

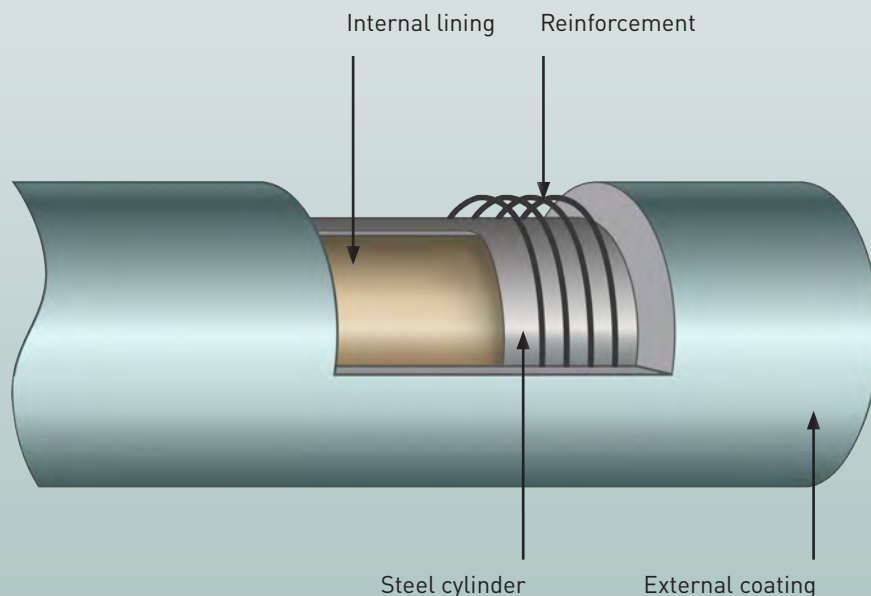
# FLUXUS® WD / FLUXUS® WS – Monitoring flow in Prestressed Concrete Cylinder Pipes (PCCP)

Permanent ultrasonic water flow meter

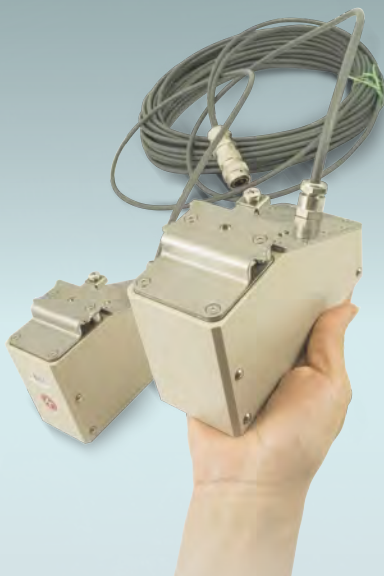
## Reducing the overall costs of new flow measurement points

- No supply interruption, pipe cutting, or flushing required
- All earth and road works achievable in one day
- Less bureaucratic work and fewer permissions required
- Significant overall cost and time saving
- No zero calibration needed and no zero drift
- Extremely accurate technology that measures flow rates as low as 0.03 ft/s
- For detailed technical information on the FLUXUS® WD series see the product brochure ([www.flexim.com](http://www.flexim.com))

The FLUXUS® WD is FLEXIM's state-of-the-art ultrasonic flow measurement device for buried transducer installations. It combines absolute durability and robustness of instrumentation with outstanding accuracy and reliability of data. The easy installation process without supply interruption and only minimal excavation work results in significant cost and time savings.







## The challenging structure of PCCP

Prestressed Concrete Cylinder Pipes, sometimes referred to as Bonna pipes, are composed of several layers of different material. The core material of these pipes is concrete, followed by a steel cylinder. The next layer consists of prestressed steel wires that create a consistent compressive pressure. These wires are embedded in a mortar coating that represents the outer material of the pipe.

The complex structure and multi-material buildup of PCCP is a challenge for non-intrusive flow measurement technology. But with extremely powerful clamp-on transducers and advanced evaluation algorithms FLEXIM masters this challenge, delivering accurate and drift-free flow measurement data even on the largest Prestressed Concrete Cylinder Pipes.

## Our technological solution

Extreme pipes call for extreme transducers. In order to measure the flow in large PCCP with outer diameters of several meters FLEXIM employs its G series transducers. The power of these low-frequency and high-amplitude transducers is impressive (and so is their size).

They are capable of sending and receiving signals through the many layers of material encountered in pipes such as PCCP, thereby maintaining sufficient signal quality for exact and reliable flow measurements. Ultrasound signals are sent at 1000 times per second and evaluated by a highly sophisticated digital signal processor that calculates time difference based on cross correlation. This ensures excellent noise suppression and results in high accuracy data, even on difficult pipes.

## No zero drift and reliable measurement validation

Data from the FLUXUS® WD series is very reliable, as its transducers remain drift-free. FLEXIM achieves this by analyzing the characteristics of each individual piezo-transducer and thereafter matching the ideal clamp-on transducer pairs. The perfect acoustic match achieved by this process allows the transducers to remain drift-free after initial factory calibration, which is a crucial advantage over other flow measurement technologies. For more technical details please see the product brochure of the FLUXUS® WD series.

