



KUWAIT 3RD FLOW MEASUREMENT TECHNOLOGY CONFERENCE

19 - 21 NOVEMBER 2017
HILTON KUWAIT RESORT , AL DORRA BALLROOM

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إحدى شركات مؤسسة البترول الكويتية
A Subsidiary of Kuwait Petroleum Corporation



MARKO ROSENTHAL

**Service Manager
Flexim Middle East**



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Flexim Overview

2

Application in Detail

3

Summary

FLEXIM – At a Glance

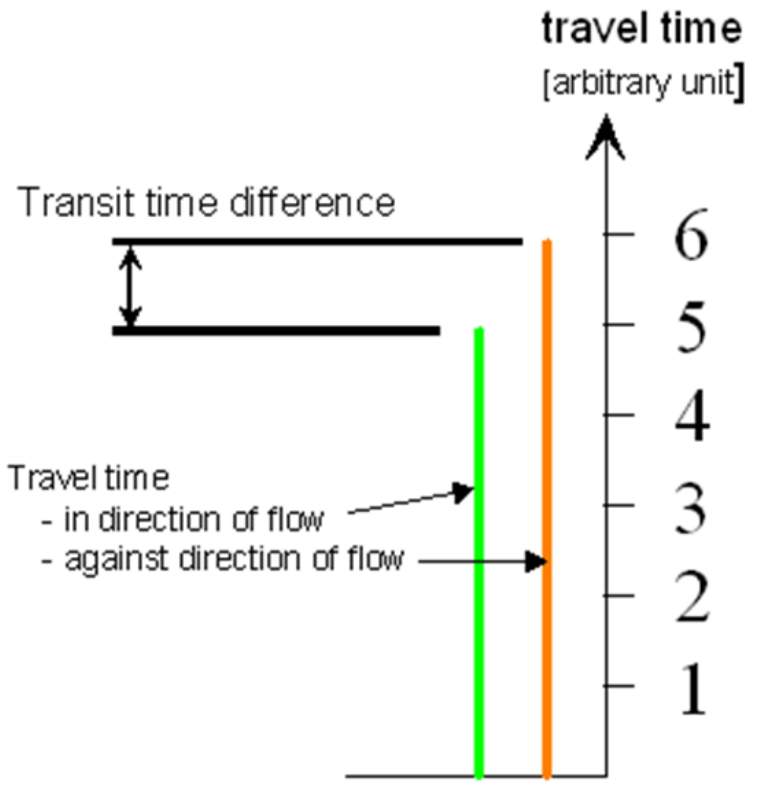
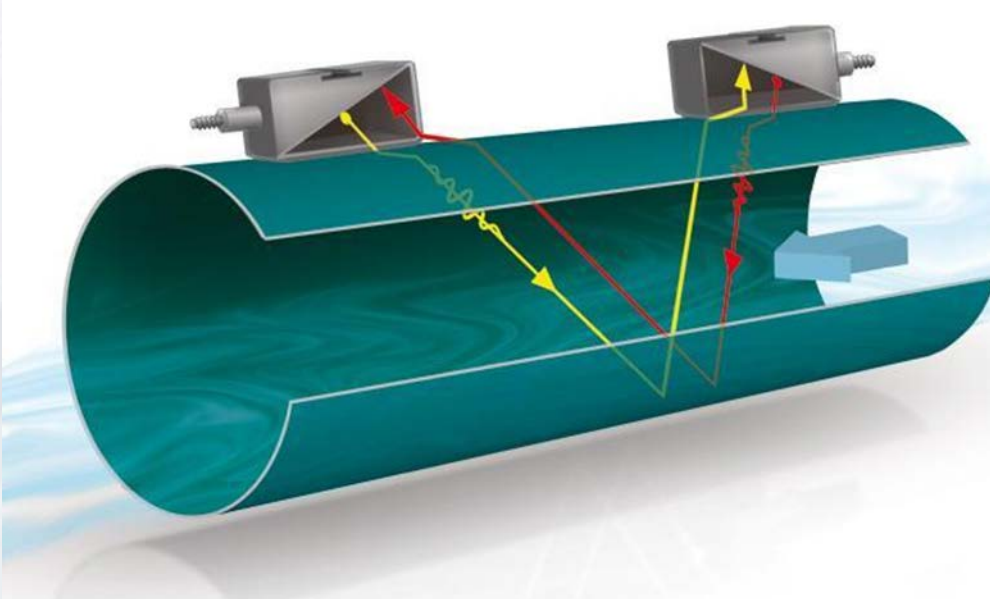
- FLEXIM, is private owned, global leader in clamp-on Ultrasonic Flow Measurement
- Highly Innovative metering solutions for Liquids and Gases as well as within Process Analytics
- Headquartered in Berlin, Germany, with more than 350 employees globally
- International presence with subsidiaries and a wide network of partner companies
- Strong competence centers in R&D and in-house production facilities
- Over 100,000 meters installed worldwide



FLEXIM - Today



Transit Time Technology



Transducer Technology

FLEXIM offers two different complementary transducer technologies

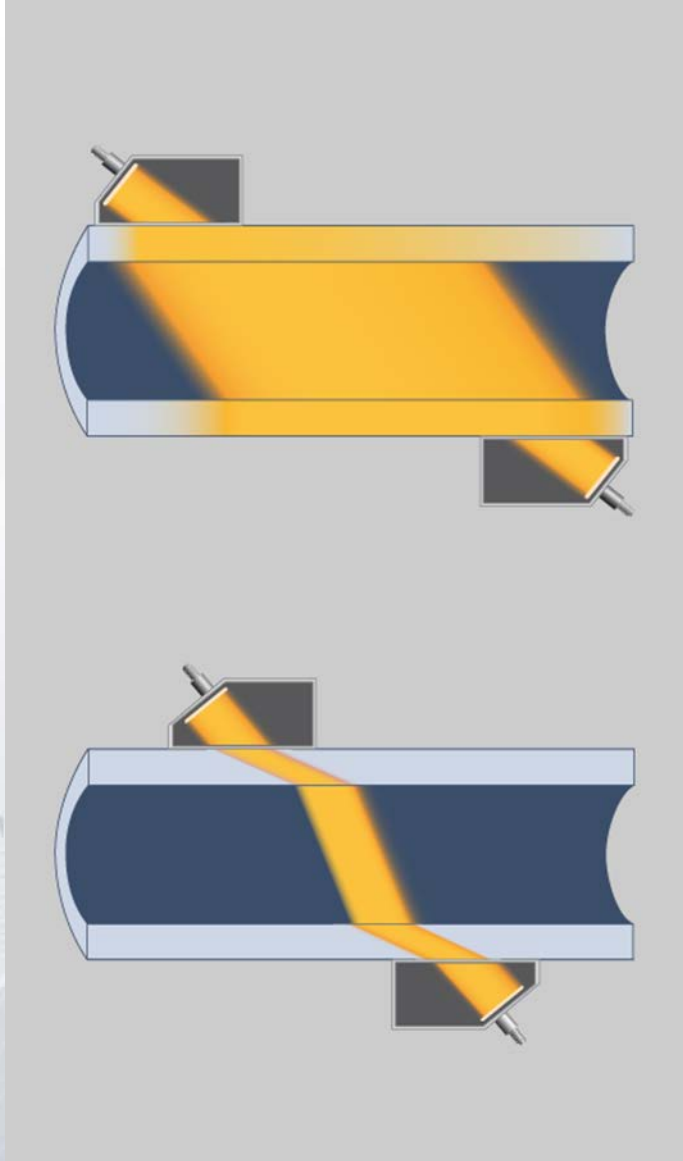
Maximum flexibility depending on application specification.

Lamb wave transducer

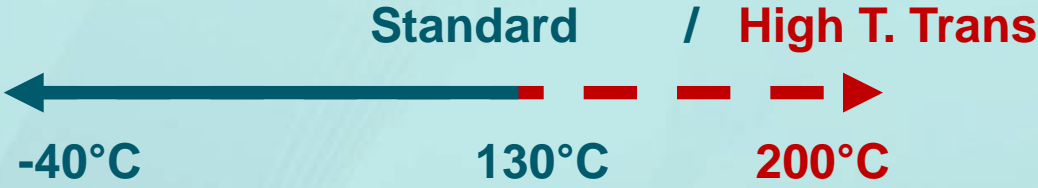
- **Gas Application**
- **Multi Product Pipelines**

Shear wave transducer

- **All pipe wall materials**
- **All pipe wall thicknesses**



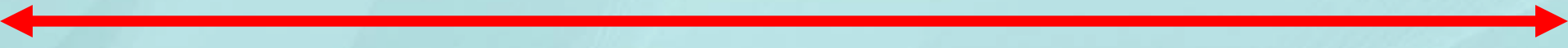
Temperature Range



-190°C

Extended temperature range with WaveInjector®

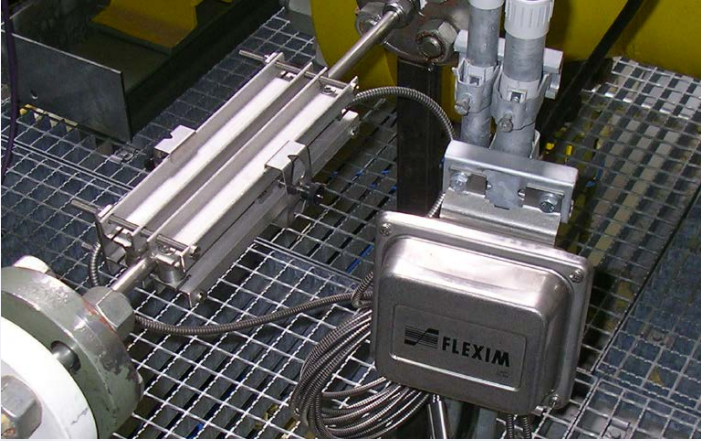
600°C



From the Smallest to the Tallest

DN6500

DN6 Liquids



DN2100

DN10 Gases



Independent of Pipe Material, Fabrication and Thickness



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Summery



FLEXIM Oil & Gas – Downstream

Customer: Saudi Aramco Riyadh Refinery

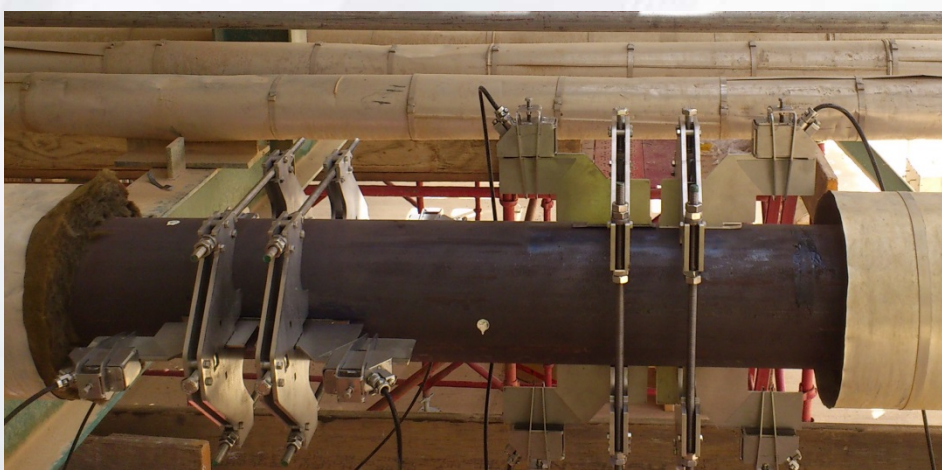
Application: High temperature Measurement at vacuum heater

Medium: Crude 380°

Outer Diameter: 170mm, Wall thickness 7,5mm

Previous meter: Orifice plate DP

Solution: 24x 8127 dual channel WI 400



FLEXIM Oil & Gas – Downstream

Customer: Equate Petrochemical Company
Application: High temperature Measurement
Medium: Crude Ethylenebenzene 280°C
Outer Diameter: 168mm Wall, thickness 7,5m
Solution: 1x F808 dual channel WI 40





FLEXIM Oil & Gas – Downstream

Customer: Bahrain Petroleum Company Refinery
Application: High temperature Mass Flow fractionator bottom
Medium: Unconverted oil 380°C
Outer Diameter: 324mm, Wall thickness 9,5mm
Previous meter: Orifice plate DP
Solution: 1x 8127LC24 WI 400



FLEXIM Oil & Gas – Downstream

Customer: QAPCO LDPE Plant

Application: Mass Flow

Medium: Ethylene 2150bar 160°C

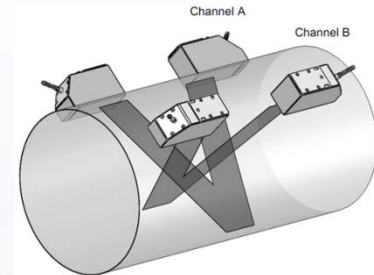
Outer Diameter: 90mm ,Wall thickness 26mm, Stainless Steel

Solution: 6x F704



FLEXIM Oil & Gas – Downstream

Customer: Saudi Aramco Abqiq
Application: Volumetric Flow measurement
Medium: Crude oil
Solution: 2x 8127 dual channel A+B/2
Outer Diameter: 1170mm, **Wall thickness** 23mm
Previous meter: Controlotron 944



Transducer



FLEXIM Oil & Gas – Downstream

Customer: Saudi Aramco Riyadh Refinery

Application: Tank dewatering

Medium: Water/Hydrocarbons

Outer Diameter: 115mm

Stainless steel

Solution: 12x F704

Previous systems: AGAR, KAM Controls





FLEXIM Oil & Gas – Downstream

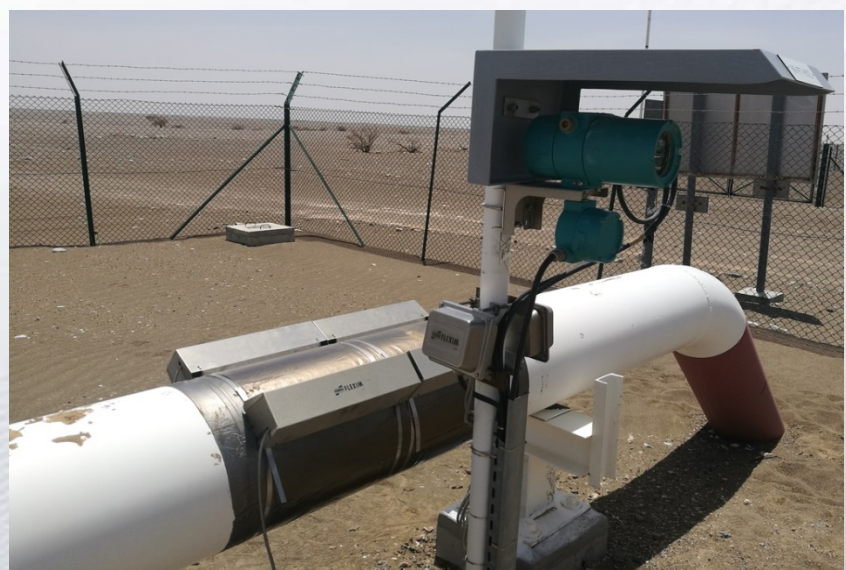
Customer: Saudi Aramco Wasit Gas Plant
Application: Standard Volume Flow
Medium: Sour Gas 67 bar
Solution: 37x G705
Outer Diameter: 765mm, Wall thickness 27mm
Precious meter: Venturi Tube





FLEXIM Oil & Gas – Upstream

Customer: Oman Gas Company
Application: Standard Volume Flow
Medium: Natural Gas 80bar
Outer Diameter: 327mm
Solution: 2x G721



FLEXIM Oil & Gas – Upstream

Customer: Dubai Supply Authority DUSUP

Application: Injection Gas Standard Volume Flow

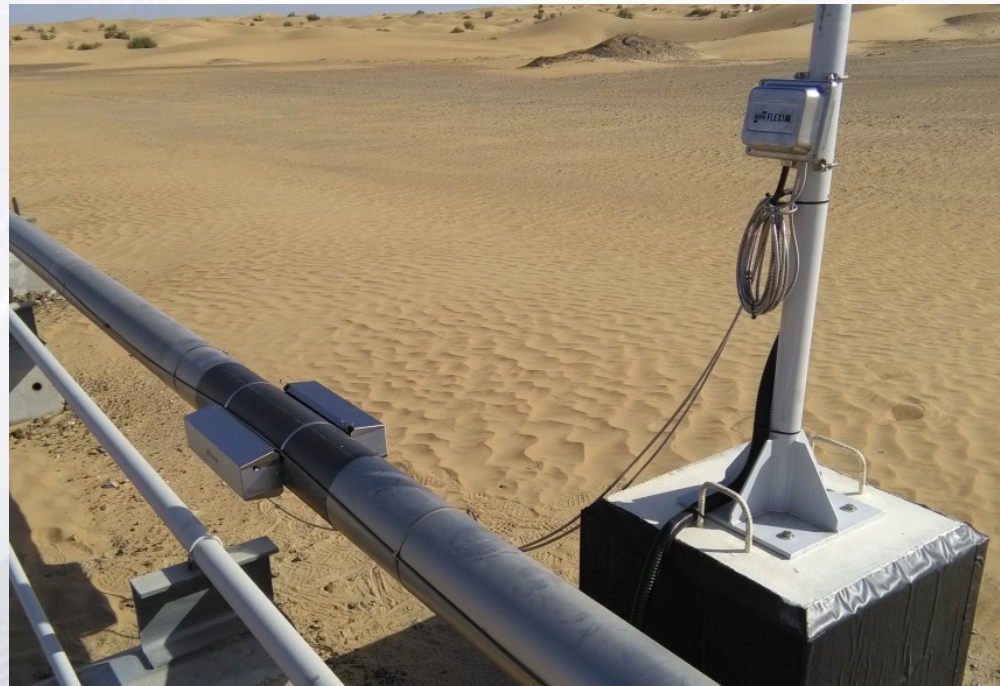
Medium: Natural Gas 110bar

Outer Diameter: 188mm, Wall thickness 17mm Duplex

Solution: 11x G705



**هيئة دبي للتجهيزات
Dubai Supply Authority**





تطوير للبترول
TATWEER PETROLEUM

FLEXIM Oil & Gas – Upstream

Customer: Tatweer Bahrain
Application: Separator outlet
Medium: Wasser / Oil
Solution: 35x F 705



FLEXIM Water & Waste Water

Customer: Saline Water Conversion Corporation Saudi Arabia

Application: Monitoring distribution

Medium: Wasser

Outer Diameter: 1322mm, Wall thickness 15mm

Solution: 25x F721 dual channel

Previous meter: MAG



FLEXIM Water & Waste Water

Customer: Greater Cairo Water Supply SCADA

Application: Monitoring water distribution

Medium: Wasser

Solution: 47x 7407

Previous meter: MAG, Micronics, Venturi



FLEXIM Power

Customer: Sabiya Power and Distillation Plant Kuwait

Application: Seawater intake

Medium: Wasser

Outer Diameter: 1842mm, Wall thickness 21mm GRP

Solution: 1x F705

Previous meter: Krohne MAG



FLEXIM Oil & Gas – Upstream

Customer: PDO
Application: Injection Water / Gas
Solution: 5x G608 Portable
ATEX/IECEX Zone 2
FM class I Div. 2 certification



شركة تنمية نفط عمان
Petroleum Development Oman



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Summary

Differences to other Clamp-on Meters

Robust, accurate and reliable through

Paired Transducers

- No zeroing necessary
- Excellent low-flow capability

Permanent Coupling

- Fit-&-forget permanent installation

Advanced Signal Processing

- Robust measurement even under harsh conditions

Temperature compensated transducers

- Meet the ASME MFC-5M-1985/2001 Standard
- Required to zero-out temperature influence



Easy Installation; a Cost Benefit



**One-Man-Commissioning – No Shut Off Valves required–
No Lifting Equipment– No Shut-Off of the unit; Installation during running process**



A Flow Meter

without

- Pressure drop
- Pressure limitation
- Corrosion effects
- Process contact
- Leakage risk
- Blockage risk
- Turndown limitation
- Drift

which can

- be installed without any process interruption even on buried pipes
- measure with a repeatability of 0,15%
- measure from -190°C to + 600°C
- measure any liquids with up to 10%solids
- measure gases or liquids
- measure any pipe size
- give detailed additional diagnostics about measurement status and process changes
- measure also concentration of acids, caustics and salts
- detect, identify and compensate for different medias





Thanks for Attention