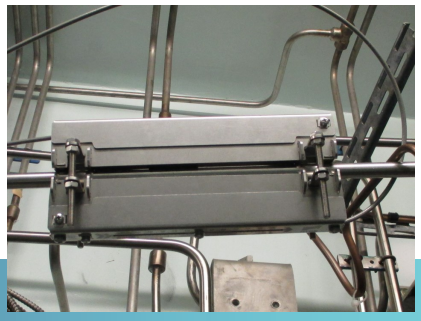
REN/RES Flow Meter

Multi-channel ultrasonic liquid flow measurement. Non-intrusive.



The REN/RES Multi-Channel Flow Meter allows continuous flow measurement on multiple sampling lines using non-intrusive ultrasonic sensors. The PLC with touchscreen HMI can thus manage alarms, retransmissions to the control room and the history of the measured channels.

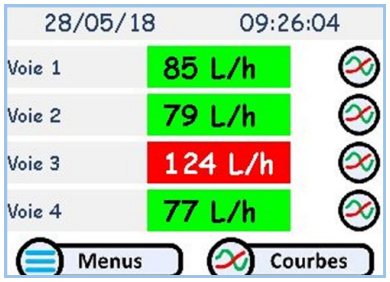
BENEFITS

> Continuous flow measurement

> Non-intrusive and requires no line changes

> Simple to implement

> Alarm management in the event of non-compliant flow rates, flow history, and fault retransmission to the control room



HMI: Multiplexing PLC

OBJECTIVE

The flow meters installed on nuclear power plant sampling lines are aging and experiencing increasingly frequent malfunctions.

Replacing these flow meters is not easy, and is often intrusive because the work involved is extensive, costly, and requires shutting down the line.

To meet this need, ARCYS, in partnership with FLEXIM, has developed a non-intrusive measurement system that is very easy to implement, covering 2 to 8 channels, is particularly robust, and does not require recalibration.

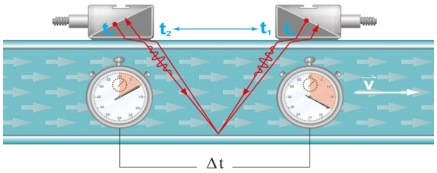
THE ARCYS SOLUTION

Ultrasonic flow measurement is a technology that allows for simple installation of sampling lines (e.g., REN/RES line applications in EDF nuclear power plants).

The ARCYS solution is non-intrusive and requires no line modifications, so there is no risk of hot spots being generated during installation. Existing flow meters are generally single- or dual-channel.

ARCYS multiplexes flow sensors and their associated electronics (one electronic for two sensors) and displays the results on a large touchscreen. This screen must be placed in a low -radiation area, as the sensors may be exposed to radiation from the circuits.

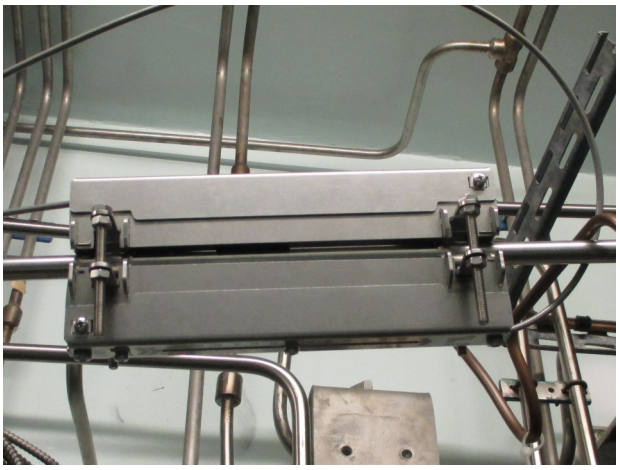
Measurement and alarm retransmission is centralized using a touchscreen controller that allows for local viewing of flow information, as well as alarm management and diagnostics.



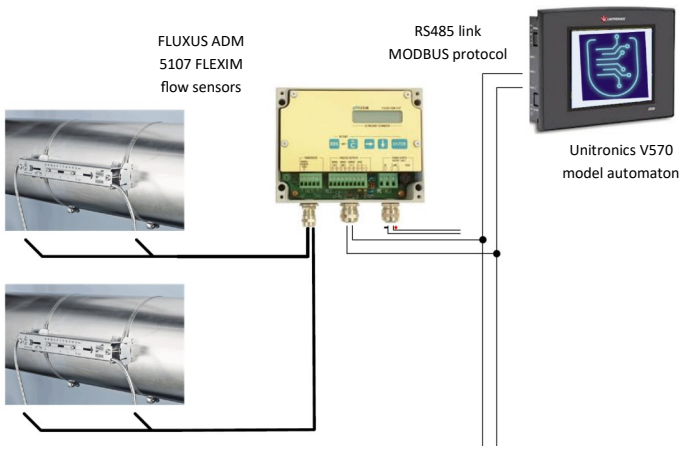
Schematic diagram: ultrasonic flow measurement.

TECHNICAL SPECIFICATIONS

Measurement characteristics	
Measuring principle	Ultrasound (ultrasound transit velocity correlation)
Number of measures	Up to 8 simultaneous measurements
Measurement accuracy	± 2%
External diameter of the ducts	10 mm to 2500 mm
Distance between sensors and measuring electronics	10 m (up to 30 m with a junction box)
Temperature of the measuring electronics	-10°C to +60°C
Protection index	IP67
Flow velocity	0,01...25 m/s
Resolution	0,025 cm/s
Fluid type	Water and acoustically similar liquids with a percentage of gas and solid particles < 6% of the volume
Fluid temperature	-40°C to +100°C
Outings	
Analog output	4 4-20 mA outputs
Digital output	1 digital output RS 485 and Modbus



Non-intrusive ultrasonic sensor



Multiplexing scheme

ARCYS

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