

Dualstream I 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 (Subsea)

Solartron ISA's subsea Dualstream I meters are designed to be used when additional facilities, typically test separators, are available for periodic well testing. The Dualstream I system will correct the gas flow rate for a known gas Mass Fraction based on data generated during a well test. This is a particularly cost effective 'per wellhead' wet gas flow rate management system.

Subsea Experience

Dualstream I subsea meters have been implemented in the shallow diver accessible depths of the North Sea through to deepwater water applications in the Gulf of Mexico, in up to 3000m water. The first subsea Dualstream meter was installed in 1994. Meters are being used to allocate gas into third party flow lines or on a 'per well' basis to optimize production.

Key Benefits

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

Applications

Reservoir management

- Optimise production
- Remote well monitoring

Production allocation

- Royalty allocation
- Essential for economic development of marginal fields



Dualstream 1 Subsea

Measurement Technique

- Dualstream Venturi and wet gas correction algorithm

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 unsS31803 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 5% (typical)
 - Liquid Mass Flow Rate From well test
- Repeatability
 - Gas Mass Flow Rate <0.15%
- Liquid Mass Flow Rate n/a
- Turndown 3:1 or 8:1 (typical)
- Pressure Loss Specific to application (<1bar)

Instrumentation

Redundancy

	Std	Dual	Triple
DP Transmitters	1 off	2 off	3 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 Input

- Gas and liquid density
- GMF (from well test)
- Compositional data



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