

From a concrete pipe
to a SITRANS FUS ultrasonic flowmeter

Case Study January 2007 update

Water

Delfland Polder Board searched for an accurate flowmeter to measure the effluent of the 'De Nieuwe Waterweg' sewage plant.



From a concrete pipe to a SITRANS FUS ultrasonic flowmeter

The idea

The idea was to use an electromagnetic flowmeter, which could be installed only after having fitted the empty concrete pipe with flanges and foundation.

Delfland Polder Board experienced that alone the costs for establishing flanges and foundation for the existing pipe would amount to 80% of the flowmeter costs. To avoid process shut down for a longer period of time, which Delfland Polder Board could not accept, a different solution avoiding this was found in co-operation with Siemens.

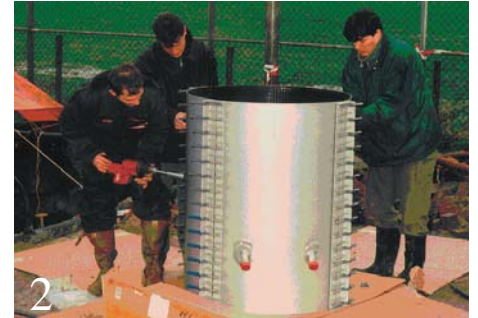
The Solution

The solution was a Tapping Band which is a complete SITRANS FUS ultrasonic flowmeter for mounting onto existing pipes. Mounting of the Tapping Band can be made without process shut down and expensive changes in the pipeline. To provide contact between the ultrasonic transducers and the medium, holes were drilled in the pipe under pressure. Also the transducers were mounted under pressure.

The Process



1 The accurate circumference of the pipe is to be measured. For the production of a Tapping Band this measure is needed.



2 The Tapping Band will be delivered as one unit with welded-on transducer holders. The number of sections is 2-8 pcs. depends



3 After disassembly, the shell sections are positioned around the pipe one by one and then screwed together.



4 Having placed the transducer holders horizontally the nuts are tightened with a drilling machine



5 The nuts are tensioned one by one according to a fixed pattern.



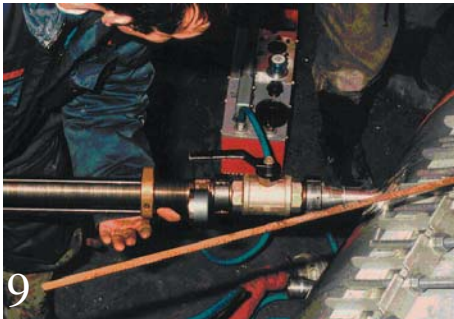
6 Here the tapping band has been mounted. The transducer holes were drilled using a pneumatic drilling machine.



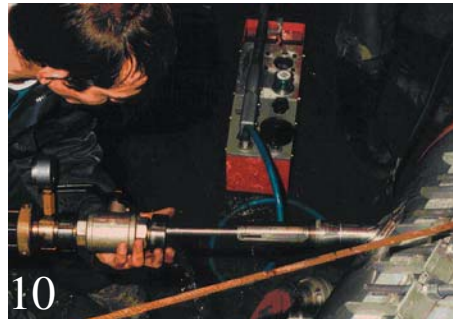
7
The diamond drill is cooled with water. The drill is pre-loaded by applying pressure from a manually driven pump. When the hole has been drilled, the machine is moved backwards until the valve can be closed.



8
The drilling machine is to be dismantled. The concrete plug from the drilling has to be removed from the drill. The transducer can now be mounted in the transducer holder, depends on pipe size.



9
The lock tool is used for mounting the transducers into the holders under pressure. The lock tool with the transducer is mounted on the ball valve. The valve to be opened and the transducer to be screwed through the valve into position in the transducer holder.



10
The lock tool and ball valve to be dismantled. The transducer is now positioned properly in the transducer holder. Same procedure for all transducers.



11
The transducers to be fitted with terminal housing. Coax cable to be connected to the terminal housing.



12
As this SITRANS FUS ultrasonic flowmeter is to be buried all terminal housings are to be filled with SYLGARD (IP68 sealing up to 10 m WG).

The finishing touch

The SITRANS F US ultrasonic flowmeter has a user-friendly operator interface.

The customer only has to enter few application related values and the SITRANS F US ultrasonic flowmeter is ready for commissioning. All the settings are stored in the transmitter which means that the settings only have to be entered once, even if the SITRANS FUS transmitter has to be changed.

Thanks to the fully digital signal processing and direct transducer contact with the media, Delfland Polder Board can now benefit from the SITRANS F US ultrasonic flowmeter, which provides accurate flowmetering and long-time duration.

For you too

It is a unique solution to use a Tapping Band as a SITRANS FUS ultrasonic flowmeter for installation without process shut down. The solution is available in sizes ranging from DN 150 to DN 1200. Siemens also offers the SITRANS F US ultrasonic flowmeter, type SONOKIT, which can be installed on existing pipes suitable for welding and is available in sizes ranging from DN 100 to DN 4000. The SONOKIT can be mounted on empty pipes or hot tapped without process shut down.

Please call Siemens for a quotation and a flowmeter solution tailored to fit your application.