



Dualstream 2

The Smart Subsea Solution For Wet Gas Wells

Each gas condensate development has its own unique challenges. These may include measuring gas rates to allocation standard, accurately detecting low levels of water for hydrate mitigation, or optimizing production recovery from marginal fields.

The Dualstream family of wet gas meters is uniquely positioned to provide the operator with the optimum "Life-of-Field" solution.

Solartron ISA's unrivalled global experience ensures user confidence in the data

that Dualstream provide. Successfully installed and operated on over 300 gas condensate fields, Dualstream is considered the benchmark for wet gas metering.

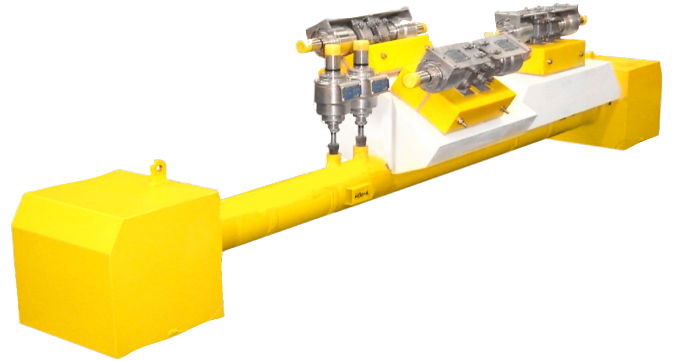
Measurement Application

Dualstream 2 is a 3-phase measurement for allocation or monitoring of flow rates in gas condensate wells. It is typically used on a per well basis and can be installed in either the jumper or manifold. It is ideal for fields with high levels of liquid. By only deploying standard sensor systems subsea, all flow computation is carried out topside ensuring minimum subsea intervention during the life of the field.

Common applications include tie-ins to existing infrastructure or new field development where real time high accuracy gas measurement is a fundamental operator requirement and water measurement accuracy is required for efficient well operation.

Mode of Operation

The pressure loss across a differential pressure (DP) device to measure wet gas flow rates, the presence of liquids will cause the gas rate to over-read. A Dual DP technique is used to measure high levels of liquids. The Pressure Loss ratio technique (PLR) is used to measure water at high GVF. Condensate is determined via a PVT calculation. A proprietary correction algorithm is used to correct the gas flow rate and output a real-time 3-phase measurement.



Measurement Applications

- ✓ Royalty Allocation
- ✓ Hydrate Mitigation
- ✓ Flow Line Monitoring

Key Benefits

- ✓ Real Time 3-Phase Data
- ✓ GVF >90%
- ✓ High Accuracy
- ✓ Uncomplicated & Robust
- ✓ Compact Design
- ✓ Low Power
- ✓ Industry Standard Computer
- ✓ Large Installed Base

Dualstream 2 Subsea

Standard Specifications

Measurement Technique

Dualstream wet gas Venturi
 PLR measurement
 Dual DP device
 Proprietary wet gas algorithms

Typical Operating Range

Turndown	>8:1
Gas mass fraction	50-100%
Water liquid ratio	0-100%

Typical Performance

Typical Uncertainty (95% confidence level):

- Gas mass flow rate ±2%
- Condensate mass flow rate ±10%
- Water volume flow rate ±1 am³/h

Repeatability

- Gas mass flow rate <0.40%
- Condensate mass flow rate <2.0%
- Water sensitivity ±0.2 am³/h

Permanent Pressure Loss

Pressure loss specific to application (<1 bar)

Subsea Sensors

- Solartron ISA SST range subsea sensors comprising
- Venturi Differential pressure sensor with Diaphragm Seals (gauge pressure as secondary variable)
 - PLR Differential pressure sensor with Diaphragm Seals (gauge pressure as secondary variable)
 - Dual DP device differential pressure sensor with Diaphragm Seals
 - Temperature
- Communication options: MODBUS, SIIS Level 2 (CANBUS) or IWIS

Subsea Power Requirement 24VDC < 15W
 (includes redundant sensors supplied as standard)

Installation Requirements

Horizontal
 Upstream straight lengths None
 Downstream straight lengths None

Data Acquisition

- Options available include
- Dualstream Flow Computer (safe area)
 - Dualstream PC (safe area)
 - Dualstream PC (hazardous area)

User Required Inputs

- Hydrocarbon composition

SOLARTRON ISA

Hackworth Industrial Park, Shildon, County Durham, DL4 1LH, UK
 Tel: +44 (0)1388 773065 | Fax: +44 (0)1388 774888
 e-mail: sales.solartronisa@ametek.com | www.solartronisa.com

AMETEK LLC Russia

Tel: +79035493325

AMETEK do Brasil Ltda.

Rodovia Engenheiro Ermênio de Oliveira Penteado, KM 57, SP-75 Bairro Tombadouro, Indaiatuba – SP – Brasil CEP:13337-300 | Tel: +55 19 99721 0539

FOLLOW US ON:



Houston Sales and Services

4903 W. Sam Houston Parkway, N., Suite A-400, Houston, TX 77041
 Tel: +1 713-466-4900 | Fax: +1 713-849-1924

AMETEK Middle East

Office 2004, Cluster X2, Jumeirah Lakes Towers (JLT), Dubai, UAE
 Tel: +971 52 645 3606

AMETEK Singapore Pte Ltd

20 Changi Business Park Central 2, #04-03/04 Singapore 486031
 Tel: +65 6484 2388 | Tel: +65 6481 6588