

# Proline

## Prosonic Flow G 300/500

### Redefines process gas measurement

For demanding applications in the oil and gas as well as chemical industries

- Flexible ultrasonic flow measurement using the transit time differential method – ideally suited for raw and processed natural gas, coal seam gas, shale gas, process gas, gas mixtures as well as wet biogas and digester gas
- Maximum reliability even in wet gas applications
- Robust sensor with stainless steel and titanium wetted parts for long term operation
- Powerful process control around the clock as a result of pressure- and temperature-compensated values measured in real time
- Advanced gas analysis functions for the calculation of additional process variables as well as for the input of customer-specific gases and gas mixtures
- High measuring accuracy ( $\pm 0.5\%$ ) and turndown ( $>133:1$ )



# Proline

## simply clever

Process monitoring is becoming more demanding and the need for maximum product quality is steadily increasing. This is why Endress+Hauser continues to provide industry-specific flow measurement solutions optimised for future technology requirements.

The new generation of our Proline flow-meters is based on a uniform device concept. This means time and cost savings, as well as maximum safety over the entire plant life cycle.



#### Web server

Time-saving local operation without additional hard-/software



#### Heartbeat Technology

For permanent self-monitoring, diagnostics and device verification



#### Simple operation (HMI)

Time-saving operating concept with guided parameterisation



#### HistoROM

Automatic data storage and data restoration



#### W@M Life Cycle Management

Open information system for device documentation and management



## Prosonic Flow G 300/500

### The robust flow specialist for every gas application

Thanks to state-of-the-art drilling technology, enormous gas resources are being discovered and developed all around the world. As a result, demand for natural gas as a fuel and energy source will rise strongly in the future.

Whether raw or processed natural gas, process gas or gas mixtures, either in the offshore or onshore sector: the new Prosonic Flow G 300/500 from Endress+Hauser is the ideal measuring device for all gaseous fluids. It combines tried-and-tested ultrasonic flow measuring technology with decades of experience in the Oil and Gas and Chemical industries.

With Prosonic Flow G it is possible to precisely measure both dry and wet gases – irrespective of fluctuating process and environmental conditions. This opens up completely new options for process monitoring and control together with the extensive functionality of the Proline 300/500 transmitters:

- Low maintenance long-term operation: robust industrial design for process temperatures of up to 150 °C and pressures up to 100 bar
- High operational safety: Heartbeat Technology for permanent self-diagnostics and device verifications during operation
- Powerful process control: one-of-a-kind gas analysis functions for pure gases or user-defined gas mixtures with up to 8 selectable components
- Versatile application areas due to 6 gas compensation models
- High flexibility during operation and configuration via local display, web server, WLAN, operating tools (FieldCare, HART handheld terminal) or digital communication (HART, Modbus RS485)



#### E-book - Prosonic Flow G for your tablet

With additional information, application examples, measuring principle film and device information at a glance.

# Robust, intelligent and safe

## Four reasons that speak for Prosonic Flow G



### Pressure and temperature compensation

- For high-performance process control thanks to pressure- and temperature-compensated values measured in real time
- For greater measuring accuracy in density calculation for determining the mass flow and/or corrected volume flow
- For a wide variety of possible applications, regardless of fluctuating process and environmental conditions
- For minimising additional pressure and temperature measuring points
- For calculation of other important process variables (see “Advanced gas analysis”)



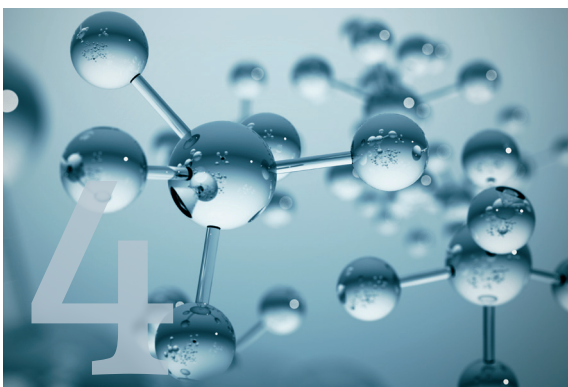
### Measurement of wet gases – no problem

- Robust, condensate-insensitive sensor design for highly accurate measured values of moist or wet gases
- Condensate dissipation system to ensure no condensate build up in the transducer socket
- Faultless continuation of ultrasonic measurement without impeding signal quality



### Process reliability around the clock

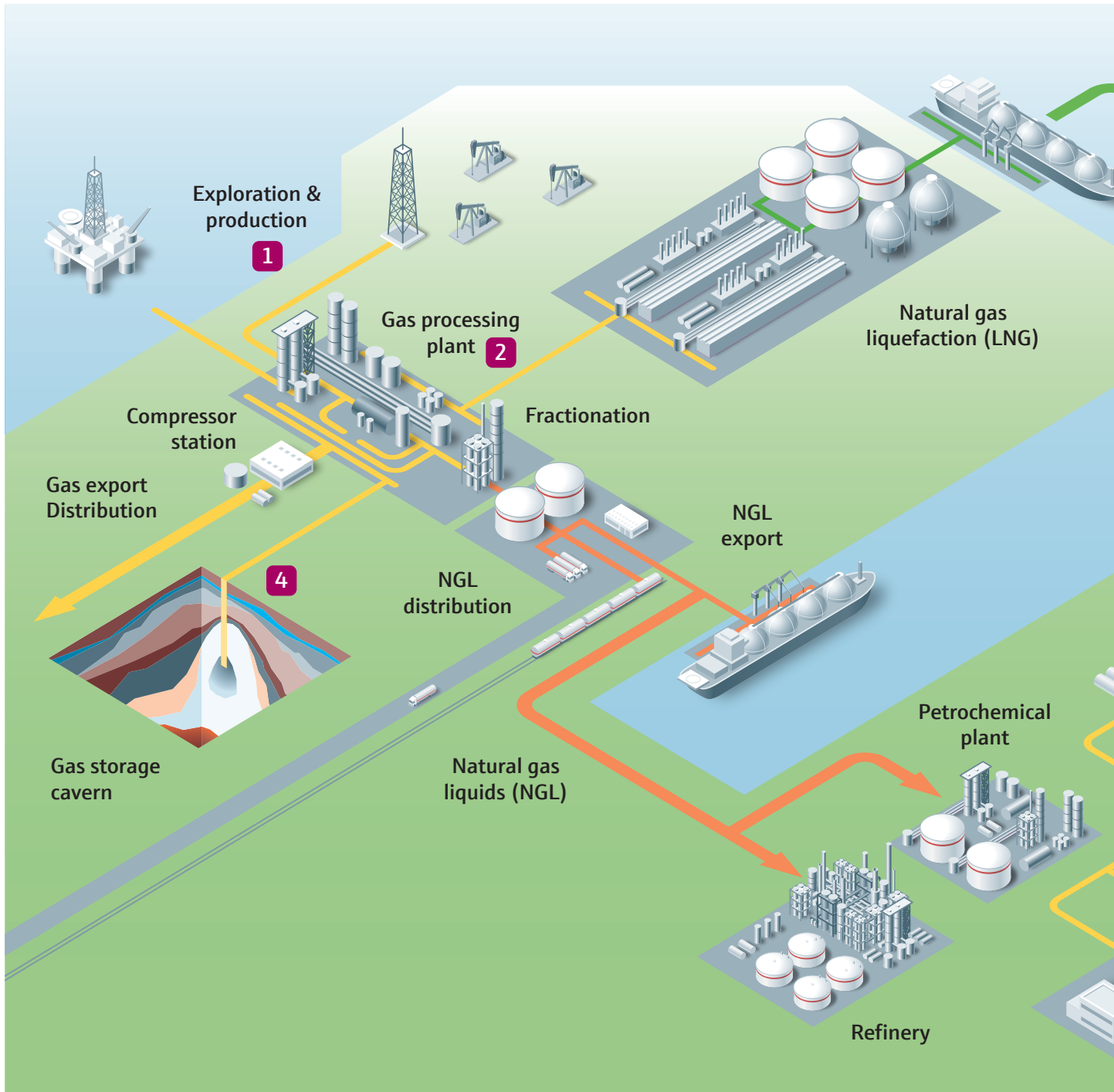
- SIL-compliant device development according to IEC 61508
- With built-in rupture disk (10 to 15 bar) for controlled releasing of overpressure in case of leakage
- Reliable device/process monitoring thanks to Heartbeat Technology:
  - Permanent self-diagnostics
  - Clear categorisation and display of device and process errors according to NAMUR NE107
  - Device verification during operation without process interruption (TÜV-certified)



### Advanced gas analysis – one-of-a-kind, worldwide

- Optimal process monitoring thanks to the simultaneous measurement and evaluation of directly measured variables such as flow velocity, sound velocity, pressure and temperature
- Comprehensive gas analysis by calculating additional process variables based on various gas models:
  - Volume flow, corrected volume flow and mass flow
  - Energy flow
  - Calorific value, Wobbe index
  - Molar mass
  - Methane content e.g. in biogas
  - Density and viscosity

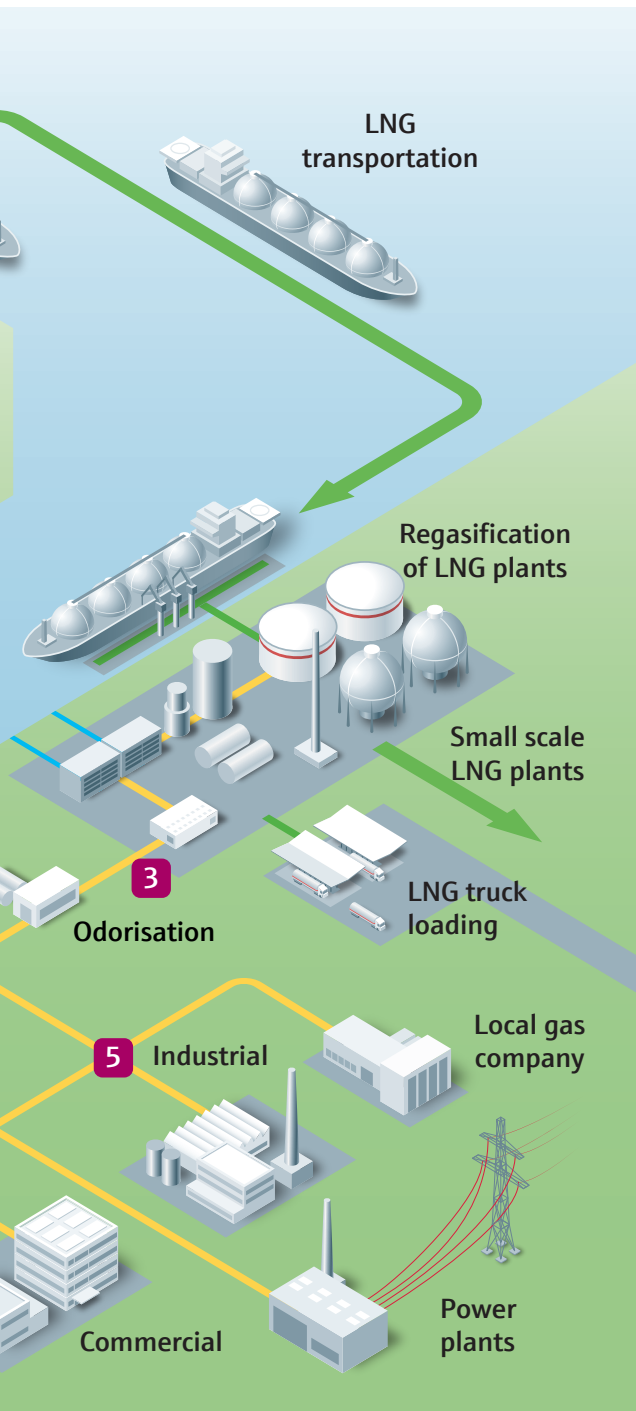




## **i** Calibration measuring technology for the highest accuracy Precision that is worth it

At Endress+Hauser, all flowmeters are subjected to strict quality controls and are checked, calibrated and adjusted on the foremost state-of-the-art calibration facilities in the world. The newly developed air calibration facility in Reinach (Switzerland) ensures that you can also rely on Prosonic Flow G 300/500 for maximum measuring performance in your plant:

- Accredited by the Swiss Accreditation Service (SAS) in accordance with ISO/IEC 17025
- Fully traceable to national standards
- Measuring sections for DN 50 to 300 (2 to 12")
- Measuring range: 2 to 8700 m<sup>3</sup>/h
- Measuring uncertainty:  $\pm 0.25\%$  o.r.
- Master meters: rotary piston and turbine gas meters



# Prosonic Flow G 300/500 in the gas industry

Universally applicable





## Sites for quantity metering and gas analysis (examples)

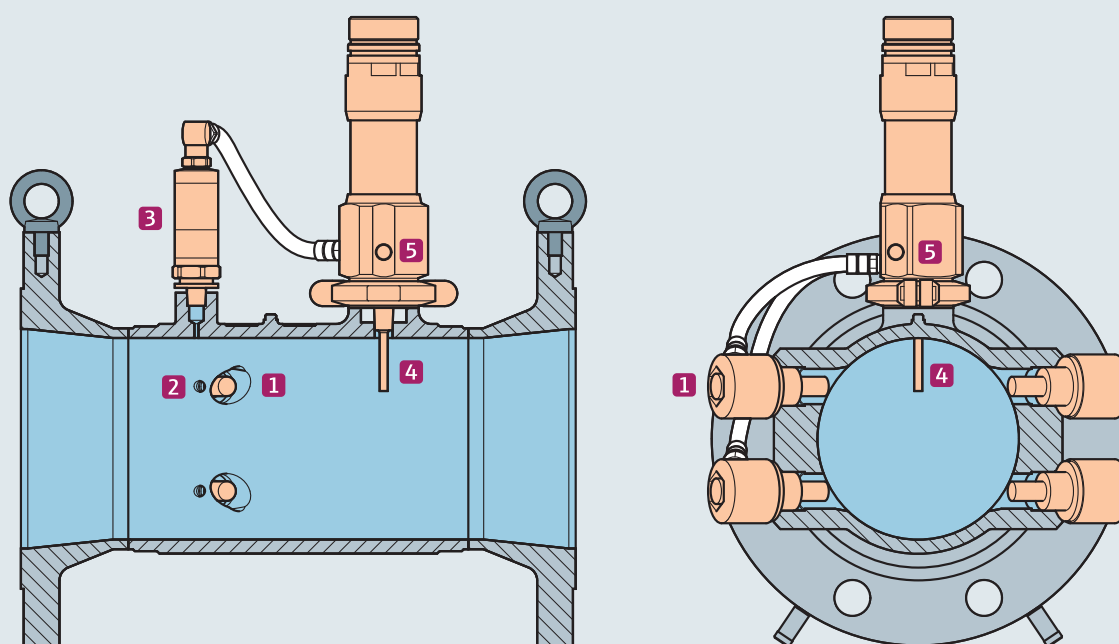
- 1 At the outlet of a test and production separator gas leg
- 2 In gas processing plants (e.g. during dehydration, sweetening, filtering, etc.)
- 3 At the outlet of regasification plants for LNG
- 4 At the inlet/outlet of natural gas storage caverns
- 5 At the inlet to petrochemical plants, power plants, industrial or commercial areas (e.g. for cost allocation)



## Technical data

Transmitters		
		
	<b>Proline 300 (compact)</b>	<b>Proline 500 (remote)</b>
Display	– 4-line backlit display with Touch Control Option: with remote display	4-line backlit display with Touch Control
Operation	Via local display, web server, WLAN as well as various operating tools (FieldCare, HART handheld terminal, etc.)	
Materials (housing)	Transmitter: aluminum, stainless steel die-cast	Proline 500 transmitter digital: aluminum, polycarbonate
	Remote display: aluminum, stainless steel die-cast	Sensor connection housing: aluminum, stainless steel die-cast
Power supply	AC 100 to 230 V (50/60 Hz) DC 24 V (50/60 Hz)	
Ambient temperature	Standard: –40 to +60 °C Option: –50 to +60 °C	
Degree of protection	IP 66/67 (Type 4X enclosure)	
Outputs	<b>Port 1</b> Current output (4–20 mA, HART) or digital communication via Modbus RS485	<b>Port 1</b> Current output (4–20 mA, HART) or digital communication via Modbus RS485
Inputs	<b>Port 2/3</b> Freely selectable I/O settings: – Current output (4–20 mA) – Pulse/frequency/switch output – Pulse output (phase-shifted) – Relay output – Current input (4–20 mA) – Status input	<b>Port 2/3/4 (Proline 500 digital)</b> Freely selectable I/O settings: – Current output (4–20 mA) – Pulse/frequency/switch output – Pulse output (phase-shifted) – Relay output – Current input (4–20 mA) – Status input
Communication		

## Cross section – Prosonic Flow G



1 Transducer socket   
 2 Drain hole   
 3 Pressure cell   
 4 Temperature sensor   
 5 Rupture disc

**Sensor**

Nominal diameters	<ul style="list-style-type: none"> <li>▪ 1-path version: DN 25 (1")</li> <li>▪ 2-path version: DN 50 to 300 (2 to 12")</li> </ul>
Process connections	Flanges: EN, ASME
Min./max. flow	0.5 to 9426 m <sup>3</sup> /h
Max. flow velocity	Up to 40 m/s
Process pressure	0.7 to 100 bara
Process temperature	-50 to +150 °C (Max. 100 °C with integrated pressure measuring cell)
Degree of protection	IP66/67 (Type 4X enclosure)
Max. measured error	<p><b>Volume low:</b></p> <p>Standard: ±1.0% o.r. at 3 to 40 m/s</p> <p>Option: ±0.5% o.r. at 3 to 40 m/s</p> <p><b>Temperature:</b></p> <p>±0.35 °C ± (0.002 · T) °C</p> <p><b>Pressure:</b> ±0.5% o.r.</p> <p><b>Sound velocity:</b> ±0.2% o.r.</p>
Turndown	Over 133:1
Materials	<ul style="list-style-type: none"> <li>▪ Sensor housing: aluminum, stainless steel die-cast (CF3M)</li> <li>▪ Measuring tube: stainless steel 1.4408/1.4409 (CF3M)</li> <li>▪ Process connections, temperature and pressure sensor: stainless steel 1.4404 (316, 316L)</li> <li>▪ Ultrasonic transducer: stainless steel (316, 316L), titanium Grade 2</li> <li>▪ Seal for transducer: FKM material group</li> </ul>
Pressure loss	No pressure loss
Approvals	<ul style="list-style-type: none"> <li>▪ ATEX, IECEx, cCSAus</li> <li>▪ SIL</li> <li>▪ PED, CRN</li> <li>▪ NACE MR0175/MR0103</li> <li>▪ Radio approval</li> </ul>

The Prosonic Flow G 300/500 measuring system fulfills the EMC requirements according to IEC/EN 61326 and NAMUR NE21. It also conforms to the requirements of the EU and ACMA directives and thus carries the **CE** and the mark.



Visit our website to find out more [www.uk.endress.com](http://www.uk.endress.com).

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