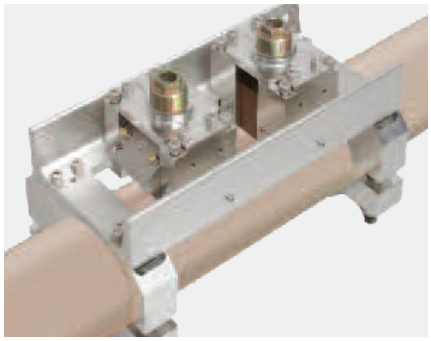
+ CALDON LEFM 2010SG System

Steam Generator Blowdown Flowmeter

The CALDON LEFM 2010SG System provides reliable volumetric measurement for Steam Generator Blowdown flow. A fixture and transducers (two per line) are mounted externally to the existing piping. This eliminates any need for cutting the blowdown lines and the expensive analyses required for changes in plant design.



The fixture precisely locates the transducers on the pipe surface of each loop to form an acoustic path. The transit times of acoustic pulses traveling between the transducers are measured and used, with the pipe dimensions, to calculate volumetric flow. The blowdown flow is then provided as an output for an external thermal power computation. The CALDON LEFM 2010SG cost-effectively measures blowdown flow rate with an accuracy between ±2% and ±5% of maximum flow (based on a single-phase fluid). The accuracy obtainable is a function of the size of the blowdown piping and the exact installation conditions of the system.

Using this measurement for blowdown flow rate in a thermal power computation will improve the uncertainty of the calculation by ±0.05%. The resulting power uprate from this improvement in calorimetric calculation uncertainty can potentially improve plant revenue by $100K/year.

A CALDON LEFM 2010SG System consists of an electronics unit, one fixture for each blowdown line, two transducers per fixture, and transducer cables. Up to four lines can be monitored with one electronics unit. The electronics unit displays the volume flow rate and the system status. Up to four analog (4-20 mA) outputs are provided for data acquisition and interface to plant equipment.

The CALDON LEFM 2010SG is a highly reliable system that requires little maintenance and provides preventative diagnostic indicators. The system has continuous online testing that verifies that the system is operating correctly and within its specified accuracy envelope. Any detected failure causing system operation to be outside the specified accuracy will generate a failure indication via the analog output.

+ Cost-effectively measures blowdown flow rate
+ External system – installed completely outside the piping
+ High temperature operation to 550°F (288°C)
+ Provides ±0.05% improvement in calorimetric calculation accuracy
+ Potential for $100K/year improved revenue from improved thermal calculation

System Accuracy	
Blow Down Drain Flow	±2% to ±5%
Electronics Unit	
Storage Temperature	-65°F to 165°F
	(-53°C to 73.9°C)
Ambient Temperature	0°F to 120°F
	(-17.8°C to 48.9°C)
Storage/operating humidity, %	0% to 95% (non-condensing)
Outputs	0-5V or 0-12V pulse output Up to four (4) 4-20mA analog outputs Two (2) Modbus RS-485 outputs
Pipe Mounted Hardware	
Process Temperature	32°F to 550°F (0°C to 288°C)
Process Pressure	No Limit (External System)
Supply Power	
Normal Voltage	120 VAC (60 Hz) or 240 VAC (50/60 Hz)
Power Surges	Up to 1200 V for < 50 µs

Services

Sensia provides the following services with every CALDON LEFM 2010SG System:

+ On-site installation of fixtures and transducers
+ System commissioning
+ Collection of baseline design data
+ Customer training
+ Field testing
+ Uncertainty analysis in accordance with ASME PTC 19.1

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