WLM-SYSTEM pat. reg.

An integral and active Water Loss Management.

Network monitoring 4.0

- **Reducing water loss sustainable**
- **Detecting leaks immediately**
- **Network survey and leak zone detection**

Martinek GMBH | The company

- More than 35 years of experience in leakdetection and surveying of pipe networks
- We are specialist for hydraulic networks survey and pre-detection of leaks.
- Martinek developed and produce the WLM-SYSTEM (WaterLossManagement-SYSTEM) – network monitoring system
- Our scope: – Sensoric – Datalogger – transmission of data – datamanagement – Visualisation and analysis of data AQUALYS
- We consult utilities in terms of network monitoring and strategic water loss management.
- Our solutions are highly cost effective and easy applicable
- **Our goal:** Producing and implementing a tool that empower utilities and water suppliers to save and secure the most important goods, *costly produced clean potable water*

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MEASUREMENT TECHNOLOGY

WHY NETWORK MONITORING

- **Understanding of „black box“ waternet**

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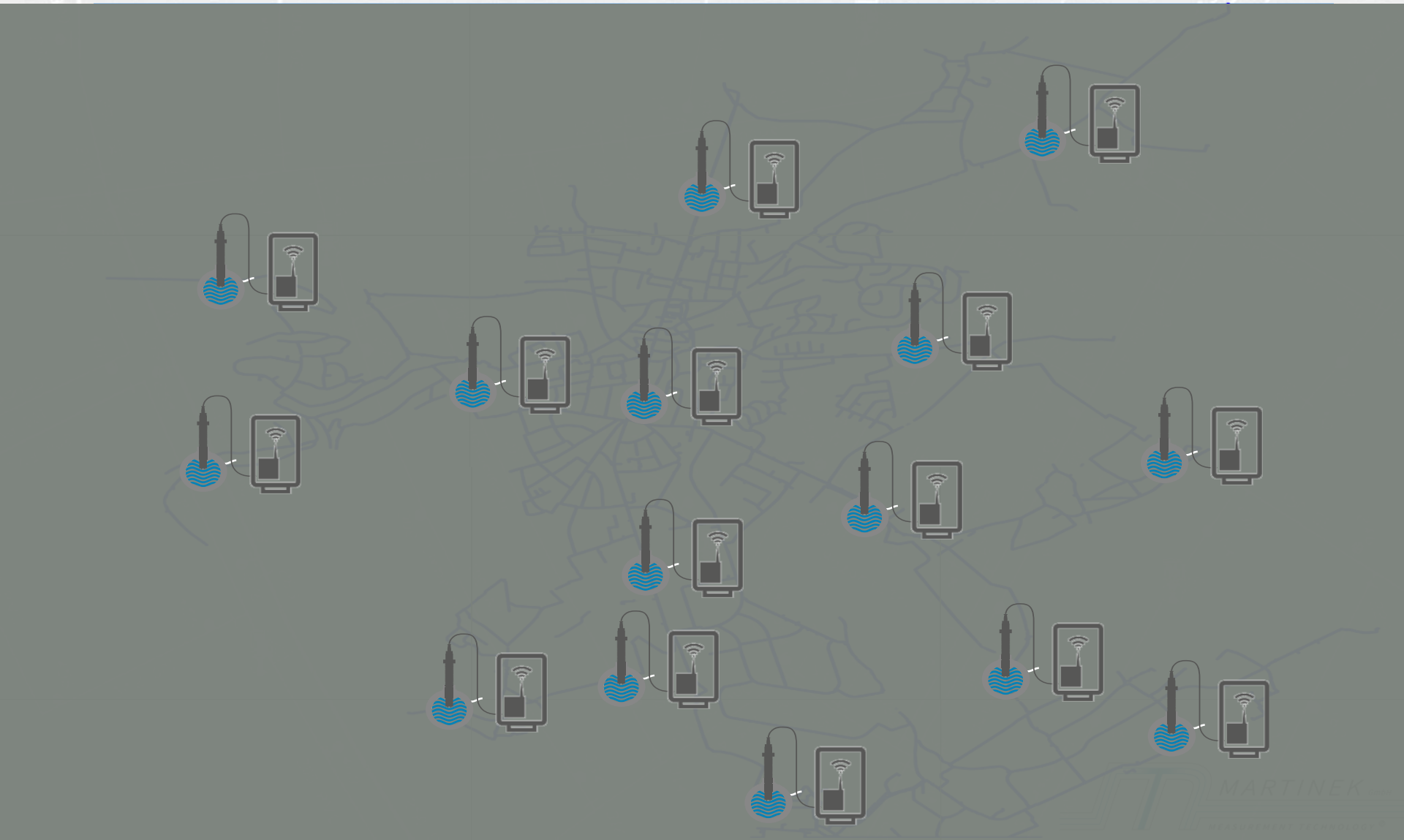
„BLACK BOX“ - Pipe Network

Measuring leads to more Transparancy & Understanding



WHY NETWORK MONITORING

- **Understanding of „black box“ waternet**
  - Network calculation
  - Recognition of closes valves, open hydrants, flushing actions,...
  - Customer behaviour
  - ...
- **Strategic Waterloss Management**
  - Immediate Information about network contdition
  - Information about waterloss volume
  - Survey of Repairs
  - ...

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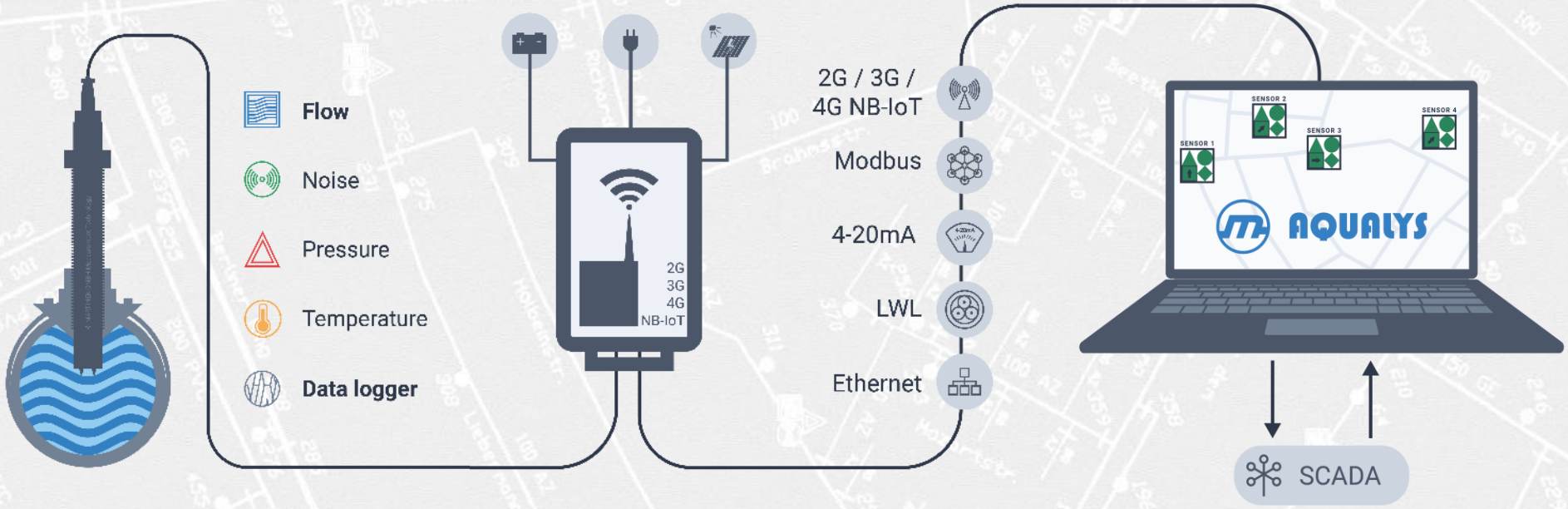
WLM-SYSTEM | Components

WLM-Sensor

C-Box

AQUALYS Software



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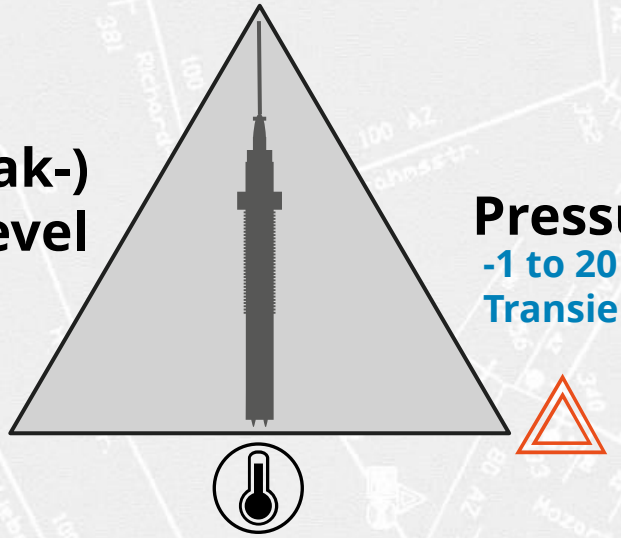
WLM-Sensor | 4 Parameters at once

Flow

- Bidirectional
- Magnetic inductive
- +/- 9999 mm/s
- Startup 10 mm/s

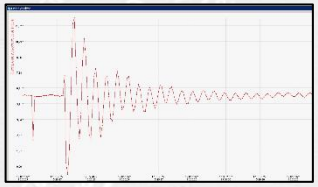


(Leak-) Noiselevel

0-100 Units

Pressure

-1 to 20 bar
Transients



Optional Temperature

to +60°C

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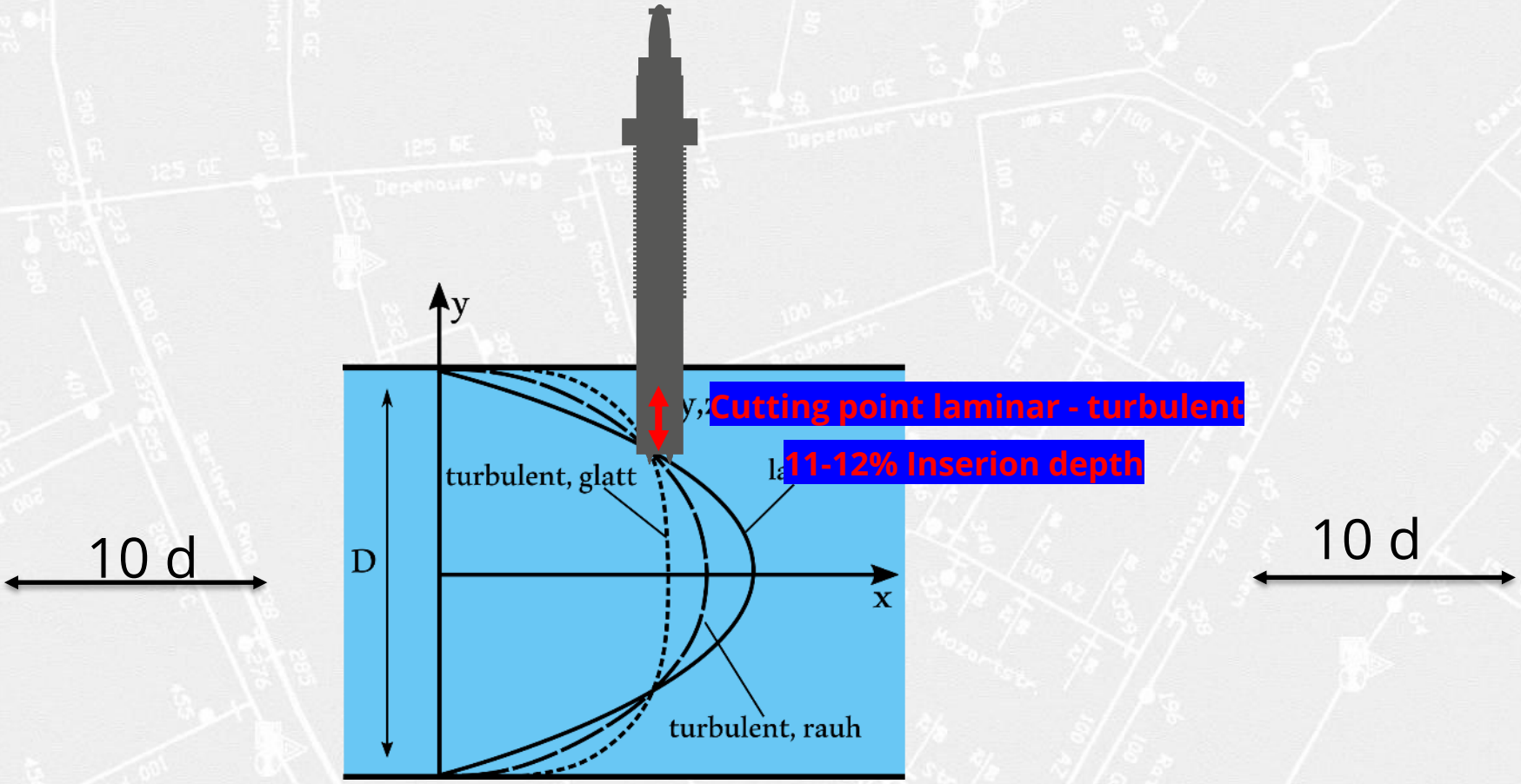
WLM-Sensor | Flowprofile | Principle | Insertion Position



Flow speed profile on waterpipe

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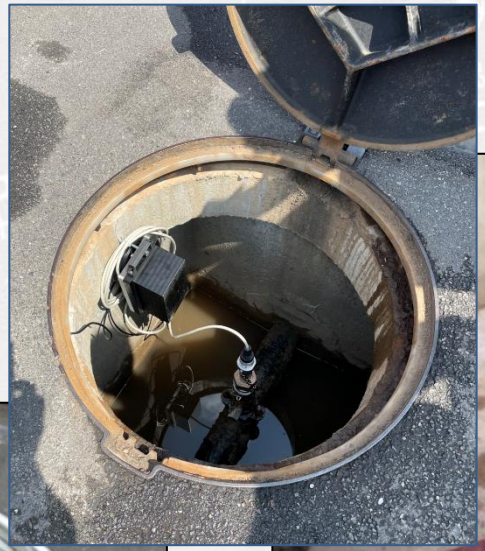
WLM-SYSTEM | Installation in concrete chamber

Gate Vale



Trunk mains installation

Shut off pipe saddle

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WLM-SYSTEM | INSTALLATION VIA SPECIAL CHAMBER

»Insertion tool

SPECIAL CHAMBER

- *Installation without any interruption*
- *Manufactured by HAWLE GmbH*
- *Easy installation and dismantling*
- *No concrete chamber construction – just small street cap*

- *HIGHLY COST EFFECTIVE!*

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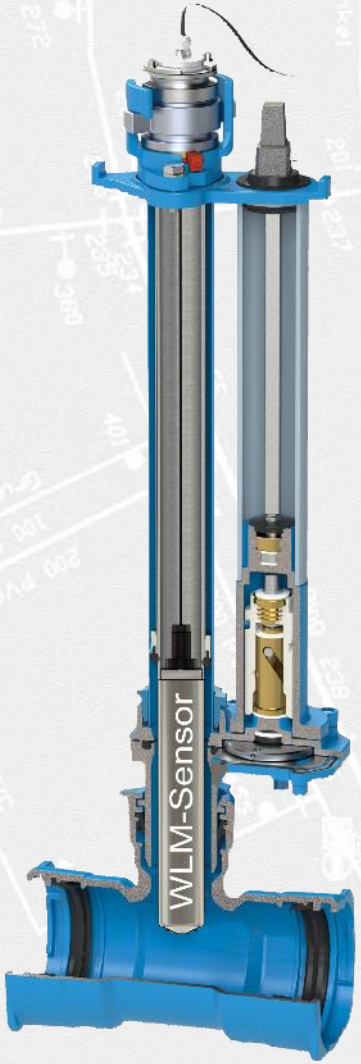
WLM-SYSTEM | Installation via underfloor hydrant



Hawle underfloor hydrant

- Every existing underfloor hydrant changes to a potential measurement position.
- Various length available
- Highly cost effective as only an “Upgrade” is necessary!

»Insertion tool

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WLM-SYSTEM | Features

- With compact, solid shape (**IP68**, 5m, 365 days/year)
- No moving parts, no pressure loss or abrasion
- Measuring flow, pressure, noise and temperature simultaneously
- Low start-up flow rate. Minimum measurable flow velocity **0.01m/s** with long-term stability
- **Live – Data** available for active leak detection!
- Automatic **remote reading** functions with GPRS (2G/3G/4G/NbIoT,...Ethernet, Modbus, 4-20mA,...)
- Integrated datalogger with buffer battery (no data gaps!)
- Power supply via battery 3 years, solar panel or 220VAC
- Installable on every pipe diameter and all materials (Steel, AC, PE, PVC, Cast Iron,...)
- Measuring of all parameters simultaneously (min, max, avg,..)
- Various interfaces to **connect to SCADA** system
- Highly cost effective (ca. 1:3 to common installations)
- Intuitive **Software AQUALYS** dedicated to survey of pipe networks

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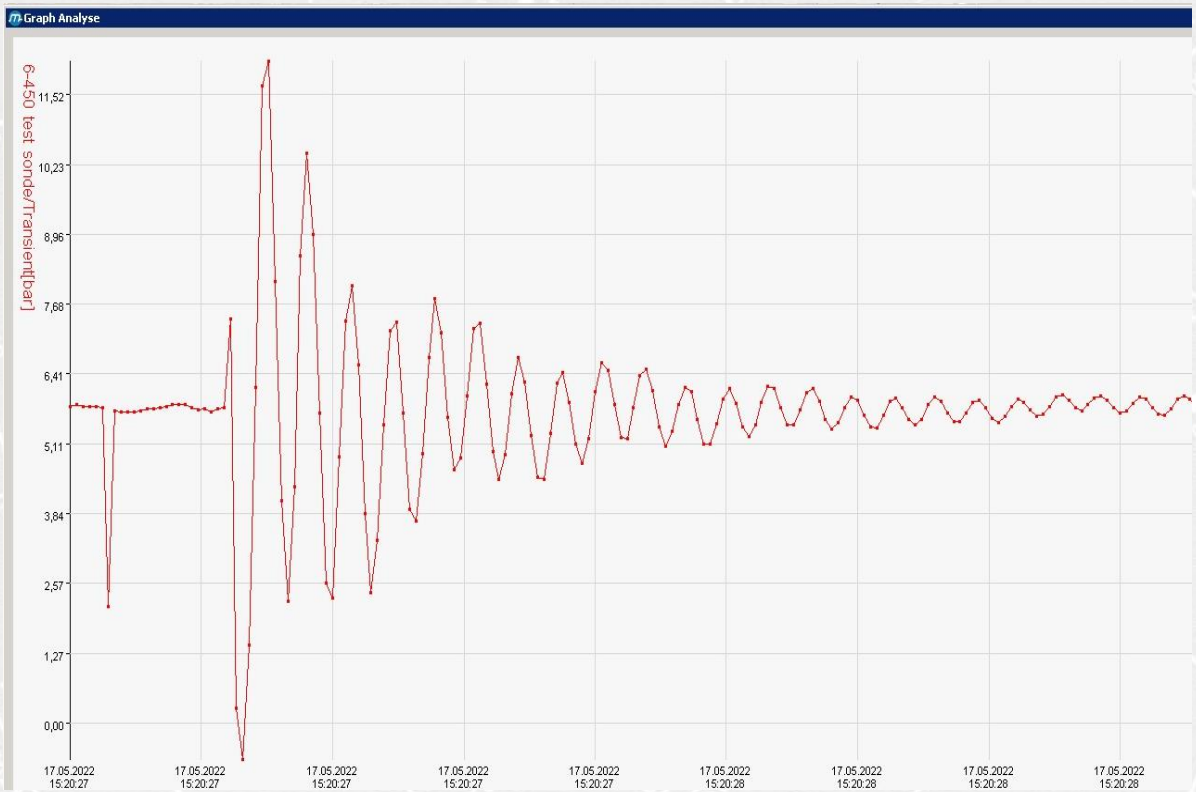
WLM-SYSTEM | Special feature
Transient Detection – Water-hammers

- Up to 100Hz frequency
- Also available with battery supply (5Hz) survey and 100Hz logging
- -1 to 23 bar
- Parallel to recordings of FLOW, PRESSURE and NOISE
- Free adjustable triggers



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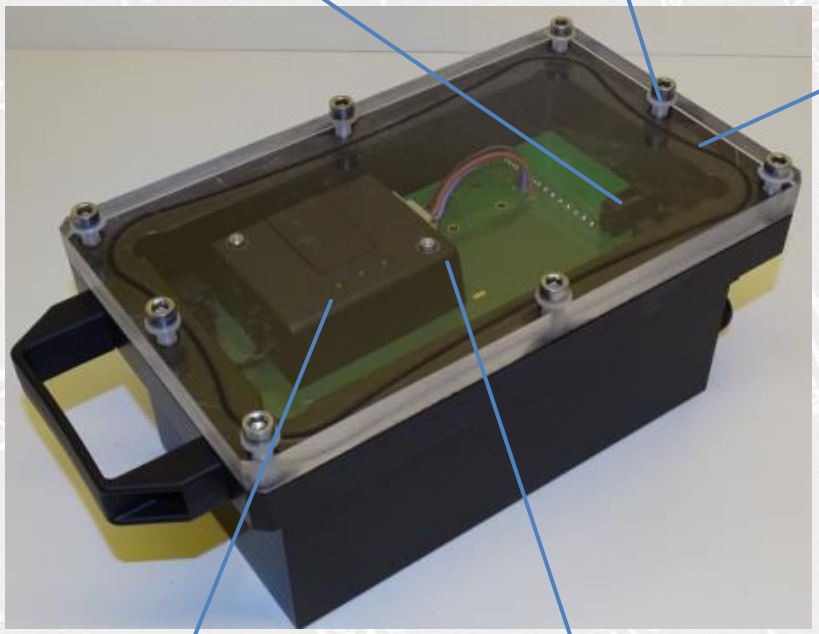
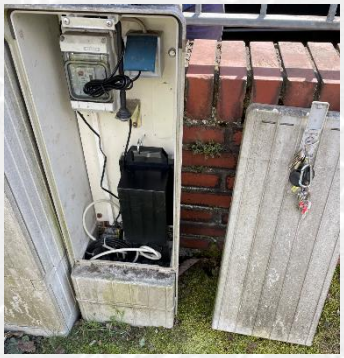
WLM-SYSTEM | Power supply grid / street light

Visible fuse

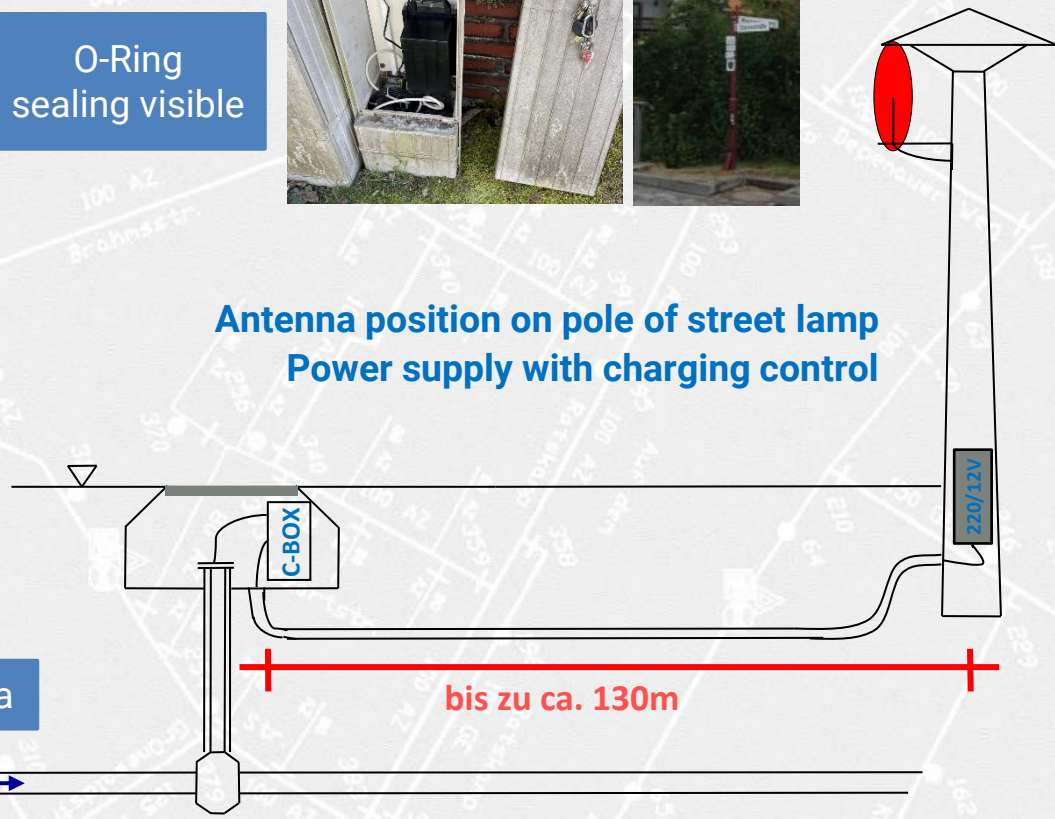
Up to 5 bar (50 m) IP 68



O-Ring sealing visible



Antenna position on pole of street lamp
Power supply with charging control



Modemstatus LED

External or internal antenna

Installation in the street cap
with battery pack and modem

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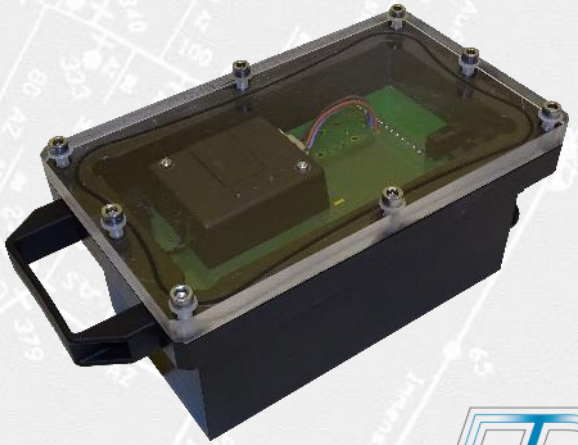
WLM-SYSTEM | Connection to solar panel / battery pack

Solar panel online data
(24h - every minute)

Rechargeable battery
(12 months)

Battery for continuous operation
(up to 3 years)



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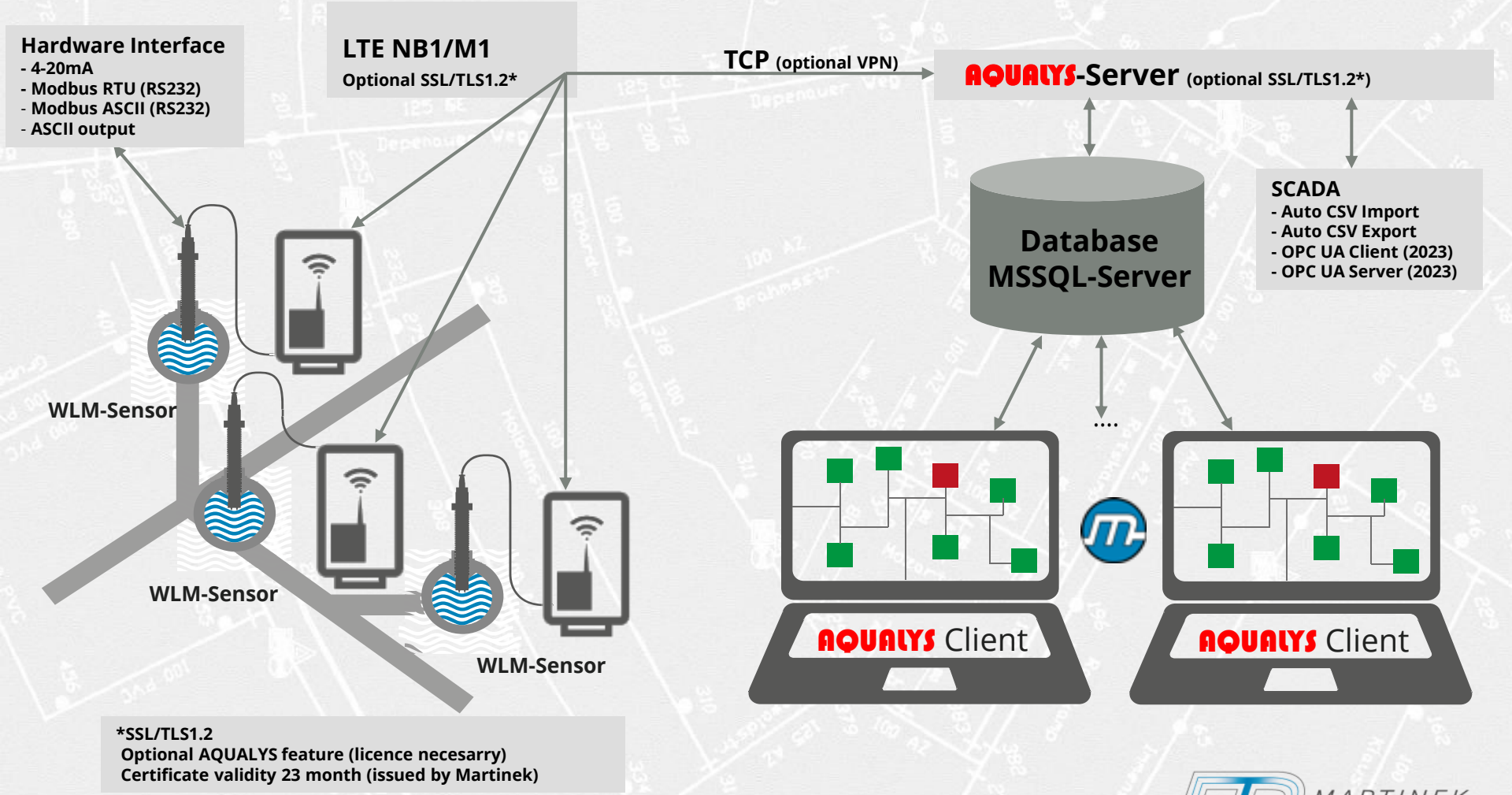
WLM-SYSTEM | Online-Communication



*SSL/TLS1.2
Optional AQUALYS feature (licence necesarry)
Certificate validity 23 month (issued by Martinek)

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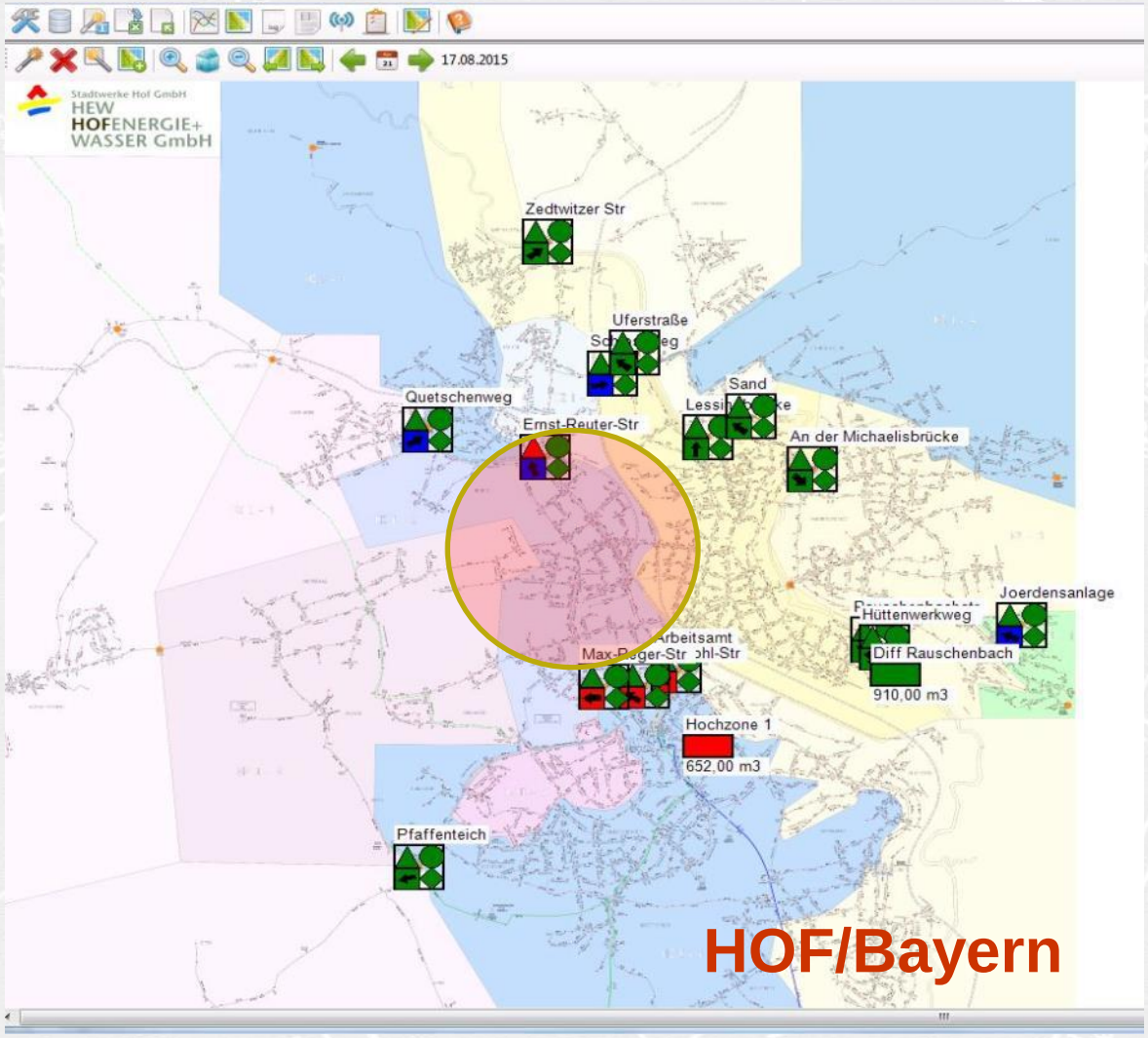
AQUALYS | Display and calculation for measured data



Hof (Germany)

GIS-MAP with WLM-Sensors allocation

- All values in range
- Flow reverse
- **ALARM!**

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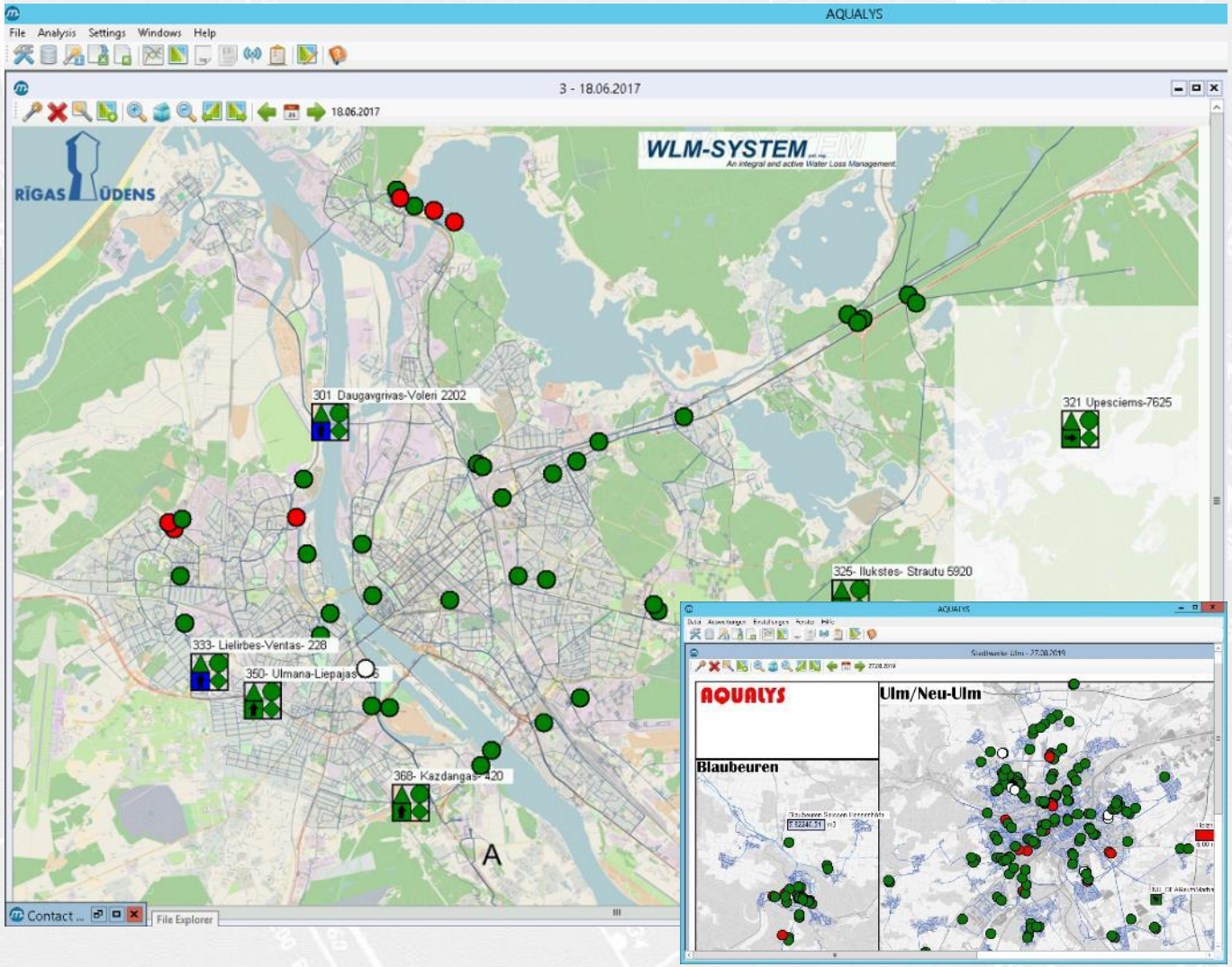
AQUALYS | Display and calculation for measured data



Riga/Lettland

GIS-MAP with WLM-Sensors allocation

- All values in rang
- Flow reverse
- **ALARM!**

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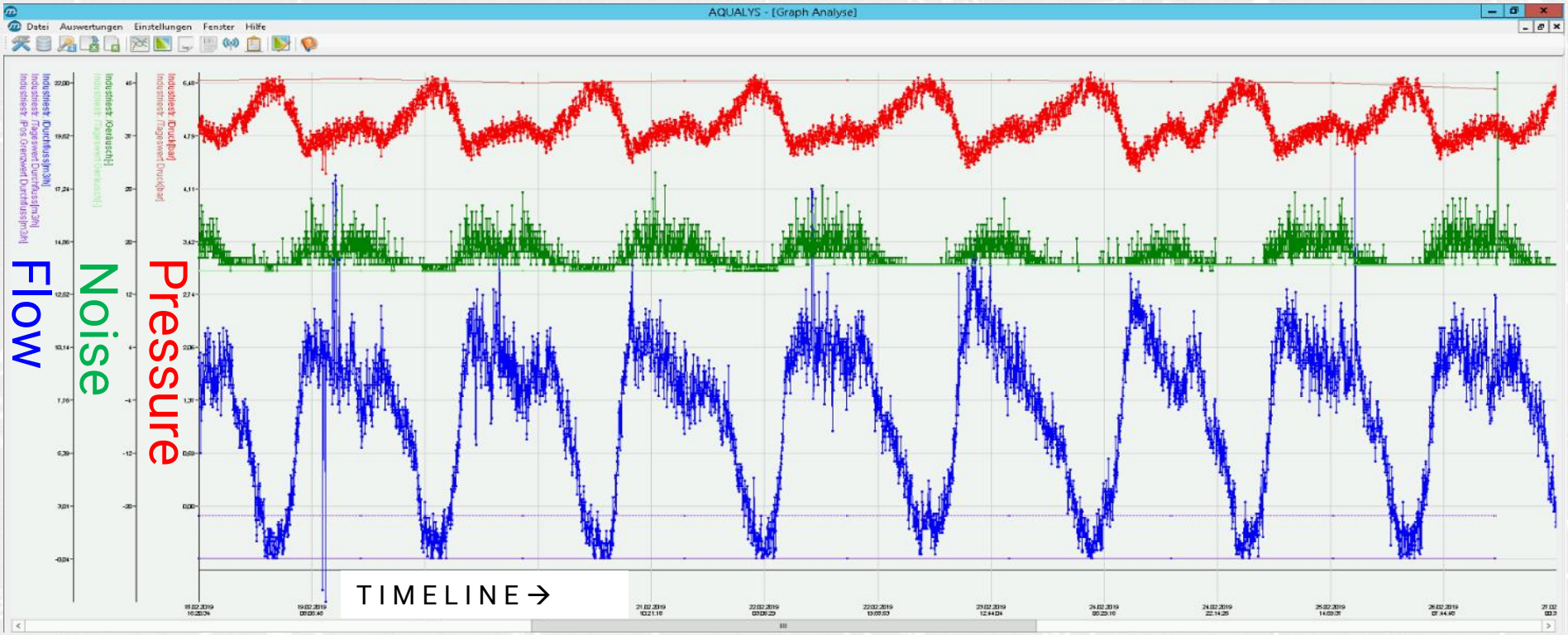
AQUALYS | AUTOMATIC DETERMINING OF DAILY VALUES



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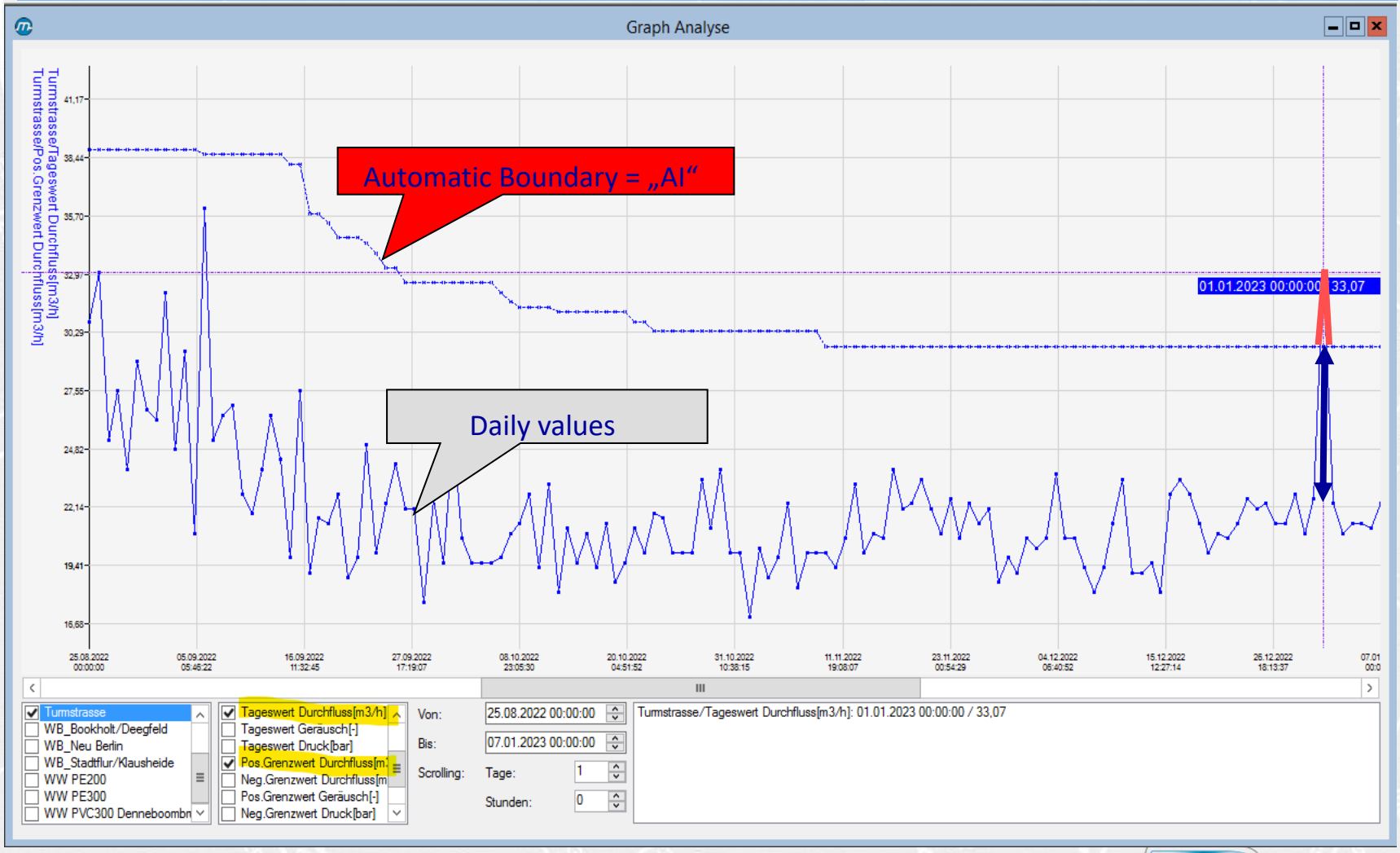
AQUALYS | Automatic calculation of boundarys



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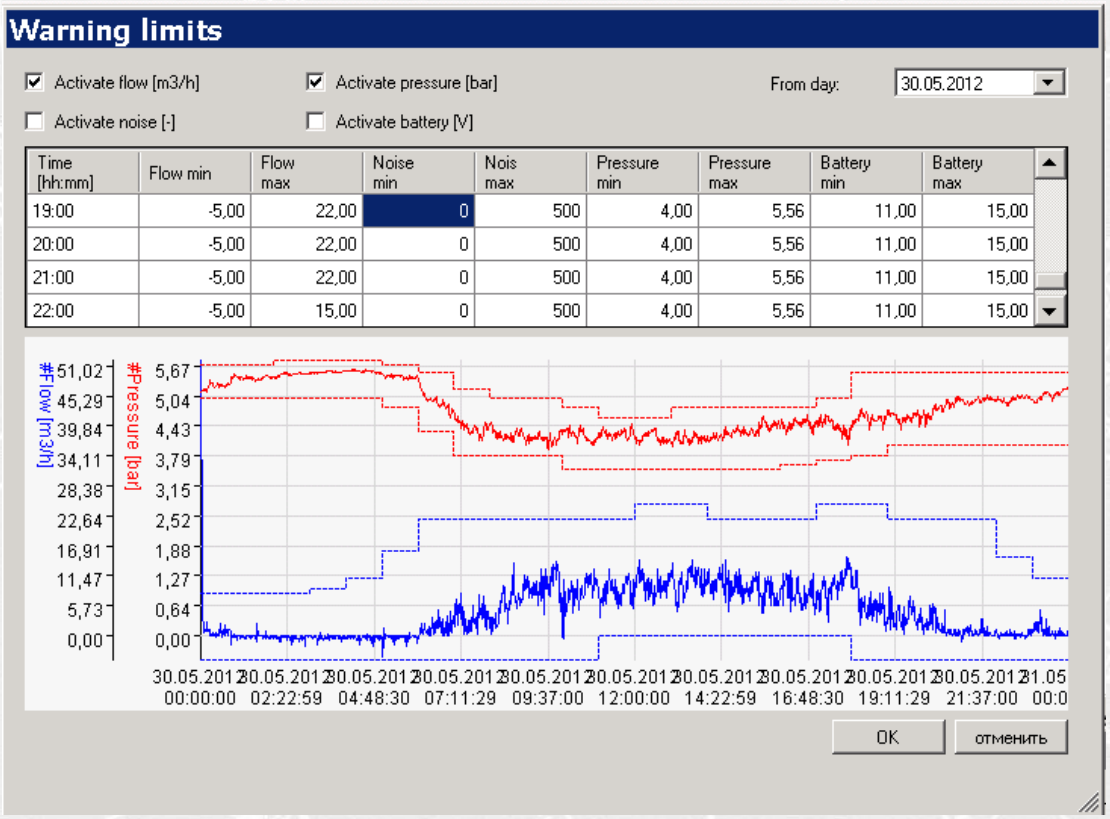
AQUALYS | 48 Boundaries / Parameter / Day



- 24 +/- boundaries
- Easy to setup
- Immediate warning via SMS or AQUALYS signal audio/visio
- Burst warning function

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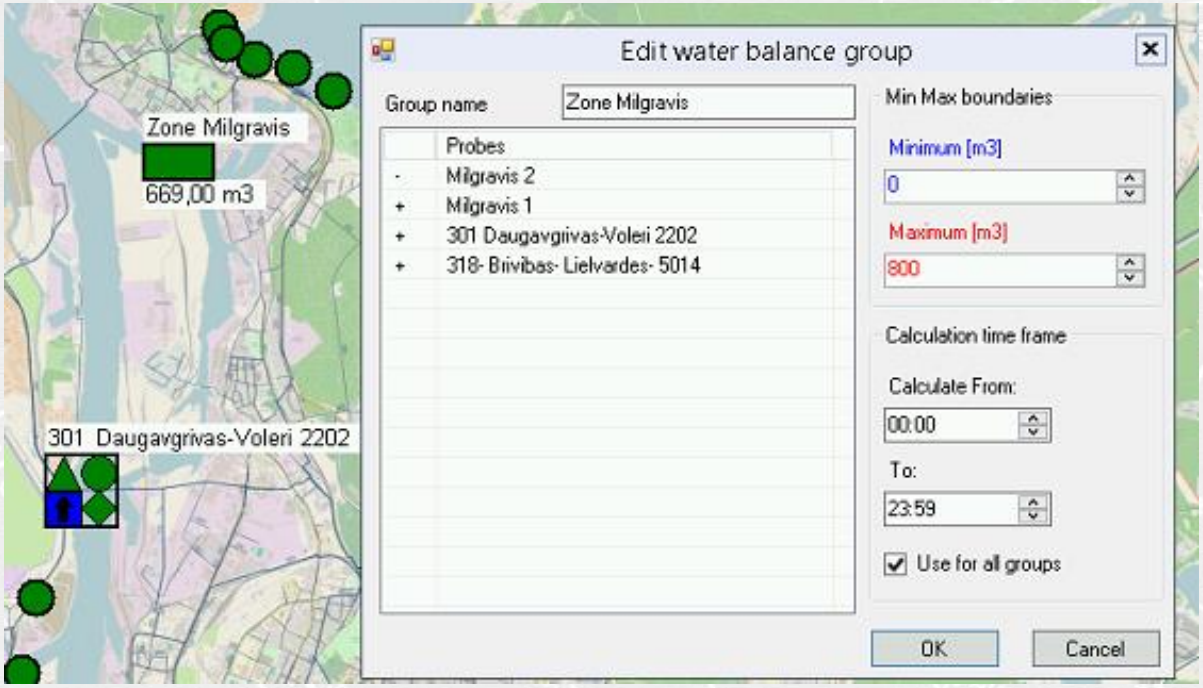
AQUALYS | Easy (time-based) water balance (0-24h)



- **Easy tool for combination of flow data to DMA**
- **Summation to totalizing values**
- **Warning for DMA**
- **Diagram display for DMA**
- **Time based water balance (i.e. 3-4h or 0-24h)**
- **Night flow analysis for DMA with AI boundary calculation**

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AQUALYS | Software WLM-SYSTEM

- Automatic and manually organized data transmission
  Bi-directional (TCP / GPRS / Glass fibre / GSM)
- Automatic calculation of daily and boundary values
- Remote setting of WLM-Sensors
- Integration of existing GIS map
- Connection to any SCADA system (bi-directional)
  - export and import data (from “foreign” flow or pressure meters)
- Server – Client architecture
- Alerts in case of crossing boundaries (SMS, audio, visual)
- Flooding or theft alarm (MS SQL Server)
- Totalizer – Quantifies balance of individual DMA‘s – physically or virtually
- Implementation of all kind of flow and pressure data
- Clear and easy presentation of displayed data
- Licence free software AQUALYS !!

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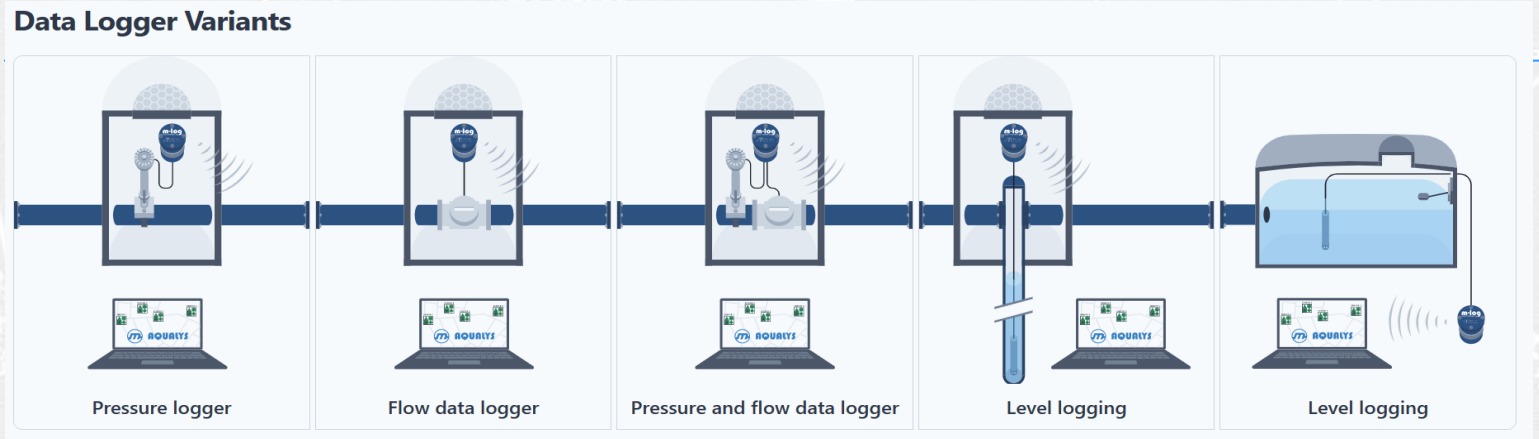
m-log | Data logger



- »Registration of pressure, flow, temperature, 4-20mA...
- »Input for Impulse Pos., Neg., and status (MID, Bulk meters, etc.)
- »Measurement of fluid level (reservoir, deep wells etc.)
- »Battery mode up to 10 years (GPRS) ; mains supply 220AC
- »Full Integration into AQUALYS
- »Data storage up to 1mio values
- »Remote parameterizing
- »IP 68 – 24h/365 days submersible
- »Internal or external antenna
- »24 boundary values/channel/day SMS warning

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WLM-SYSTEM | Picture gallery

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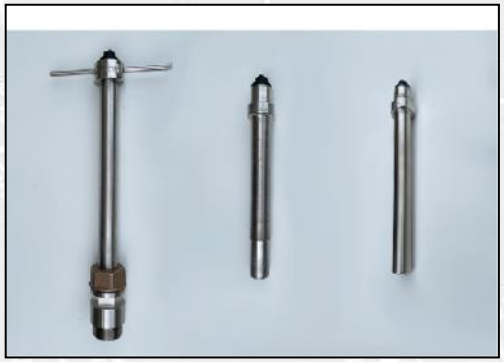
Martinek GmbH | Solutions – Product Overview

Measurement Technology



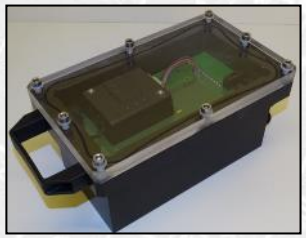
Multiparameter - WLM-Sensor

- Flow
- Pressure
- Noise
- Temperature
- Transients – water hammers
- Switch for flooding, ...
- Integrated datalogger

m-log data logger

- Pulse recording
- Pressure recorder
- Temperature recorder
- Transients
- Level metering
- Status switch (flooding/theft/level ...)

Data Transmission



AQUALYS

Software / Data management

Communication
Database/Data warehousing
Visualization
Connection to SCADA

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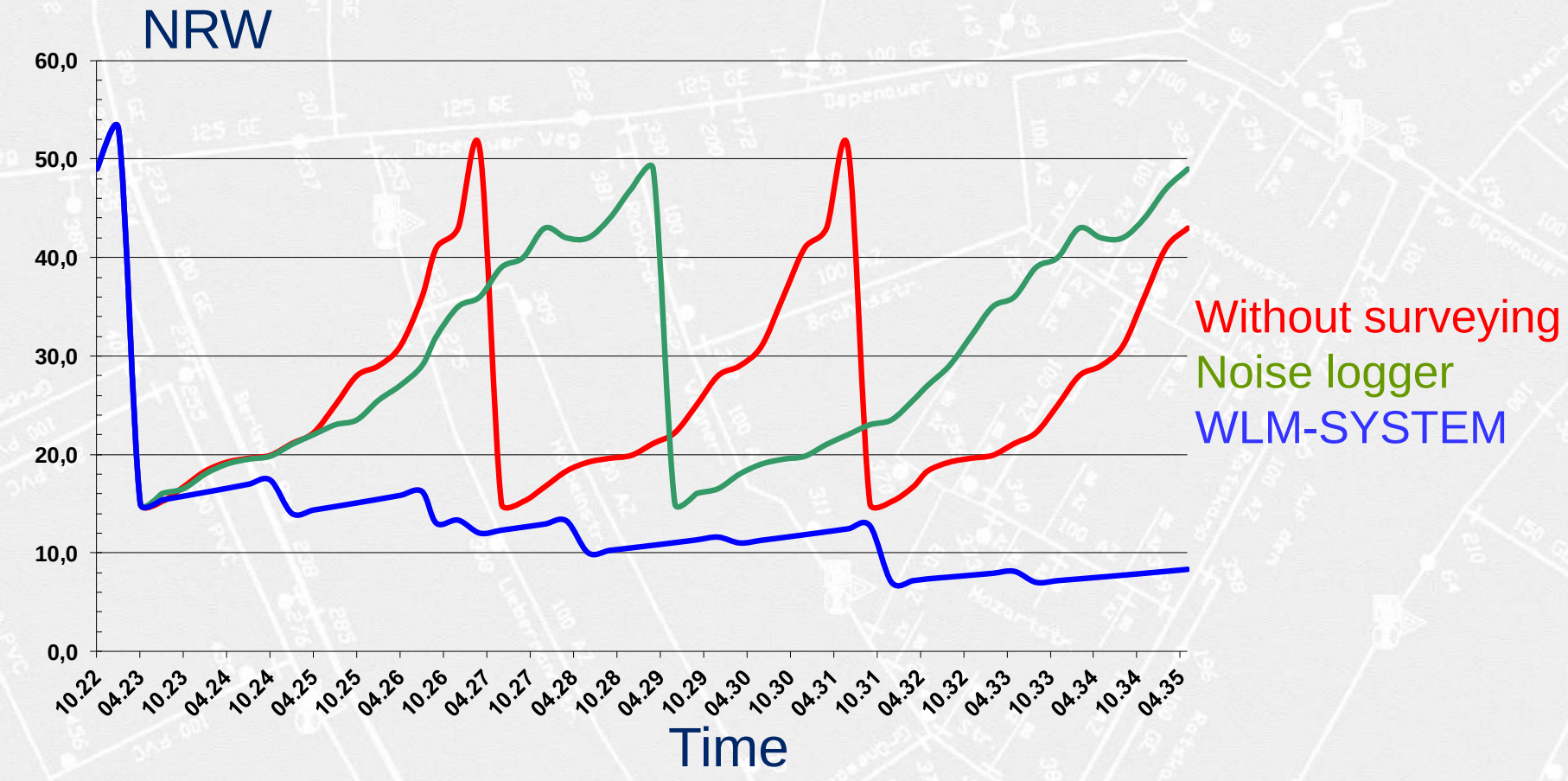
WLM - SYSTEM | Sustainablity



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WLM-SYSTEM

Thanks for your attention!

MARTINEK GMBH Measurement Technology

Burgweg 8 | 6840 Götzis | Austria

office@martinek.org | www.martinek.org

Phone +43 720 210021

Our references

BWB Berlin,

OOWV, HEW,

Brühl, Köln,

Tallinn, Riga,

Pula, ...