

Aim

To establish a metrological infrastructure which makes it possible to characterize the performance of domestic water meters close to real-world conditions





Background

Normative documents

for water meters date back to „mechanical meter times“
with various adaptations

Changes

in consumption characteristics
water meter technologies and measuring ranges

Discrepancies

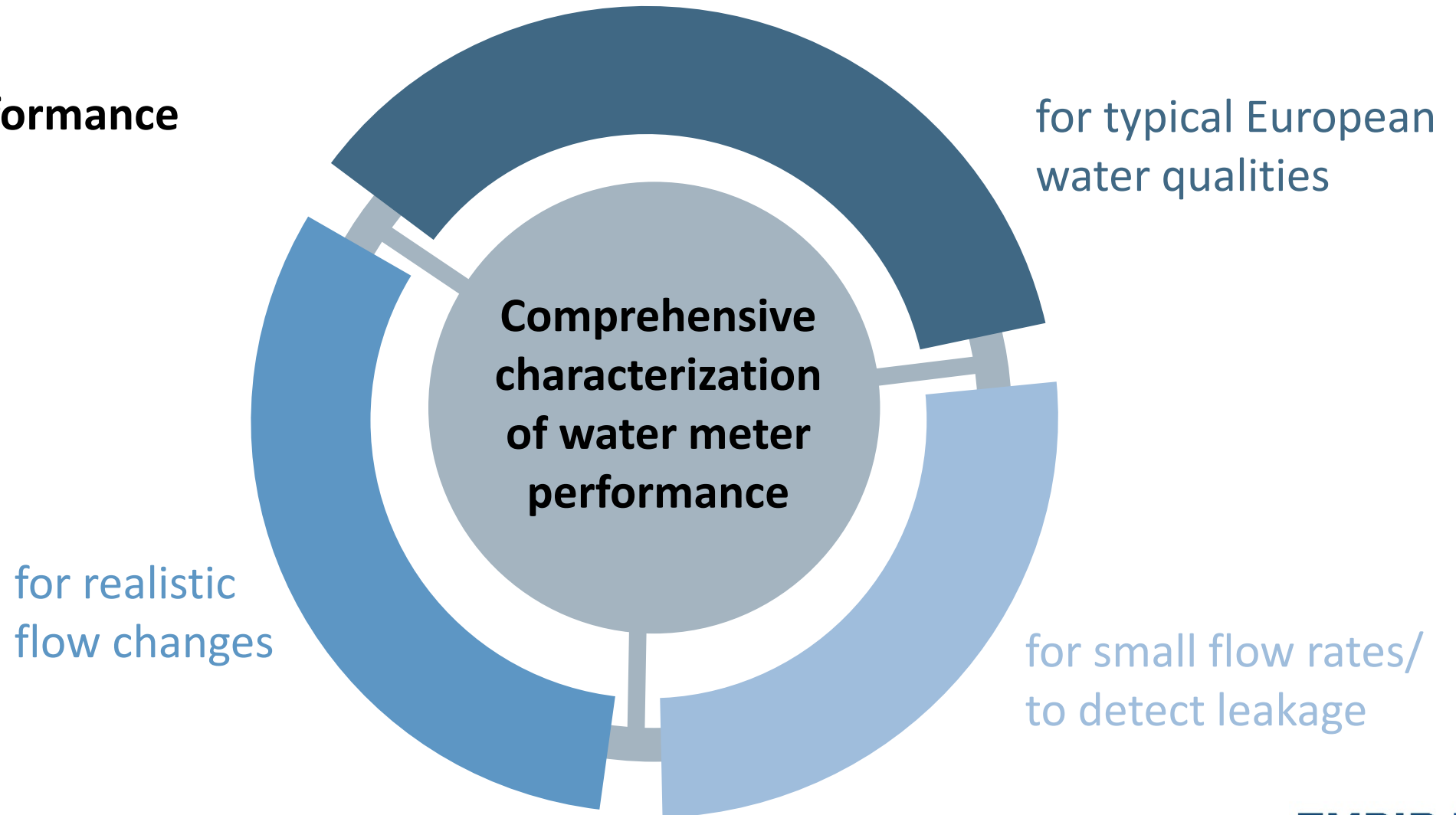
between operating conditions and prescribed tests

**How much is the
measurement performance
of water meters affected?**



Development of metrological infrastructure and tests

Assessment of water meter performance





Project outputs

- Accessible via project website
<https://www.ptb.de/empir2018/de/metrowamet/information-communication/downloads/>
 - Metering Site Identification Scheme
 - Recommendations for the acquisition of consumption profiles of potable water in households including guidelines for the selection of equipment, time scales and sampling rates
 - Technical report describing the algorithms for the detection and evaluation of leakage
 - ...
 - User interface to create plots of measurement deviations of water meters depending on different parameters



Project outputs

■ Publications

- Pietrosanto, A., Carratu, M., Liguori, C., 2021. Sensitivity of water meters to small leakage. Measurement, vol. 168, <https://doi.org/10.1016/j.measurement.2020.108479>
- Büker, O., Stolt, K., Lindström, K., Wennergren, P., Penttinen, O., Mattiason, K., 2021. A unique test facility for calibration of domestic flow meters under dynamic flow conditions. Flow Meas. Instr., vol. 79, <https://doi.org/10.1016/j.flowmeasinst.2021.101934>
- Schumann, D., Kroner, C., Unsal, B., Haack, S., Kondrup, J., Christophersen, N., Benkova, M., Knotek, S., 2021. Measurement of water consumption for the development of a new test regime for domestic water meters. Flow Meas. Instr., <https://doi.org/10.1016/j.flowmeasinst.2021.101963>
- Kroner, C., Akselli, C., Benková, M., Borchling, A., Büker, O., Christoffersen, N., Pavlas, J., Schumann, D., Seypka, V., Unsal, B., Warnecke, H. Evaluation of the measurement performance of water meters depending on water quality. Water Supply, submitted July 2021
- Ogheard, F., et al. Development and validation of a dynamic primary standard for unsteady liquid flow calibration. Meas. Sci. and Techn., submitted July 2021
- Büker, O., Stolt, K., Kroner, C., Benkova, M., Pavlas, J., Seypka, V. Investigations on the influence of total water hardness and pH value on the measurement accuracy of domestic cold water meters. Water, submitted August 2021
- Warnecke, H., Kroner, C., Ogheard, F., Kondrup, J.B., Benková, M., Büker, O., Haack, S., Huovinen, M., Unsal, B. New metrological capabilities for measurements of dynamic liquid flows. Metrologia, to be submitted



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