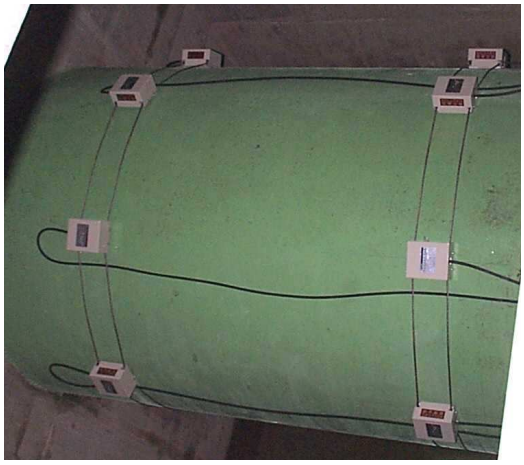
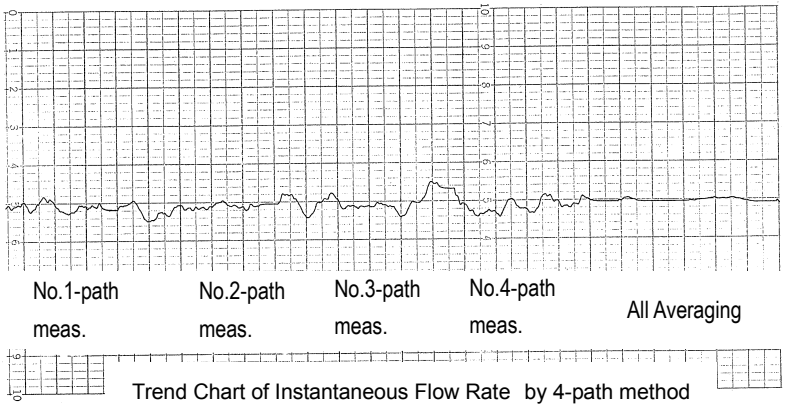
Ultrasonic Flowmeter Application Report 11

- Flow Measurement by 4-Path Method -





Trend Chart of Instantaneous Flow Rate by 4-path method

The UFL-20 series stationary, clamp-on ultrasonic flowmeter with multi-path measurement capability incorporating up to 4 pairs of transducers placed on the outside of pipes provides stable instantaneous flow rate measurements.

At this particular site, the UFL-20 series stationary flowmeter with multiple pairs of sensors measures the flow rate through more than 300mm diameter pipes, non-intrusively, from the outside with no interference of flow.

The efficiency of the 4-path method of measurement is graphically illustrated in the trend chart above and as numerical data in the flow rate table below. Sensors No. 1 to No. 4 are located on the pipe. Data on instantaneous flow rate measurement values of sensors No. 1 to No. 4 for each diametrical axis as well as 4-path measurement values is provided in the table.

The table shows the measurement values of sensors No. 1, No. 2, No. 3, and No. 4, which were individually and manually switched in sequence and the average of all four sensors. These measured values are compared to rounded flow rate readings off a local indicator of a Venturi flowmeter, which was installed close by.

Table of Instantaneous Flow Rate

	m^3/h						%	
Flow Rate	Flow Rate at each Diameter-axis				4-path	Venturi Flowmeter	Error vs Venturi	Error vs Venturi
(%)	No.1	No.2	No.3	No.4	ALL		(%) RD	(%) FS
95	1398	1446	1398	1386	1416	1421	-0.4	-0.3
75	1170	1122	1110	1104	1116	1123	-0.6	-0.5
50	760	742	752	754	742	750	-1.1	-0.5
25	355	359	351	372	356	376	-5.3	-1.3

[Note] * RD = of Reading * FS = Full Scale = 1,500m3/h at this site

Multi-path measurement is a feature of our UFL-20 series stationary clamp-on ultrasonic flowmeter. By employing the UFL-20 series stationary clamp-on ultrasonic flowmeter in combination with the appropriate sensor from the variety available and/or the system's multi-path measurement capability. You may be able to obtain high stable flow measurements of pipes from 25mm up to 6000mm in nominal diameter under less than ideal conditions.

In addition, the all-in-one UFL-20 main unit boasts two independent analog outputs, 4 varieties of contact outputs for totalizing or warnings, and 2 digital communication ports (RS-232C). The Windows-based graphical and user-friendly PC interface is easy to configure and set up.

[Pipe Specification]
Pipe DN : more than 300mm
Pipe material : Steel
Lining : None

[Installation Data]
Main Unit : Stationary Ultrasonic Flowmeter UFL-20
Transducer : SE044040NC
Installation : V method / 4 path

For more detailed information, please contact your local representative.

Representative in your Area