oil & gas measurement solutions

Dualstream I *advanced* Subsea

Background

Wet gas measurement is now an integral part of most gas condensate field developments. Dualstream wet gas flow meters have been utilized in over 100 projects since the early 1990's and have been a key factor in enabling marginal field development providing wet gas allocation measurements and enhancing reservoir data.

Dualstream I *advanced* (Subsea)

Solartron ISA's advanced version of the Dualstream I meter includes an additional differential pressure measurement to enable on-line detection of changes in liquid fraction. This system can be used to reduce period well testing or to calculate liquid flow rates in real time thus alleviating the requirement for well testing altogether. For this reason Dualstream I *advanced* is particularly applicable to subsea flow rate measurement in reservoir management, allocation of hydrocarbon gas and condensate and as an economic method of water breakthrough detection.

Subsea Experience

Dualstream I meters have been implemented in shallow diver accessible depths and in deepwater water applications in up to 3000m water. The first subsea Dualstream meter was installed in 1994.

Key Benefits

- Intelligent on-line measurement
- Simple, cost effective and robust flow spool
- Tried and tested instrumentation
- Simple Data Acquisition System
- Significantly reduced operational costs
- Digital communications enabling reduced size and weight of subsea meters
- Large installed base including allocation systems

Applications

Reservoir management

- Optimise production
- Remote well monitoring
- HC gas and condensate flow rate measurement
- Water breakthrough detection

Production allocation

- Royalty allocation
- Essential for economic development of marginal fields

Dualstream I *advanced* Subsea

Measurement Technique

- Dualstream Venturi, Pressure loss ratio measurement, wet gas correction algorithm and PVT calculation

Mechanical Specification

- Standard Line Sizes 2" NB to 24" NB (larger sizes on request)
- Pressure Class API 5K/10K API (15K & ANSI ratings on request)
- Process Temperature Range -20 to 120°C (-4 to 248°F) (higher ranges on request)
- Meter Body Material Duplex uns531803 as standard
- Weight dependant on NB/Pressure rating
- Overall length 5D (typical)

Installation Requirements

- Upstream Straight lengths – 3D to 10D (typical) (calibrated spool supplied for allocation systems)
- Downstream Straight lengths – None (5D calibrated spool supplied with thermowell for allocation systems)
- Orientation Horizontal

Performance

- Uncertainty
  - Gas Mass Flow Rate 2% (typical)
  - Liquid ±10-20%
  - Condensate PVT calculation water ±1 am^3/h (water or oil continuous flow)
- Repeatability
  - Gas Mass Flow Rate <0.15%
  - Liquid Mass Flow Rate <1.5%
  - Water Sensitivity ±0.2 am^3/h (water or oil continuous flow)
  - GVF Range 98 – 100%
  - Turndown 3:1 or 8:1 (typical)
  - Pressure Loss Specific to application (<1bar)

Instrumentation

Redundancy

	Std	Dual	Triple
DP Transmitters	2 off	4 off	6 off
GP Transmitter	1 off	2 off	3 off
TT Transmitter	1 off	2 off	3 off

- Analogue Option: 4-20 mA
- Digital Options:
  1) MODBUS RS232C/RS485 Point to Point or Multidrop
  2) Foundation Fieldbus or Hart

Insulation

- Optional

Data Acquisition (Subsea)

- Available on special request

Data Acquisition (Topside – Safe Area)

- Option A – Solartron 7955 Flow Computer – Power Supply 20-30 VDC, 40W
- Option B – Industrial PC – Power Supply 90-260 VAC, 50-60 HZ or 24 VAC
- Input Protocol 4-20 mA, Hart or MODBUS
- Output Protocol 4-20 mA or MODBUS
- Electrical Interface RS232C/RS485
- PVT Package – Optional
- Typical Output Data –
  Gas Mass Flow Rate
  Liquid Mass Flow Rate
  Condensate Mass Flow Rate
  Water Mass Flow Rate
  Gross and Nett Volume
  Line Pressure
- User required inputs (hydrocarbon composition)

AMETEK®

Solartron ISA
Hackworth Industrial Park, Shildon,
County Durham, UK, DL4 1LH
Tel: +44 (0) 1388 773065
Fax: +44 (0) 1388 774888
Email: sales.solartronisa@ametek.co.uk

Houston Sales & Service
3727 Greenbriar, Suite 106-B
Stafford, TX 77477 U.S.A.
Tel: (281) 240-9054
Fax: (281) 240-3583

solartron ISA

www.solartronisa.com

Ref No. 0506

906UK (980016)