



Metrology for Real-World
Domestic Water Metering

Recommendations for acquisition of consumption profiles

Johan Bunde Kondrup

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Introduction



- **Johan Bunde Kondrup**
 - Project Manager at FORCE Technology.
 - WP Leader on Working Package 1.
 - Department for liquid flow and type approvals.
- **FORCE Technology is a technology consultancy and service company**
 - Type approvals and tests of Water, Heating and Cooling Meters.



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Content

- **Working Package 1**
 - Understanding the context of our recommendations
- **The Recommendations**
 - Equipment
 - Risk mitigation
 - Legal requirements

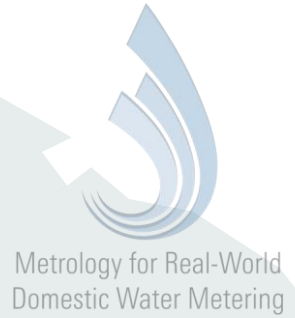


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Working Package 1

Infrastructure to assess domestic water meters under dynamic load changes.

- Collect data and create consumption profiles
- Create infrastructure for dynamic tests of domestic water meters
- Test a variety of commercially available domestic flow meters



Working Package 1

Output

- Site Identification Scheme
- Technical guide for dynamic tests
- European infrastructure for dynamic tests
- Recommendations for future acquisition of consumption profiles
- Report on the performance test of domestic water meters under dynamic loads



Recommendations



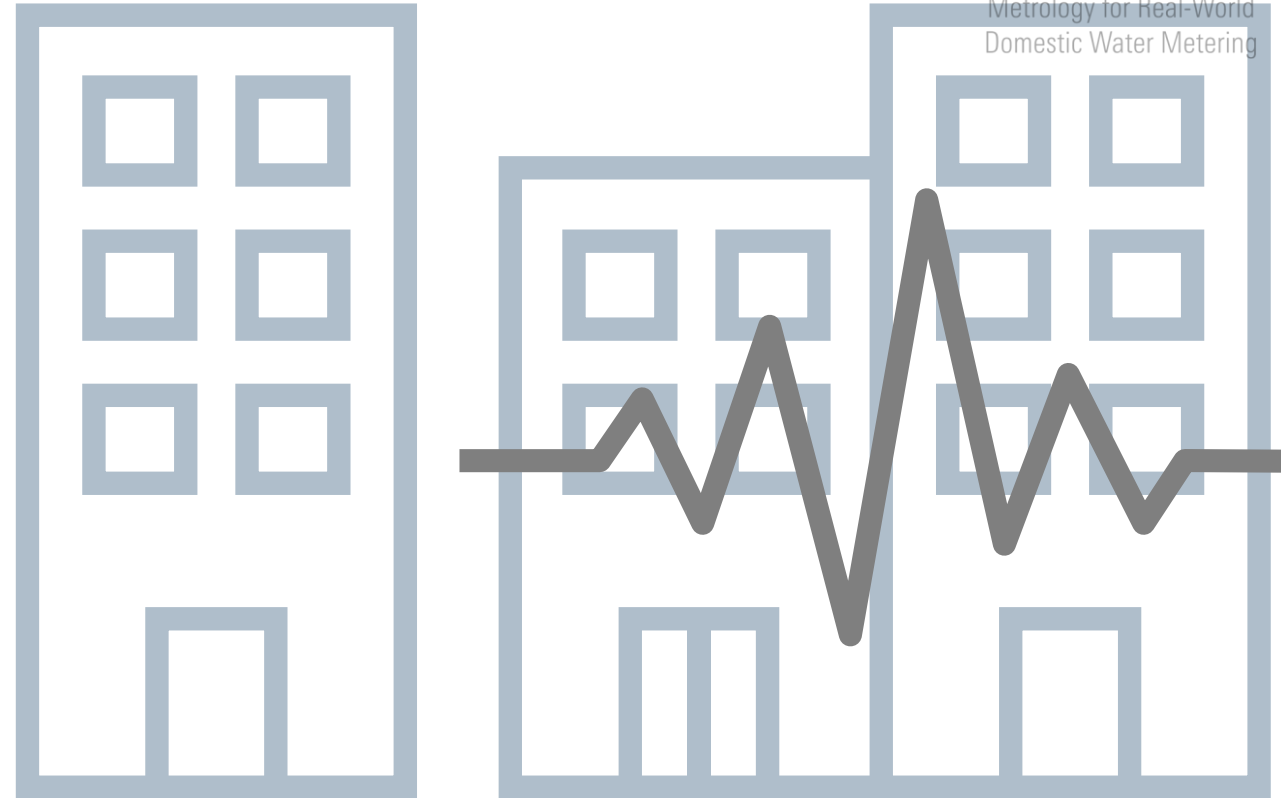
Measurement Equipment



Logging Requirements



Logging Specifications

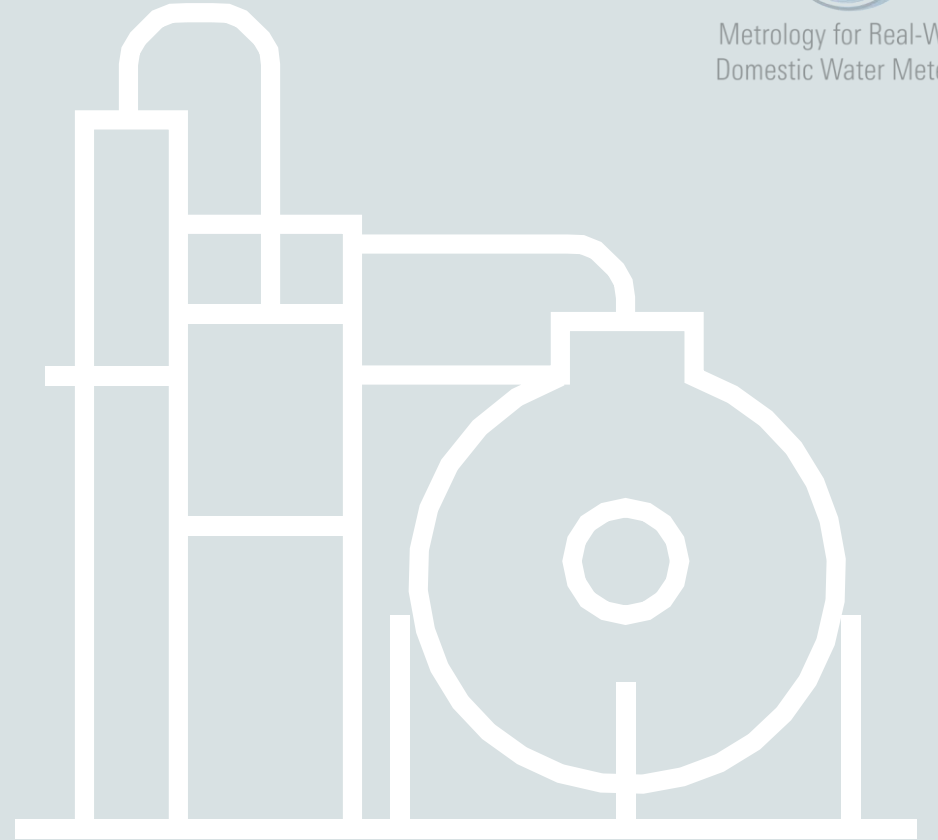


Measurement Equipment

- Accuracy – 0.2% or better
- Dynamic range 20:1 or better
- Resolution 0.01 L/pulse or better
- MAT 50 °C
- MAP 16 bar
- Low sensitivity to disturbances
- Battery powered



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Logging Equipment

Automated data acquisition system with battery power is recommended.

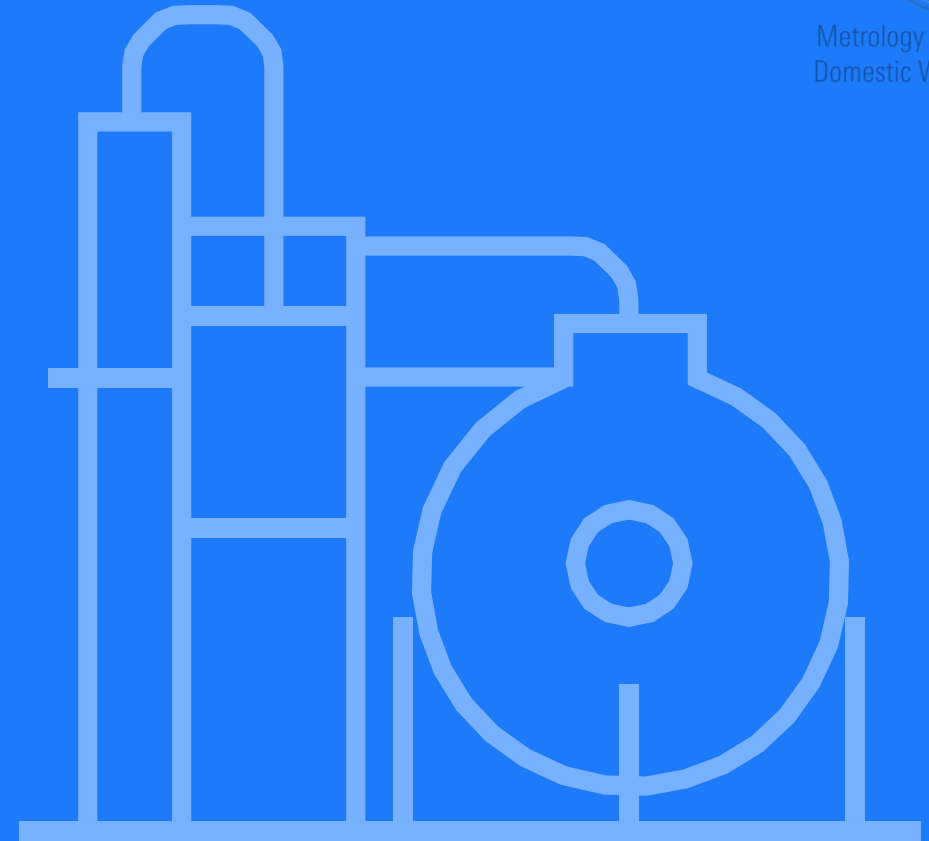
Secured from tampering and environmental damage i.e.. heat, humidity, flooding etc.

Make sure that the system have battery and memory to run the entire duration of the measurements.

In case data transmission is used, it is recommended that all data is transmitted and not just a summary of daily consumption.



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Logging Specifications



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- Rate: 1 Hz
- Duration: Optimally 1 year, Minimally 4 occupied weeks
- Meta-data:
 - Number of residents
 - Urban or country area including line pressure
 - Housing type and number of utilization units/tapping points
 - Feed type (direct or tank)
 - Installation site of water meter (inside, outside, well)
 - Meter type

Risk mitigation



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Water

Supply Quality

Sites with high amounts of air or particles should be avoided if possible.



Occupancy

Normal Consumption

Its is important that the housing(s) are occupied and the use pattern are estimated to be of a normal character during the data acquisition.



Equipment

Validate the equipment

Make sure that the reference equipment is calibrated and installed correctly according to manufactures specification.

Legal

- Make sure to follow national and EU legislation including GDPR
- Get written agreement from property owner and inhabitants
- Make sure you follow national regulations when installing equipment in water supply lines, as not to introduce contamination



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Keep in touch

Johan Bunde Kondrup
Project Manager
jbko@force.dk
+4543250652
forcetechnology.com

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