

# Flow Disturbance Correction

**Accurate measurements, even with non-ideal installation conditions**

Reduces the required inlet length

Enables installation in tight spaces

Improves accuracy

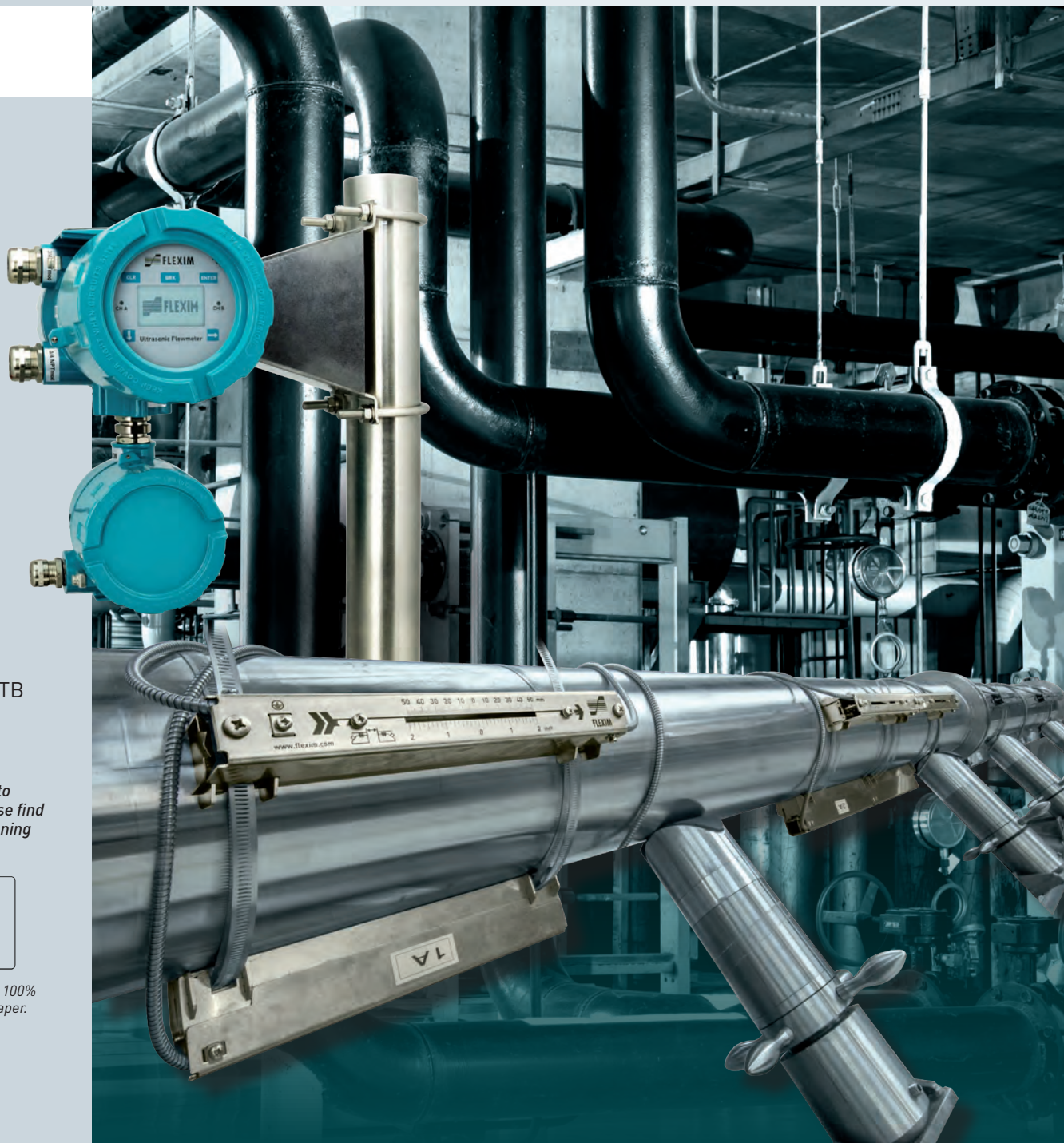
Higher flexibility

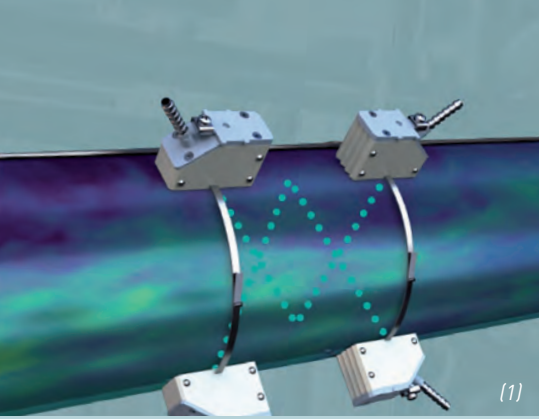
In collaboration with PTB

*Our brochures are kept short to benefit the environment. Please find additional information by scanning the QR-Code.*

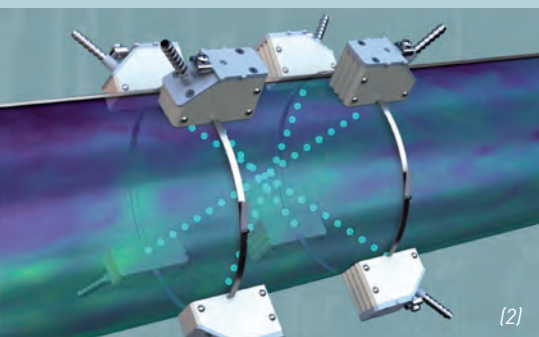


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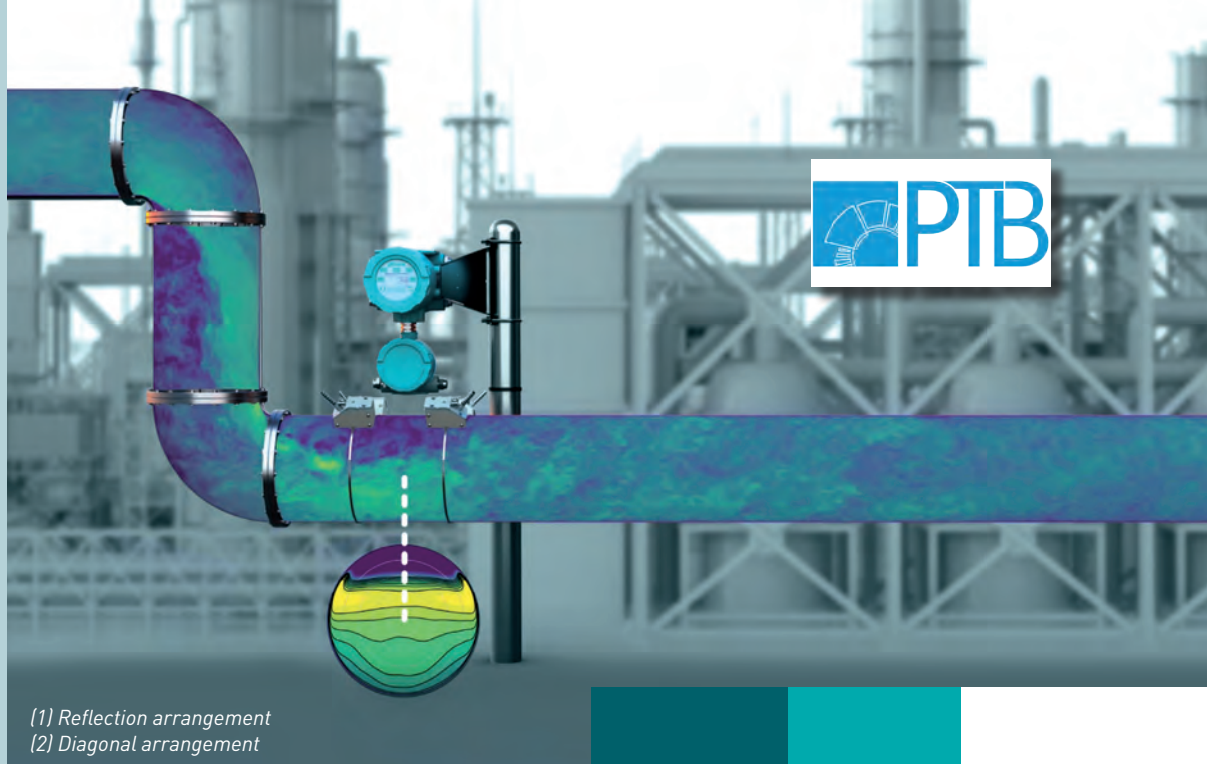




(1)



(2)



(1) Reflection arrangement  
(2) Diagonal arrangement

**In the often limited space of industrial process plants,** recommended straight run requirements can be difficult to find. Due to restricted pipework, it's not always possible to carry out optimum installation as advised, away from valves, bends and other inline components that could cause excessive and problematic turbulence.

For accurate measurement to be achieved, clamp-on flowmeters normally require an inlet length of at least 10 diameters.

**Thanks to FLEXIM's disturbance correction,** good accuracy is achieved even at non-ideal inflow conditions, reducing the required inlet length from 10 diameters to just 2 diameters. This innovation means that installation is achieved in even the tightest of spaces, without process interruption.

The disturbance correction is applicable for all measurement arrangements that compensate cross-flow effects. These are reflection arrangement, X arrangement or displaced X arrangement.

**As part of the development, FLEXIM collaborated with the highly respected PTB** (National Metrology Institute of Germany) on a research project focusing on the exact determination of flow profiles and how they influence the measuring accuracy of clamp-on ultrasonic flowmeters.

**Calibration was used to determine** the disturbance corrections implemented in the meter, firstly under undisturbed conditions, and then under disturbed conditions. This allowed the disturbance correction to be obtained from the ratio of the two results, and the procedure was repeated for all types of disturbance that require a correction function to be put in place.

Following correction, the uncertainty is dependent on the number of measurement planes that are installed, as well as the distance to the disturbance and its character.

**Analyzed by CFD (Computational Fluid Dynamics),** the effect of different bend radii found in industrial piping is included in the uncertainty. The disturbance correction is applicable for all fluids, no matter what their state of aggregation or the diameter of the pipe.

Because FLEXIM's Flow Disturbance Correction reduces the required inlet length from 10 diameters to just 2 diameters, accurate measurements are guaranteed, even with non-ideal installation conditions. Maximum flexibility and cost savings are delivered for both planners and users alike.

**FLEXIM GmbH Berlin** info@flexim.de • **FLEXIM Austria GmbH Olbendorf** office@flexim.at • **FLEXIM Instruments Benelux B.V.** Berkel en Rodenrijs benelux@flexim.com • **FLEXIM France SAS Limonest** info@flexim.fr • **FLEXIM Instruments UK Ltd.** Northwich sales@flexim.co.uk • **FLEXIM Middle East Dubai South** salesme@flexim.com • **FLEXIM Flow India Pvt. Ltd** Rohini New Delhi salesindia@flexim.com • **FLEXIM Japan Chiba** salesjapan@flexim.com • **FLEXIM Instruments Asia Pte Ltd.** Singapore salessg@flexim.com • **FLEXIM Instruments China Shanghai** saleschina@flexim.com • **FLEXIM S.A., Chile** Las Condes info@flexim.cl • **FLEXIM AMERICAS Corporation, USA** Edgewood, NY salesus@flexim.com

