meter

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Execution Face : Metering system

The two Flow Control valves in each stream regulate the flow scheduling. Up to 50% of the total flow rate only the first CV is open. When the 50% threshold is reached the flow computer commands the opening of the second control valve so that 2 x 50% flow rate is managed. A ramp down is also available when the flow rate decrease from 100% to 50% or less. In this way we can guarantee that for low flow rates only one meter is in function with a created accuracy. The air eliminator is equipped with 2 High / low level switches.

A low level is reached when a big presence of air is coming into the Vessel. In order to avoid that the air is carried into the metering streams and therefore create disturbance to the metering accuracy, when the LLS is activated a signal is sent from the flow computer to closed the FCV in order that the level rise again into the Air eliminator.

When the level reach the high level switch another signal is sent to the FCV to open again 100% as the normal conditions are re-established.

Level switches

Execution Face : very distant target

Plan from the End

and Implement every requirements from the engineering phase:

- SAT and verification
- Erection and connections
- Shipment and Logistic
- Fabrication
- Procurement

in one word : Planning!!

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Execution Face : Plan the Site works

Early involvement of Site people (from Turkey) during FAT

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Execution Face : Plan the Erection

Ikea Instruction

B

Execution Face : Plan the Erection

Ikea Instruction

We can't afford to loose time on site !

Anchoring of the Cable tray supports

ground where necessary. The supports should be anchored to the ground by

using the anchor bolts (expansion bolt

Cable tray supports (unistrut) are supplied with anchoring points to the

Endress+Hauser

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Erection Procedure

General Description

Unidades LACT - Esmeraldas y Santo Domingo

6.0 ASSEMBLY OF INTERCONNECTING PIPING AND VALVES

nterconnecting piping has been dismounted and shipped loose

Endress+Hauser

Execution Face : Plan the Costruction

Technical standards

Execution Face : Plan the Costruction

Technical standards

...but this pipe and all the instruments should also be dismounted

Elbow and pipe are supported with special support.

Valve flange sits on a saddle

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Execution Face : Plan the Costruction

- Cables: fire resistant / flame retardant, <u>armored</u>, <u>shielded</u>
- Cable glands: double lock (armored), SS / brass nichel plated, with PVC shroud
- Fitting : double ferrule
- Cable trays : hot dip galvanized, with closed cover, and special parts (tee, fittings)
- JB : SS, GRP high resistance, self estinguish

Execution Face : Design

Project execution is divided in three Engineering phases :

- Design and Basic Engineering: Sizing (Flow meter, lines, vessels etc.), PID, Data Sheet, Cable block Diagram, System Architecture, Foundation plot plan
- **Detailed Engineering**: Piping details, Typical Installation details, JB and cable specs, cable trays layout, Cabinet and flow computer details, shipping drawings
- Fabrication Engineering, Steel structure, Isometrics, wiring diagram, loop diagrams,

Endress+Hauser

Execution Face : Design Reviews

Internal **Design Reviews** are carried out to guarantee:

- compliance with Contract, technical specifications & International standards >>>
- ensure that OIML R117 standards are followed into practice
- risk analysis (safety, hazards and operation), accessibility, operability.
- congruity between design data, drawings and purchased/manufactured materials
- dismantling & transportability of materials
- feasibility of installation, operation, maintenance
- technical-economical optimization

Applicable Design Standards

- Shell Design and Engineering Practice's (DEP's)
- BP General Practice's (GP's)
- Joint venture Shell and BP
- + 1 line / 2 lines mono / bi directional

>>>> Communication is the key

The multiple faces of a Custody Metering Project

Daniel Wassmer Service Manager

Taner Hatabay Service Engineer

Close Out Face:

Onder Yildirim Head of Project and Service

Erkan Bayar Service Engineer

Close Out Face: Site works

Commissioning

Training

Close out

Together with the commissioning of the skid, the Verification as per MID should take place. EH has therefore appointed Notified Body for the certification of the skids and the relevant sealing.

Execution Face : MID Certification

MODULE B: EU- TYPE EXAMINATION

EU-type examination' is the part of a conformity assessment procedure in which a notified body examines the technical design of an instrument and verifies and attests that the technical design of the instrument meets the requirements of this Directive that apply to it.

MODULE F: CONFORMITY TO TYPE BASED ON PRODUCT VERIFICATION

A notified body chosen by the manufacturer shall carry out the appropriate examinations and tests, or have them carried out, to verify the conformity of the instruments with the type as described in the EU-type examination certificate and the appropriate requirements of this Directive.

Certificate of Conformity

Number CoC-15200550-01 Project number 15200550 Page 1 of 1

Issued by	NMi Certin B.V., designated and notified by the Netherlands to perform tasks with respect to conformity modules mentioned in article 17 of Directive 2014/32/EU, after having established that the Measuring instrument meets the applicable requirements of Directive 2014/32/EU, to:
Manufacturer	Endress + Hauser Instruments International AG Kägenstrasse 2 4153 Reinach Switzerland
Measuring instrument	An interruptible measuring system.
• • • • • • • • • •	Type : Flow Metering System Serial Number : PCN 80027314-1
• • • • • • • • • • •	Measurement transducer : Promass 84F DN150 Serial numbers sensor : K702A202000 / K702A102000
	Gas Separator
	Serial numbers
	Flow computer : Flow-X
	Serial numbers : 15-28-1-20 / 15-28-1-15
	15-28-1-50 / 15-28-1-1
Applicable approval	EC type-examination Certificate, number T10728
Examinations	According normative document OIML R117-1 + + + + + + + + + + + + + + + + + + +
Location	Shell Derince Tesisleri
* * * * * * * * * *	Deniz Mahallesi Petrol Ofisi Cad.
	No. 35 Derince, Kocaeli
• • • • • • • • •	Turkey. • • • • • • • • • • • • • • • • • • •
Verification date	22 April 2016
Conformity procedure	Annex II, Module F, of the Directive 2014/32/EU.

<u>Close out face : Customer acceptance</u>

Thank You !!!

...any questions?

Italv

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