

SONARtrac™ Gas Volume Fraction Monitoring System

Model GVF-100

CiDRA's SONARtrac Gas Volume Fraction Monitoring System is a breakthrough in process measurement technology. By installing on existing process lines, SONARtrac clamp-on gas volume fraction monitoring systems allow on-line real-time measurement of the amount of entrained air/gas present in any liquid-continuous-phase process fluid.

The SONARtrac Gas Volume Fraction Monitoring System does not utilize ultrasonics; it utilizes patented array processing techniques to listen to, and interpret, acoustic fields generated by the machinery, piping and flow present in virtually all industrial processes. This passive listening approach results in an in-situ measurement of the amount of entrained air/gas present in the process flow with a high degree of accuracy and repeatability.

Sonar Technology

CiDRA's SONARtrac technology represents an innovative new class of industrial measurement instrumentation. This "sonar" technology utilizes array processing techniques related to those used in the field of sonar processing. CiDRA's proprietary "sonar" technology was initially developed for flow and compositional measurement in one of the world's most demanding environments: downhole, offshore oil and gas production.

CiDRA has taken the proven reliability of its SONARtrac technology to provide new measurements and insight into the monitoring and optimization of industrial processes.

The SONARtrac Gas Volume Fraction Monitoring System utilizes an array of sensors that are clamped onto the pipe. The amount of entrained air/gas is determined using CiDRA's array processing techniques to measure the sound speed, or speed at which sound propagates, through the process medium. The entrained air percentage is then calculated directly from the measured sound speed.

The advantages and features of CiDRA's SONARtrac Gas Volume Fraction Monitoring System enable users to realize the following measurable benefits:

- Low installation and life cycle costs
- Increased process efficiency and quality
- Lower operating costs
- Increased product quality

Applications:

- Oil & Gas
- Oil Sands Processing
- Minerals Processing
- Chemical
- Pulp and Paper
- Consumer Products
- Water and Wastewater Treatment
- Power Generation
- Pharmaceutical
- Food and Beverage



Features:

- Entirely non-intrusive clamp-on design enables:
 - Installation without process shutdown
 - No pressure drop
 - No potential for leaks
 - No wetted parts to corrode or fail
 - No flow obstruction, no clogging
 - No moving parts
- Real time measurement of entrained air/gas resulting in ability to monitor and/or assess effect of process changes on process efficiency and quality.
- May be used to compensate process instrumentation affected by entrained gas:
 - Flow measurement
 - Density measurement
 - Consistency measurement
- Optimize deaerating chemical additive usage, and monitor the effectiveness of mechanical deaeration systems.
- Detect changes in process operation due to air/gas leaks caused by pump pump/valve packing or flange/pipe problems.
- Accurate and reliable operation over a wide range of process flows, including high consistency and abrasive slurries and viscous fluids such as low API crude oil..
- Compatible with most pipe materials and schedules
- Simple, quick installation, minimal surface preparation, no gel required, lightweight



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SONARtrac™ Gas Volume Fraction Monitoring System Specifications

Parameter	Specifications	Comments
Pipe diameters	2" to 36"	Metric and Custom Sizes Available ^(a)
Entrained air/gas range	0 to 20 %	By volume
Entrained air/gas accuracy	±5% of reading, 0.01% to 20% ^(b)	Assumes on-line process pressure available
Entrained air/gas repeatability	±1% of reading, 0.01% to 20%	
Sensor head	Clamp-mounted onto the existing pipe section; designed for single, permanent installation	Sensor head length 30" (76 cm) Height within flange diameter of pipe Lightweight (22 lbs./10 kg for 8" meter)
Transmitter with integrated flow processor	Programmable by keypad or PC interface Self-diagnostics capability	
Operating Temperature Range:		
Transmitter	-4°F to +140°F (-20°C to +60°C)	Inquire with CiDRA for temperatures outside these specified ranges.
Sensor head process temp.	-40°F to +212°F (-40°C to +100°C)	
Sensor head ambient temp.	-40°F to +140°F (-40°C to +60°C)	
Storage Temperature Range:		
Transmitter	-22°F to +176°F (-30°C to +80°C)	
Sensor head	-40°F to +185°F (-40°C to +85°C)	
Cable between transmitter and sensor head	PLTC or armored cable with one end connectorized	Cable lengths up to 300 ft (90m)
Analog Input	Two (2) 4-20 mA	Enables internal logging of optional process parameters
Analog output	Two (2) isolated 4-20 mA current outputs	One (1) with HART protocol
Digital outputs	Pulse/Frequency Output: Alarm Serial Output: RS232 or RS485	
Transmitter local display	LCD with backlight	Provides entrained air/gas, system status, system diagnostics
Data logging capability	Yes	
Transmitter enclosure	NEMA 4X	
Power requirements	AC version: 100 to 240 VAC, 50/60 Hz, 25 watts DC version: 18 to 36 VDC, 25 watts	
Area Classification	Standard: General Purpose Optional: Class 1, Division 2, Groups A, B, C and D	

^(a)Inquire with CiDRA for availability on sizes greater than 36".

^(b) For Gas, overall accuracy may be application dependent.

Contact CiDRA

To speak with a CiDRA applications engineer about the SONARtrac Gas Volume Fraction Monitoring System, or for information on this or other CiDRA industrial process measurement solutions, call (877) cidra77 or visit our web site at www.cidra.com. SONARtrac is a trademark of CiDRA Corporation.

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