

## ABBON Multiphase Flow Meter Solutions



”

**ABBON Multiphase  
Measurement Solutions,  
an End-to-End solution  
to reduce costs and  
maximise production  
output by enabling  
data driven decisions**



- 1) **ABBON Introduction**
- 2) **ABBON Success Stories & Track Record**
- 3) **ABBON Product Portfolio**
- 4) **ABBON 3PM Technology**
- 5) **ABBONAnalyticS**



# ABBON Profile



**ABBON HQ and Manufacturing Facility**  
ABBON AS Oslo, Norway



**ABBON Middle East**  
ABBON AS Branch Office, UAE, Abu Dhabi  
Regional Sales & Service Hub  
Competence Centre Middle East  
Workshop Service



**ABBON Saudi Arabia**  
ABBON Service Unit, Saudi Arabia  
(ABBON Manufacturing Unit, Saudi Arabia)



**Approved Supplier**



## ABBON 3PM MULTIPHASE FLOW METERS

### ABBON Value Proposition:

1. Hassle-free metering
2. Increased data assurance and accuracy
3. Most compact and robust meter design



TWINFLOW™  
TECHNOLOGY 

## ABBON 3PM MULTIPHASE FLOW METERS



### 1. Hassle-free metering

- Eliminating potential radiation hazards to people throughout the running of the meter and to the environment through the decommissioning process (HSE).
  - Avoiding wipe tests, source handling, source disposal & personnel safety training.
- ✓ **Eliminates OPEX for HSE and safety measures by 100%**

## ABBON 3PM MULTIPHASE FLOW METERS



### 2. Increased data assurance and accuracy

- Meter accuracy is not sensitive to H<sub>2</sub>S or CO<sub>2</sub> content, unlike radioactive meters due to high attenuation of gamma rays by Sulfur and Carbon Dioxide
- Salts dissolved in water will not affect WLR measurement, unlike radioactive meters, since gamma absorption coefficients are depending on salinity
- ✓ **No On-Site calibration, Elimination of OPEX by 100%**
- ✓ **Increased Data Assurance means fact-based productivity**
- ✓ **Extended Range for Mobile Applications with 2" & 3" in one skid**

## ABBON 3PM MULTIPHASE FLOW METERS



### 3. Most compact and robust meter design with TWINFLOW™

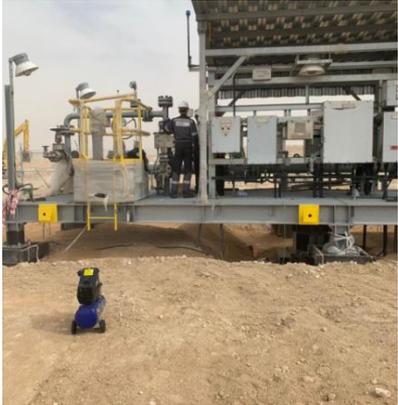
- The reduced weight and size of the meter provides easy handling and integration in the field, reduced costs
  - Reduced footprint of the meter provides reduced skid size, especially important for offshore Installations on platforms or FPSO's.
- ✓ **Reducing investment (CAPEX) and Operational Costs (OPEX)**



# ABBON TRACK RECORD Middle East



MULTIPHASE MEASUREMENT SOLUTIONS



**Aramco Haradh Field**  
- 40 Units



**Aramco Khurais Field**  
- 6 Units



**SGS OMAN job**  
- 1 Mobile Unit



**ADNOC Al Dabb'iya**  
- 1 Mobile Unit



**ARA Petroleum Oman**  
- 1 Mobile Unit



**Al Mansoori Trailer Mounted**  
**Saudi Aramco Qatif - 1 unit**



**ADNOC Asab**  
- 12 Dual units



**GDMC Magwa KOC-**  
**1 Mobile MPFM**



**ADNOC Rumaitha**  
- 5 units



**TOTAL/Equinor/SHELL**  
**JTP**



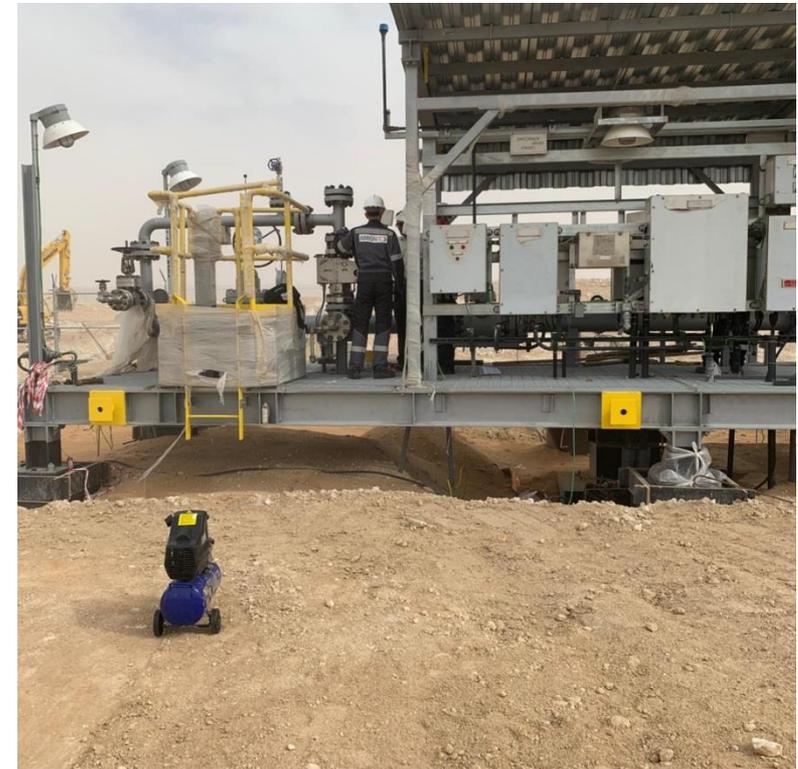
# ABBON TRACK RECORD Middle East

Year of PO	Name of Client	End User	Region	Type	Meter Quantity
2013	SGS Gulf LTD	CCED	Oman	3PM-S2-D (Duplex)	1
2017	SGS Gulf LTD	KOC	Kuwait	3PM-S3-I (Inconel)	1
	SGS Gulf LTD	SAUDI ARAMCO	Saudi Arabia	3PM-S3-I (Inconel)	1
	WETICO	SAUDI ARAMCO	Saudi Arabia	3PM-S3-I (Inconel)	12
	PETRONASH	SAUDI ARAMCO	Saudi Arabia	3PM-S3-I (Inconel)	14
	AES ARABIA	SAUDI ARAMCO	Saudi Arabia	3PM-S3-I (Inconel)	20
2018	Al MANSOORI	KOC	Kuwait	3PM-S3-I (Inconel)	1
	GDMC	KOC	Kuwait	3PM-S3-I (Inconel)	1
	AL ASAB (EPC)	ADNOC ASAB 1	UAE	3PM-S3-I (Inconel)	6
2019	SNF (EPC)	KOC	Kuwait	3PM-S3-I (Inconel)	1
	AL ASAB (EPC)	ADNOC ASAB 2	UAE	3PM-S3-I (Inconel) 3PM-S2-I (Inconel)	12
	AL ASAB (EPC)	ADNOC ASAB 1 Extension	UAE	3PM-S3-I (Inconel) 3PM-S2-I (Inconel)	12
	AL ASAB (EPC)	ADNOC RUMAITHA	UAE	3PM-S3-I (Inconel)	5
	TECHNIMONT	ADNOC ONSHORE	UAE	3PM-S3-I (Inconel)	1
2020	Al MANSOORI	ARA Petroleum	Oman	3PM-S3-I (Inconel)	1
	TECHNIMONT	ADNOC ONSHORE	UAE	3PM-S3-I (Inconel)	1
	SNF	SNF Pilot RAZU	Kuwait	3PM-S2-I (Inconel)	4
2021	SNF	SNF Pilot UNLF	Kuwait	3PM-S2-I (Inconel)	1
	RTCC	SAUDI ARAMCO	Saudi Arabia	3PM-S2-I (Inconel)	5
<b>Total</b>					<b>100</b>



# Aramco Deliveries Comissioning

- ABBON MPFM at Haradh Field (1 of 46 units)



- ABBON MPFM at Qatif Field vs Separator (Reference)



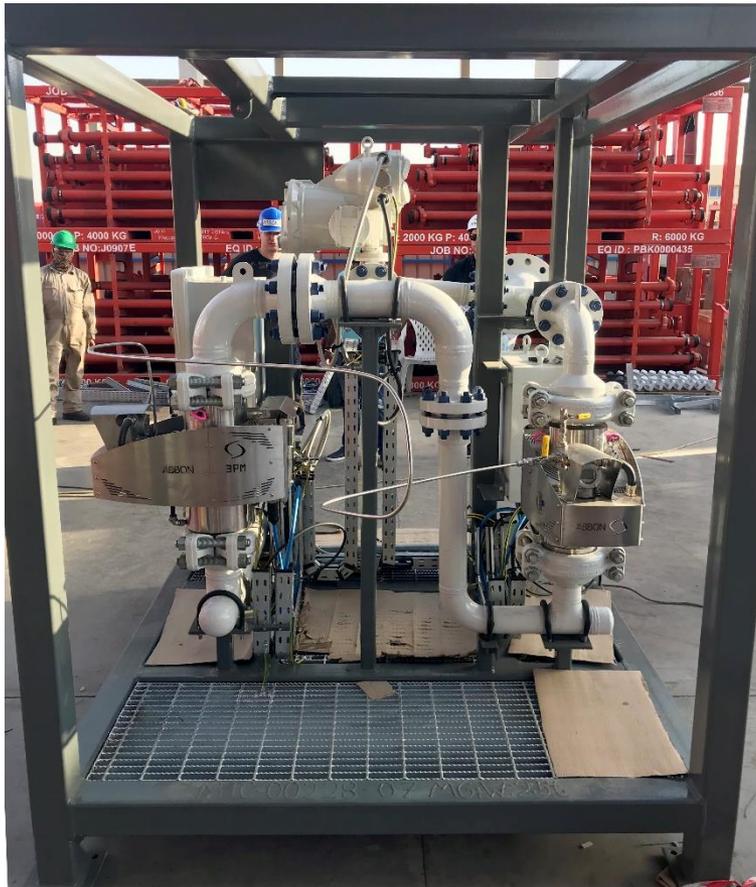
**Separator with associated Gas Orifice Meter &  
Liquid Turbine Meter Downstream**



**ABBON 3PM  
MPFM**

# Success Stories - ADNOC

## ABBON 3PM-SX Dual System for ADNOC – 12 Skids





# SAUDI ARAMCO Plant Approval

Aramco Overseas Company B.V.  
Scheveningsweg 62 - 66  
2517 KX The Hague  
The Netherlands

Tel: +31 (0) 88 262 2000  
Fac: +31 (0) 88 262 3000  
www.aramcooverseas.com



ABBON AS  
ATTN: MRS. S. MATHIESEN  
BAKER OSTBYS VEI 5  
1351 RUD  
NORWAY

The Hague, October 2, 2017  
AOC Ref: ASG/IL107000132307

**Attachment:**

Inspection lot: 107000132307

**Approved 9COM(s):**

9COM	Description
600002917	FLOWMETER, MULTIPHASE TYPE,34-SAMMS-001

**SUBJECT: PLANT EVALUATION**

Vendor ID: 10060328 - Plant ID: 30008061

Dear Mrs. Mathiesen,

As a result of the plant evaluation conducted on June 20 and 21, 2017 we are pleased to inform you that your company is **Approved** to supply the 9COM material(s) listed in the attachment.

This approval is granted for your manufacturing plant **ABBON AS in RUD, NORWAY**.

This plant approval is restricted to this manufacturing address; materials manufactured at any other non-approved plant, will be irrevocably rejected.

The outsourcing of assembly and final test activities is not allowed. Additional restrictions in outsourcing manufacturing activities are specified in the applicable Saudi Aramco standards, specifications and procedures.

It is the responsibility of the manufacturer to notify Aramco Supplier Registration Group in a timely manner in case of change of name and/or address, any change of manufacturing location (sub sourcing fabrication of major components) or discontinuance of fabrication of approved material(s).

This approval should not be regarded as a commitment from Aramco Overseas Company (AOC) to purchase from you. However, your company will have the opportunity along with other approved suppliers to respond to requests for quotation in accordance with AOC's established policies and procedures.

We would like to take this opportunity to thank you for your interest in doing business with AOC and Saudi Aramco. Please quote the above referenced Vendor ID and Plant ID in all future correspondence.

For any questions regarding this notification please contact [inspection@aramcooverseas.com](mailto:inspection@aramcooverseas.com).

Yours faithfully,



Frans de Zwart  
Supervisor Supplier Registration Group



# KOC Qualification with GDMC Service Company

02/05/2018 11:12 00965-23985468 TL WELLSURV SUPP & E PAGE 01/06

OM  
FYI necessary action  
Need to keep the unit utilized  
100%.



FACSIMILE TRANSMITTAL  
COVER SHEET

Ref: WSSEE/000395/18 DATE: 25<sup>th</sup> April 2018

COMPANY: M/s GDMC

ATTENTION: Mr. Ali Bou Dastour, GDMC General Manager

FAX NO.: 2398-9051 / 2398-6105

FROM: Ag. Team Leader Well Surveillance Support & Engineering

No. of pages including cover sheet:  
If FAX is illegible or all pages were not received, please notify us.  
Our Fax No.: (965) - 23985468

GDMC Well Testing Contract # 15051601  
Approval for New WT Unit (MPFM-2)

With reference to your email dated on 20<sup>th</sup> December, 2017 and KOC fax (Ref. WSSEE/1068/17) regarding the above mentioned subject (copies attached), kindly find the below status for the New WT equipment:

Equipment	NK Feedback Date	SFK/WK Feedback Date	Status
MPFM-2	24 Apr. 2018	24 Apr. 2018	Approved to work in KOC Fields

This is for your kind information and further action.

  
Emad Safar

Cc: M (WS) [Signature]  
GZ's WST (NK - SFK/WK) [Signature]  
WSSEE WTS Contract Management & Engineering Unit  
WSSEE Engineering Unit (A. Aburghob)  
WSSEE WTS Field Passes Unit  
File



Equipment	NK Feedback Date	SFK/WK Feedback Date	Status
MPFM-2	24 Apr. 2018	24 Apr. 2018	Approved to work in KOC Fields

This is for your kind information and further action.

  
Emad Safar



# KOC Qualification with SGS service company

Expertest Well Testing Contract #15051547

**ABBON MPFM Field Trials**

With reference to the above mentioned subject, and as per the demo jobs done through the New MPFM "ABBON" technology, kindly be informed that all data reported by ABBON Multi-phase for the below wells were acceptable:

- RA-0446
- UG-0242
- MN-0069

21/06/2017 12:48 88965-23985468

TL WELLSURV SUPP & E

PAGE 01/01



FACSIMILE TRANSMITTAL  
COVER SHEET

Ref: WSSEE/441 /17

DATE: 20<sup>th</sup> June, 2017

COMPANY: M/s Expertest

ATTENTION: Fatch Sami. Project Manger

FAX NO.: (965) 23989715

FROM: Team Leader Well Surveillance Support & Engineering

No. of pages including cover sheet: 1

If FAX is illegible or all pages were not received, please notify us.

Our Fax No.: (965) - 23985468

Expertest Well Testing Contract #15051547  
ABBON MPFM Field Trials

With reference to the above mentioned subject, and as per the demo jobs done through the New MPFM "ABBON" technology, kindly be informed that all data reported by ABBON Multi-phase for the below wells were acceptable:

- RA-0446
- UG-0242
- MN-0069

This is for your kind information and further action.



# ADNOC, UAE Vendor Approval

ADNOC Suppliers Data

https://suppliersdm.com/Home/SupplierViewRecord/4948?vendorUniqueCode=I2zt6vbUOEuxGxO939DmbA

Suppliers Data Help pme@pme.ae Sign out

Your Submission Version is: **14**  
Your unique code is: **I2zt6vbUOEuxGxO939DmbA** [View History](#)

### Supplier Info

**Supplier Name \***  **Supplier Code**

**Supplier Contact person Name \***  **Supplier Contact person Email**

Manage	Agency Type	Certificate No	Issue Date	Expiry Date	Product Groups												
	Exclusivo (E)	17620	05/15/2017	05/15/2021	<table border="1"> <thead> <tr> <th>Manage</th> <th>Product Commodity</th> <th>Product Commodity Code</th> <th>Product Group</th> <th>Pri-Qualification Status</th> <th>Request Reassessment</th> </tr> </thead> <tbody> <tr> <td></td> <td>34 - INSTRUMENTS</td> <td>3422 - FLOW MEASURING INSTRUMENTS</td> <td>342235 - FLOW METERS - MULTI PHASE TYPE ( METERSKID)</td> <td>PQ - Pre-qualified</td> <td></td> </tr> </tbody> </table>	Manage	Product Commodity	Product Commodity Code	Product Group	Pri-Qualification Status	Request Reassessment		34 - INSTRUMENTS	3422 - FLOW MEASURING INSTRUMENTS	342235 - FLOW METERS - MULTI PHASE TYPE ( METERSKID)	PQ - Pre-qualified	
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	34 - INSTRUMENTS	3422 - FLOW MEASURING INSTRUMENTS	342235 - FLOW METERS - MULTI PHASE TYPE ( METERSKID)	PQ - Pre-qualified													



**From:** [nsd@pau.go.ug](mailto:nsd@pau.go.ug)  
**To:** [Audun Aspelund](#)  
**Subject:** Qualification for NSD 2020  
**Date:** mandag 23. desember 2019 16:15:12

---

Dear ABBON AS,

Reference is made to the qualification of your company NS-12608/19/1588 on the NSD 2019.

Following a change in regulation, the Petroleum Authority of Uganda is pleased to inform you that the qualification of your company shall remain valid for 3 years from 7/4/2019. You may afterwards reapply to be included on the NSD.

Please note that your qualification is valid for 3 years from 7/4/2019.

EXECUTIVE DIRECTOR  
PETROLEUM AUTHORITY OF UGANDA

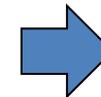
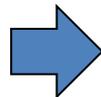
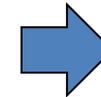
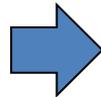
Tel: +256 414 320780  
Email: [nsd@pau.go.ug](mailto:nsd@pau.go.ug)

....  
<https://www.pau.go.ug/disclaimer>



# Fluid Parameter Measurement

- Note:
  - ABBON MPFM is **calibrated** in Factory !
  - ABBON MPFM is only **configured** in the Field !
- Configuration by fluid property measurement for meter input parameters
  - Oil permittivity / Water conductivity
  - Oil / Water densities
  - Gas SG
  - H<sub>2</sub>S / CO<sub>2</sub>

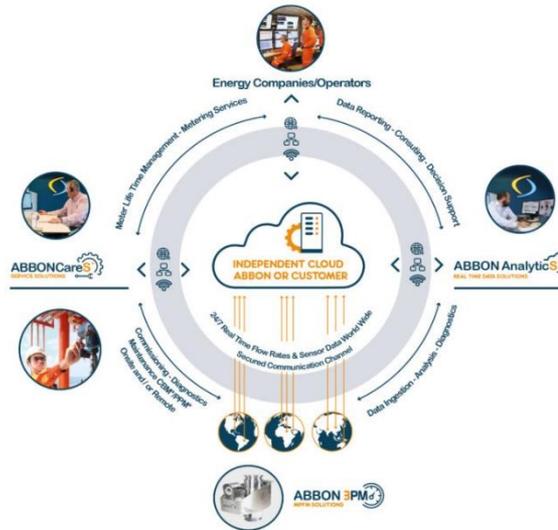


# ABBON Product Portfolio

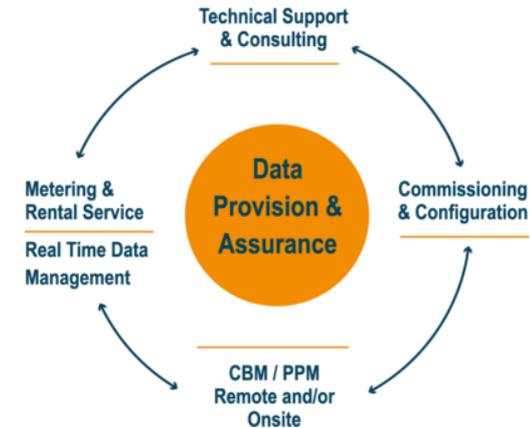
**ABBON 3PM**   
 MPFM SOLUTIONS



**ABBON AnalyticS™**   
 REAL TIME DATA SOLUTIONS

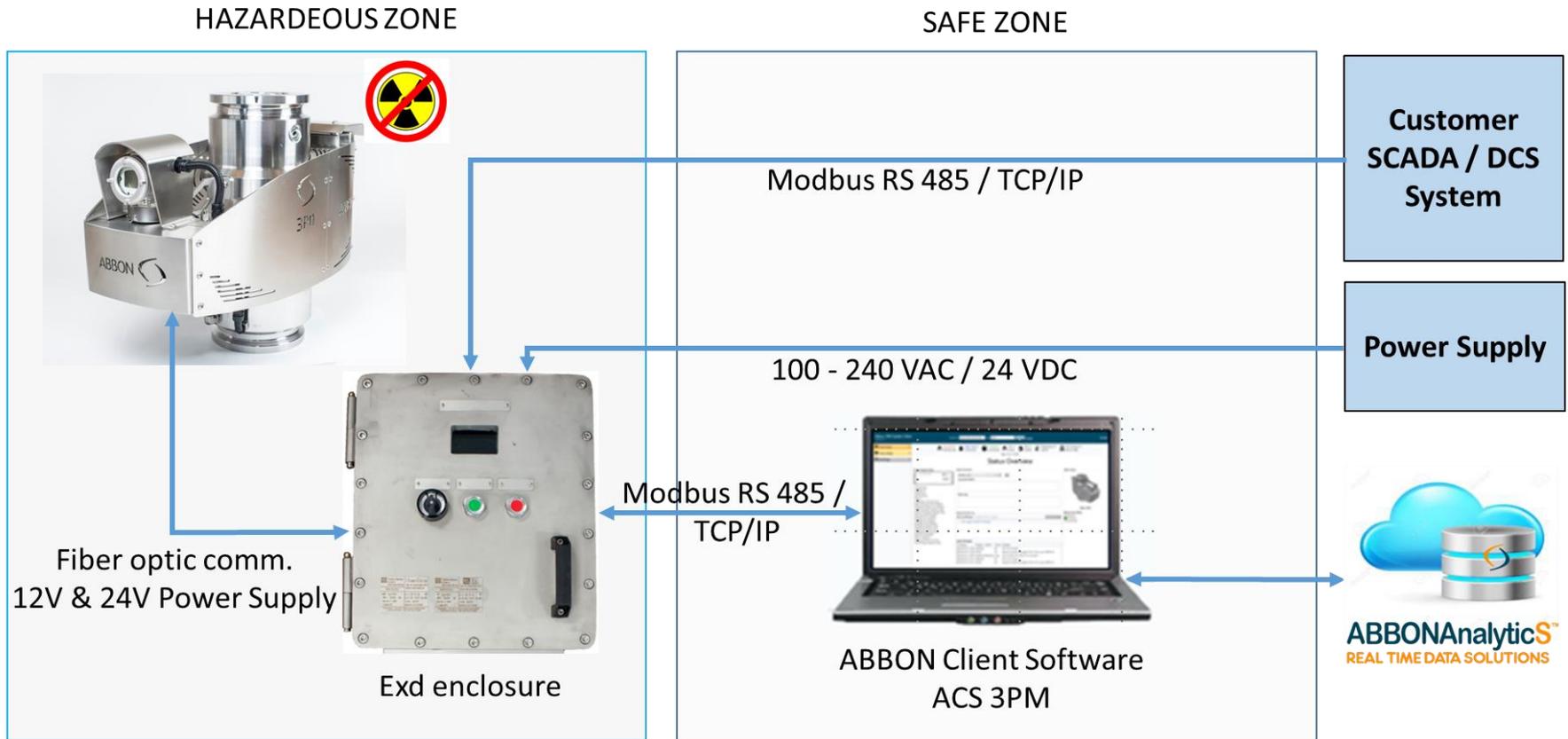


**ABBONCareS™**   
 SERVICE SOLUTIONS



# ABBON 3PM System Overview

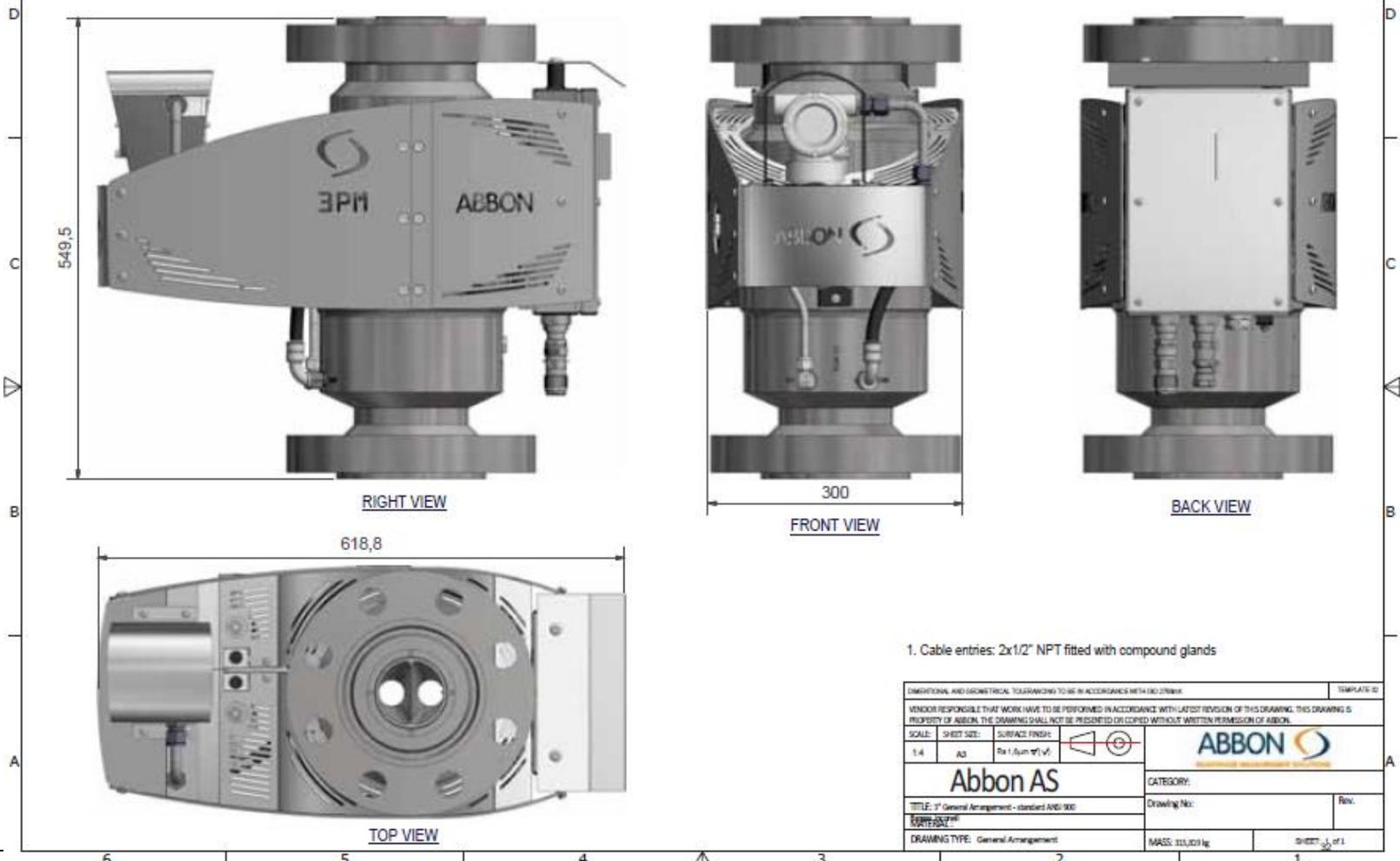
## ABBON 3PM



# ABBON 3PM Typical Dimensions

**3-inch meter, 4" ANSI 900 RTJ**

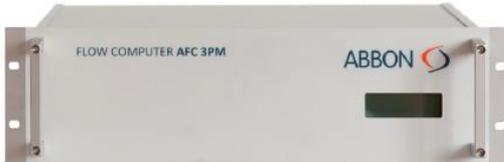
REVISION HISTORY		DATE	DESIGNED BY	CHECKED BY	APPROVED BY
REV	DESCRIPTION				
1	ISSUED FOR CONSTRUCTION	2017-04-07	PD	ML	ML



1. Cable entries: 2x1/2" NPT fitted with compound glands

DIMENSIONAL AND GEOMETRICAL TOLERANCES TO BE IN ACCORDANCE WITH ISO 2768-M		TEMPLATE 02
VENDOR RESPONSIBLE THAT WORK HAVE TO BE PERFORMED IN ACCORDANCE WITH LATEST REVISION OF THIS DRAWING. THIS DRAWING IS PROPERTY OF ABBON. THE DRAWINGS SHALL NOT BE REPRODUCED OR COPIED WITHOUT WRITTEN PERMISSION OF ABBON.		
SCALE:	SHEET SIZE:	SURFACE FINISH:
1:4	A3	Ra 1,6µm (12.5)
<b>Abbon AS</b>		
TITLE: 3" General Arrangement - standard ANSI 900		CATEGORY:
DRAWING TYPE: General Arrangement		Drawing No:
MATERIAL: 316L SS		Rev:
MATERIAL: 316L SS		MASS: 11,103 kg
		SHEET 1 of 1





## AFC - Safe Zone 19" Rack 3U 1

Abbon Safe Area Flow Computer AFC-3PM in 19" Standard Rack (includes power supplies, barriers and comm. modules)



## AFC - Safe Zone Rugged Housing 2

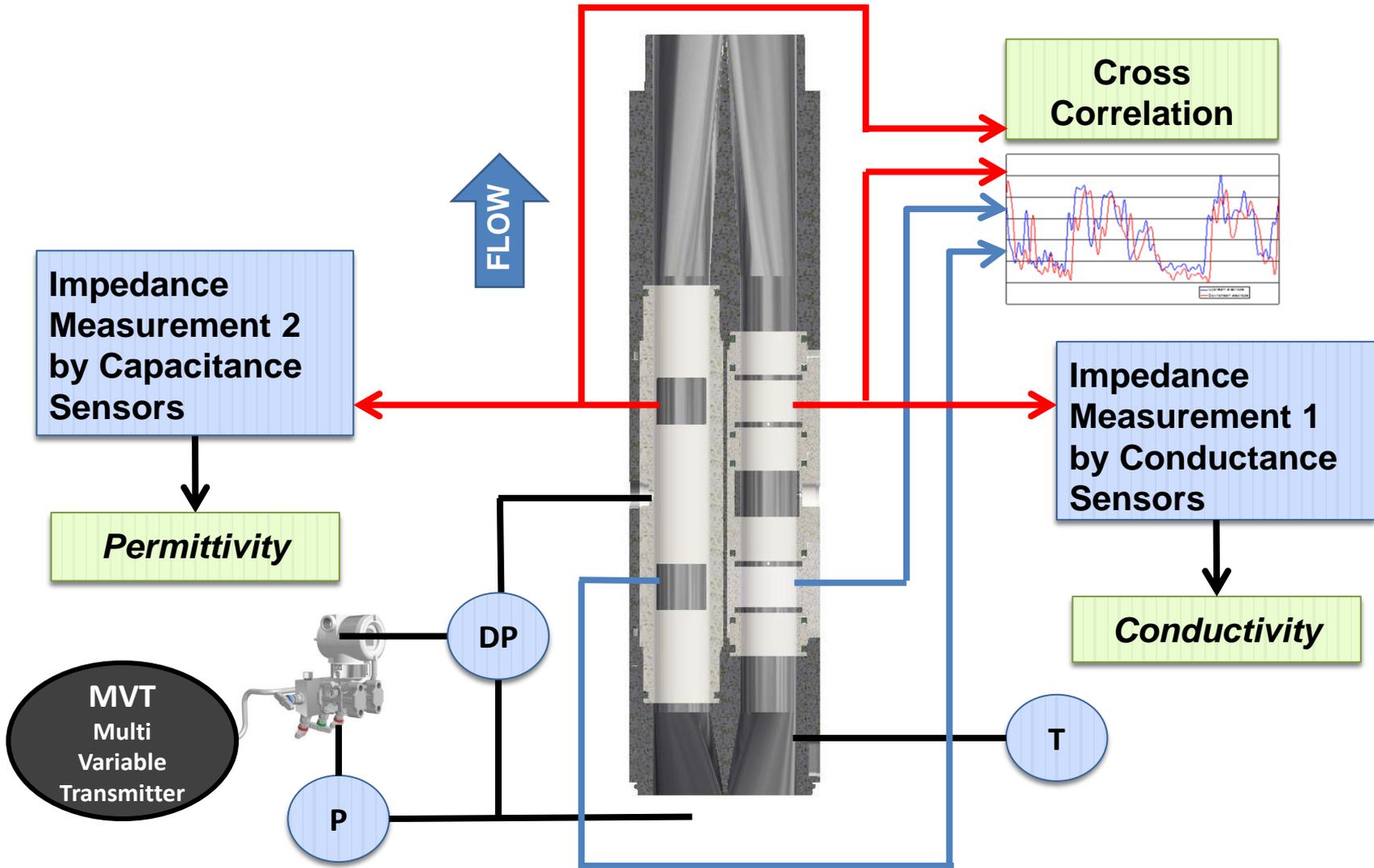
Abbon Safe Area Flow Computer AFC-3PM in rugged safe zone enclosure SS316 (includes power supplies, barriers and comm. modules)

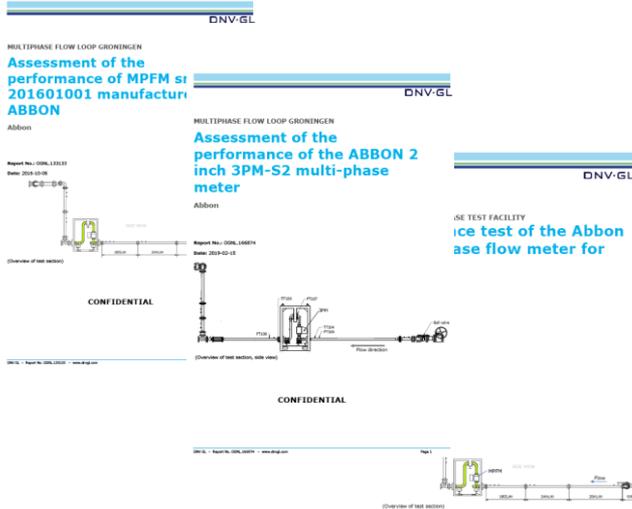


## AFC - Hazardous Zone ExD Housing 3

Abbon Hazardous Area Flow Computer AFC-3PM in ExD enclosure; SS 316 or Aluminum (includes power supplies, barriers and comm. modules)

# ABBON 3PM Measurement Principles





## Test Reports

- DNV GL Test Loop, Groningen, The Netherlands
  - 3<sup>rd</sup> Party test 3-inch, 2016
  - 3<sup>rd</sup> Party test 2-inc, 2019
  - Customer qualification reports



- TÜV-NEL Flow Loop, East Kilbride, Scotland
  - Multi test analysis report, 2019
  - Dual Meter Test, 2019
  - Customer FAT Reports, 2020



## EROSION TESTING OF ABBON 3PM MULTIPHASE FLOW METER

# Report

ABBON AS

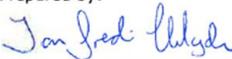
Report No.: 2016-0224, Rev. 2  
Document No.: 1ZGH7LZ-3  
Date: 2016-09-05

Project name:	Erosion testing of Abbon 3PM multiphase flow meter	DNV GL AS Oil & Gas Well & Flow Technology P.O.Box 300 1322 Høvik Norway Tel: +47 67 57 99 00
Report title:	Report	
Customer:	ABBON AS,	
Customer contact:	Audun Aspelund	
Date of issue:	2016-09-05	
Project No.:	PP152096	
Organisation unit:	Well & Flow Technology	
Report No.:	2016-0224, Rev. 2	
Document No.:	1ZGH7LZ-3	

Applicable contract(s) governing the provision of this Report:

Objective:

Prepared by:



Jan Fredrik Helgaker  
Engineer

Verified by:



Lars Even Torbergsen  
Senior Principal Engineer

Approved by:



Per Jahre-Nilsen  
Senior Principal Engineer

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# Contact details

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www.abbon.com  
Sales Partners



**ABBON Multiphase Measurement Solutions, an End-to-End solution to reduce costs and maximise production output by enabling data driven decisions**

