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Feb. 11th 2021

Smart Metering Inspiration

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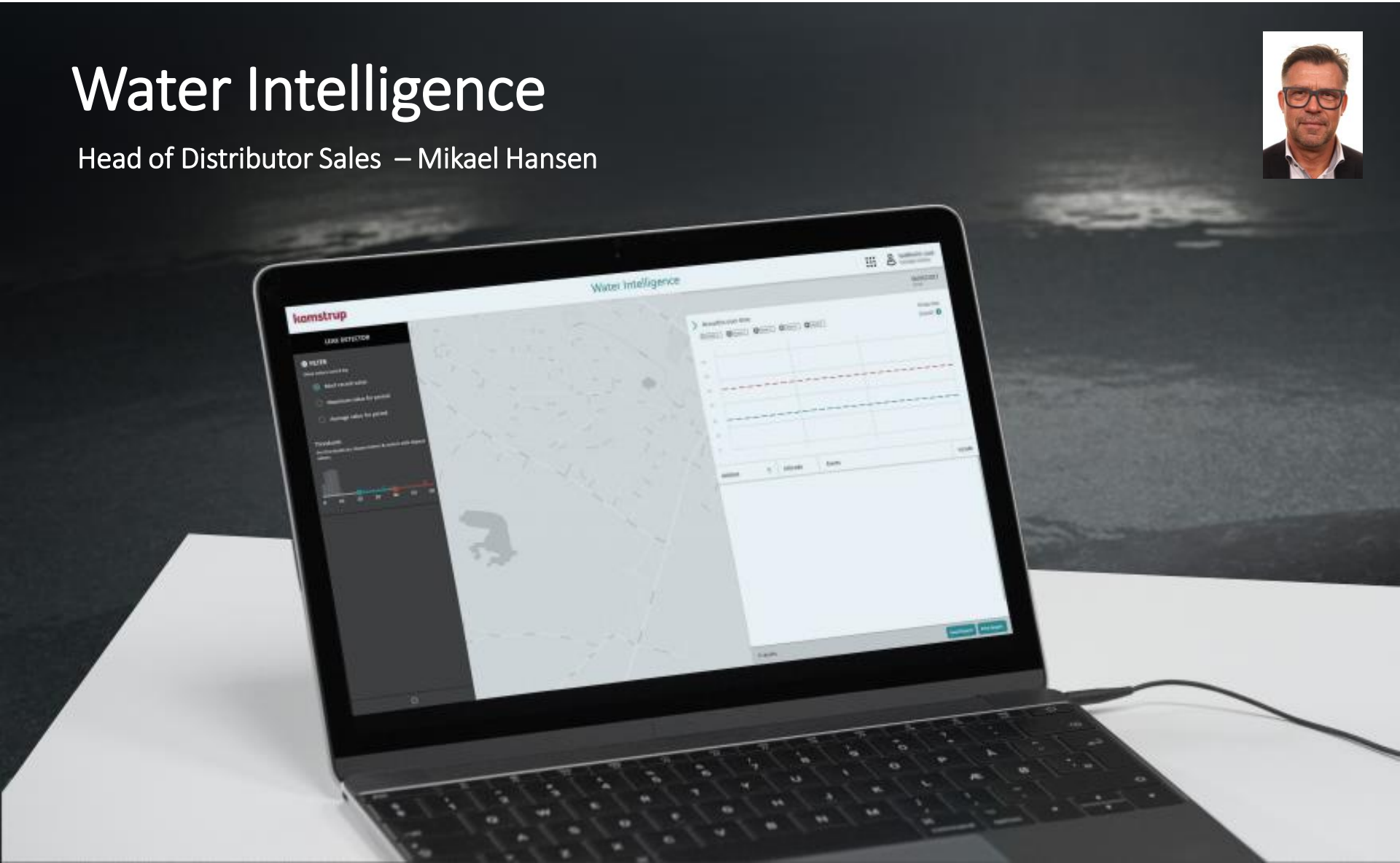
Water Intelligence

Head of Distributor Sales – Mikael Hansen



Agenda

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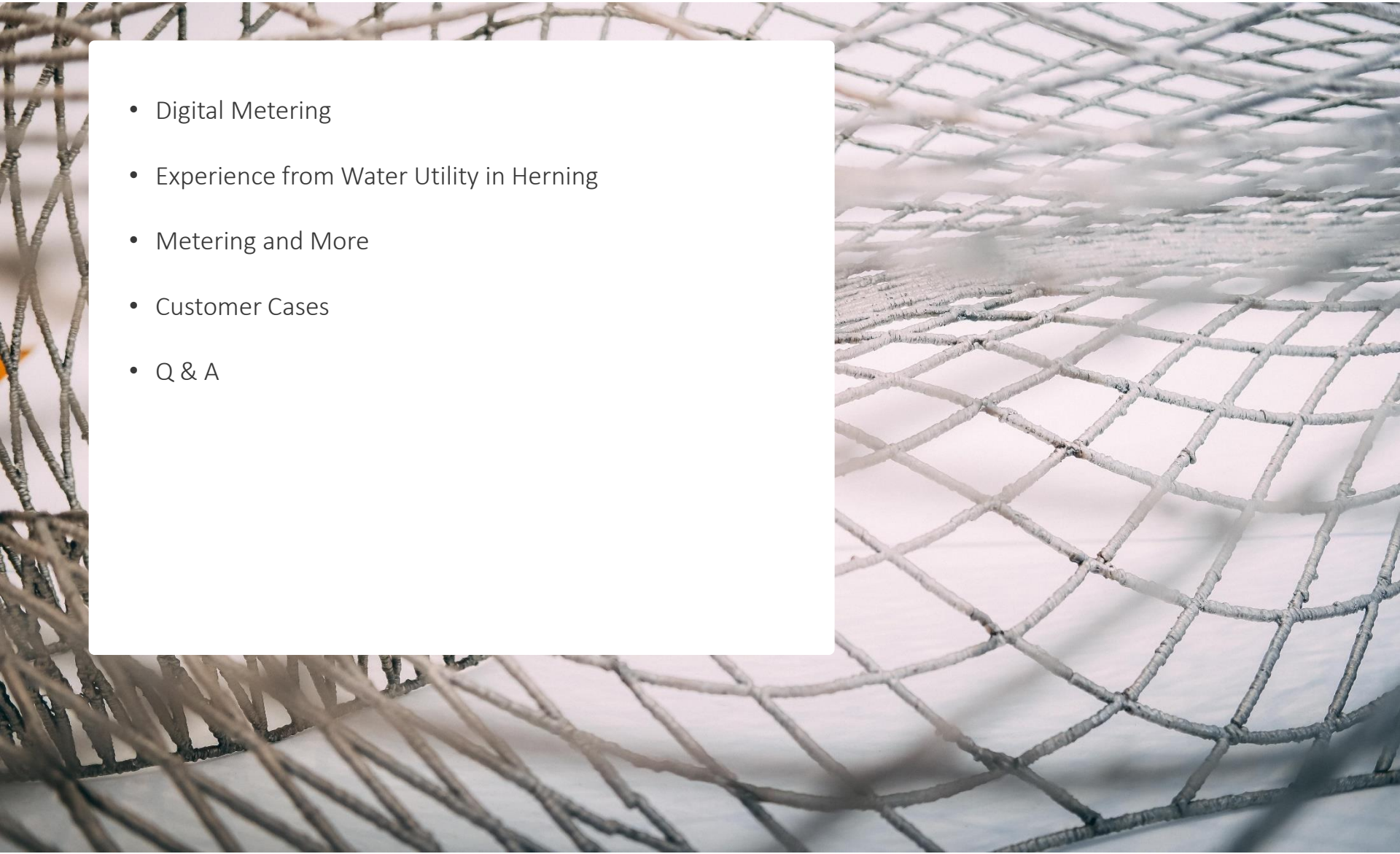

- Digital Metering
- Experience from Water Utility in Herning
- Metering and More
- Customer Cases
- Q & A

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Digital Water Metering

Pioneer of Ultrasonic Technology

The ultrasonic measuring principle

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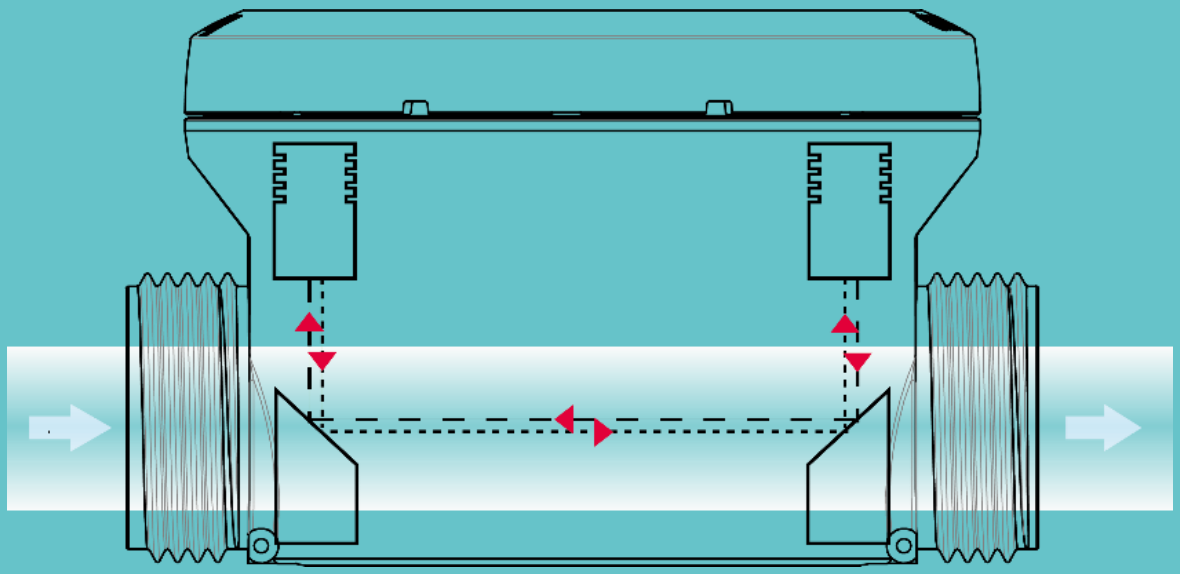
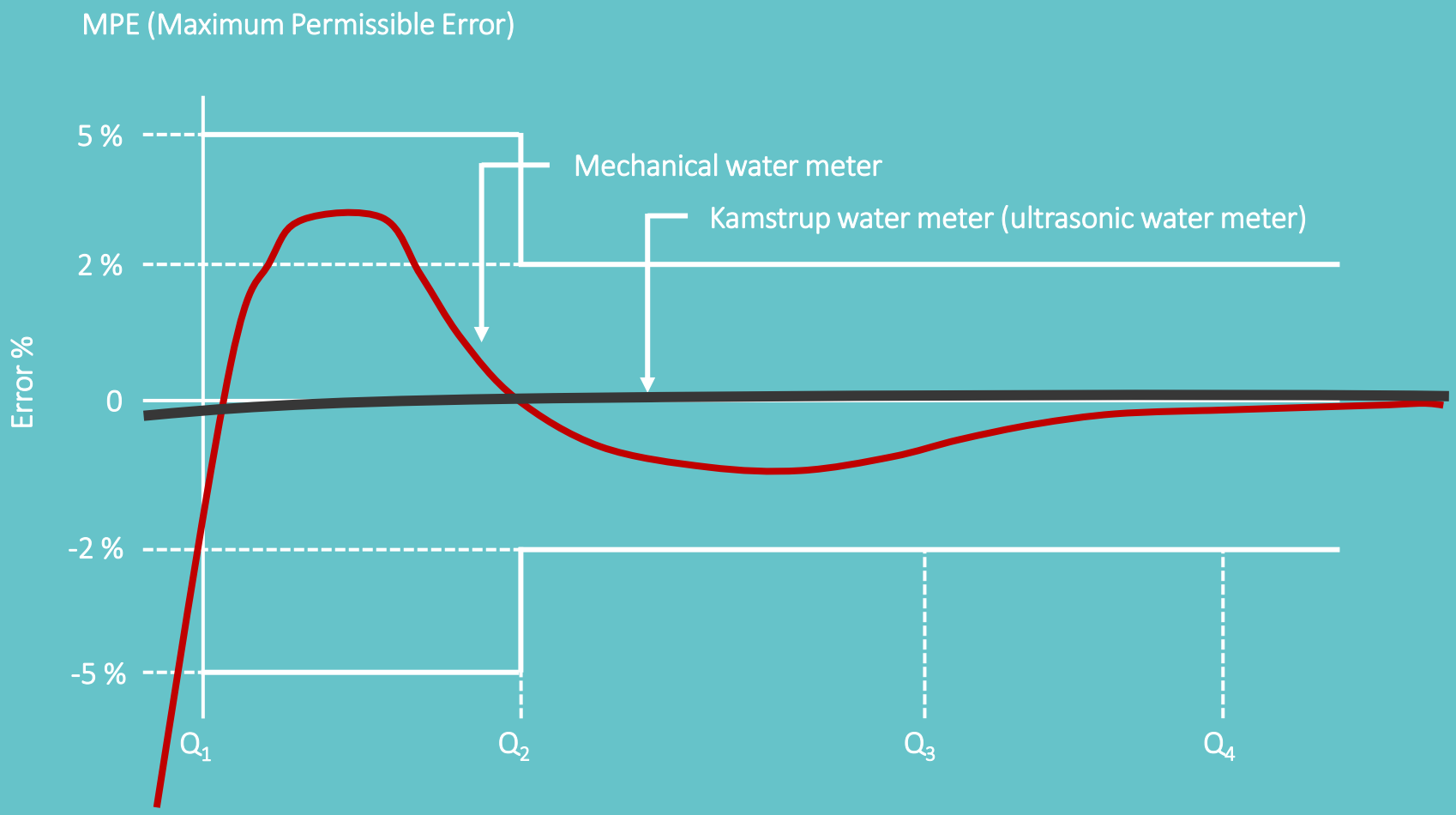


Two transducers send an ultrasonic signal in each direction through the water flow

Based on the speed difference between the two signals and the inner diameter, the flow rate is calculated

Accuracy


MPE (Maximum Permissible Error)
5 %
2 %
0
-2 %
-5 %
Error %
Mechanical water meter
Kamstrup water meter (ultrasonic water meter)
Q_1
Q_2
Q_3
Q_4

Data logger

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Data loggers		
Logging interval	Logging depth	Logged value
Yearly logger	20 years	Volume register
Monthly logger	36 months	Volume register
Daily logger	460 days	Volume register
Hourly logger	60 days	Volume register
Info logger	50 events	Info code / date

Content				
Register type	Yearly logger (20 years)	Monthly logger (36 months)	Daily logger (460 days)	Hourly logger (1440 hours)
Date (YY.MM.DD)	✓	✓	✓	✓
Volume V1	✓	✓	✓	✓
Operating hour counter	✓	✓	✓	✓
Info code	-	✓	✓	✓
Reverse volume	✓	✓	✓	✓
Volume net	✓	✓	✓	✓
Max flow incl. timestamp	✓	✓	✓	-
Min. flow incl. timestamp	✓	✓	✓	-
Min. water temp.	✓	✓	✓	-
Average water temp.	✓	✓	✓	-
Max water temp.	✓	✓	✓	-
Min. ambient/meter temp.	✓	✓	✓	-
Average ambient/meter temp.	✓	✓	✓	-
Max ambient/meter temp.	-	✓	✓	-

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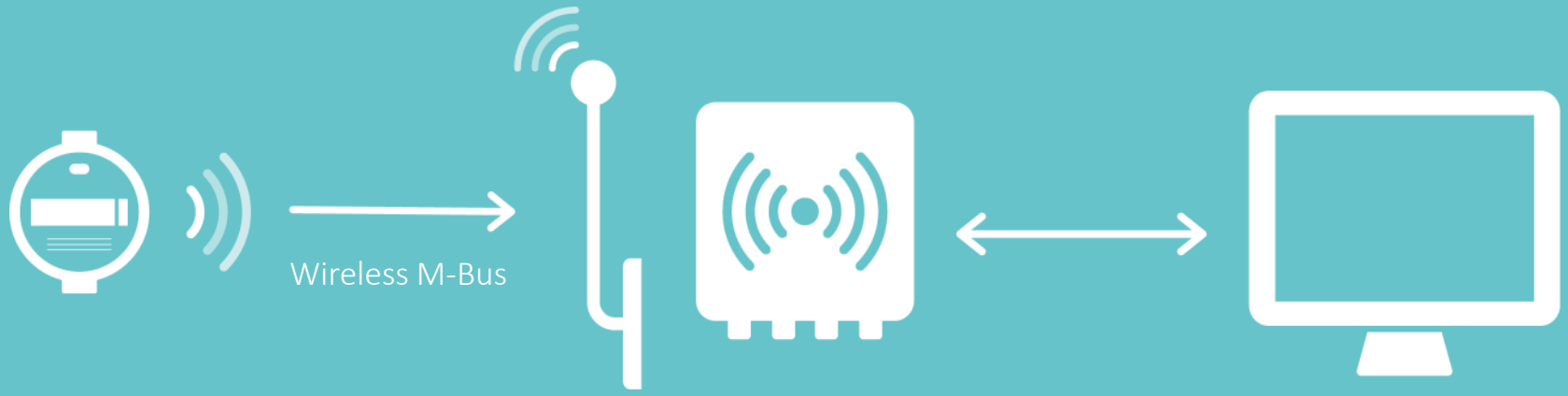
Meter reading – fixed network



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Concrete value of smart water metering

A case from Denmark

Herning Vand

A Danish water utility with 17,300 metering points.

In 2016 Herning Vand decided to replace mechanical meters with intelligent meters and a remote reading system.

Before the smart metering solution, Herning Vand's customers reported their consumption manually once a year.

Herning Vand decided to exchange all their meters in a 2-year period to reap the benefits as fast as possible.

Solution from Kamstrup

- 17,300 intelligent water meters (MULTICAL® 21)
- Fixed network (READy)
- Water intelligence
- Project Management

Concrete value of choosing smart metering

Annual savings:	One time savings:	Payback period:
314,800 EUR	142,667 EUR	6 years

Solution

17,300 intelligent water meters
READy fixed network
Water Intelligence
Project management

Value created

- Increased revenue
- Increased service to customers
- Optimisation of administration and operating tasks

Value created through:

- Remote reading
- Asset management
- Accurate readings

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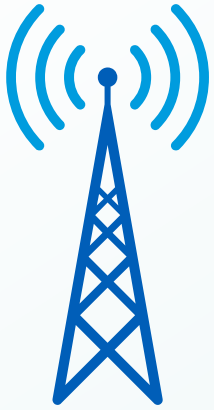
Remote reading



No manual readings
Savings: 4 EUR per reading
(based on the end customers report the consumption once a year)

No missing data or error readings
Savings: 9 minutes per meter
(47 EUR/hour x 1,500 readings)

Savings: 592 hours on control readings per year (592 x 47 EUR)

Value created
- Increased revenue
- Optimisation of administration and operating tasks
- Better customer service
- Reduction of outstanding revenue

Yearly savings

No manual readings	64,533 EUR
Missing and error readings	38,133 EUR
	102,666 EUR

Remote reading - customer relocations

No manual readings
No involvement of customers
makes the proces more efficient

Value created
- Better customer service
- Operational efficiency

Yearly savings

No manual readings	7,067 EUR

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Asset Management

Insight to the distribution network
10% less investments

Operational efficiency
Increased by 10%

Waste water
Possibility to create better water balances

Seal
No new seal is needed for maintenance of the meters

Value created

- 10 % reduction in asset management investments
- Increased revenue
- Better customer service
- Operational efficiency

Yearly savings

Insight	33,333 EUR
Operational efficiency	10,000 EUR
Waste water	33,333 EUR
Seal for meters	3,733 EUR
	80,399 EUR

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Accurate readings

Low flow measurement
Higher accuracy increases the revenue by 1%

Value created
- Increased revenue

Yearly savings

Low flow measurement	124,667 EUR

One time savings

Value created
- Increased revenue
- Operational efficiency

Savings

No systematic fraud	100,000 EUR
No seal for the meters (new installations)	42,667 EUR
	142,667 EUR

Customer benefits

Frost damage on the meters
Savings: meter replacements and insurance cases (20 cases yearly)

Leakage detection
Savings: 2667 EUR x 50 customers (yearly)

Value created
- Financial benefits for the customers
- Better customer service
- Reduction of water waste

Savings

Frost damages	30,667 EUR
Leakage detection	133,350 EUR
	164,027 EUR

”We are looking forward to give our customers the possibility to follow their consumption and motivate them to save water and money”

Niels Møller Jensen, CEO, Herning Vand

Acoustic Leak Detection

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Water Intelligence

Utilizing new technologies to help utilities reduce their non-revenue water

Distribution of leakages

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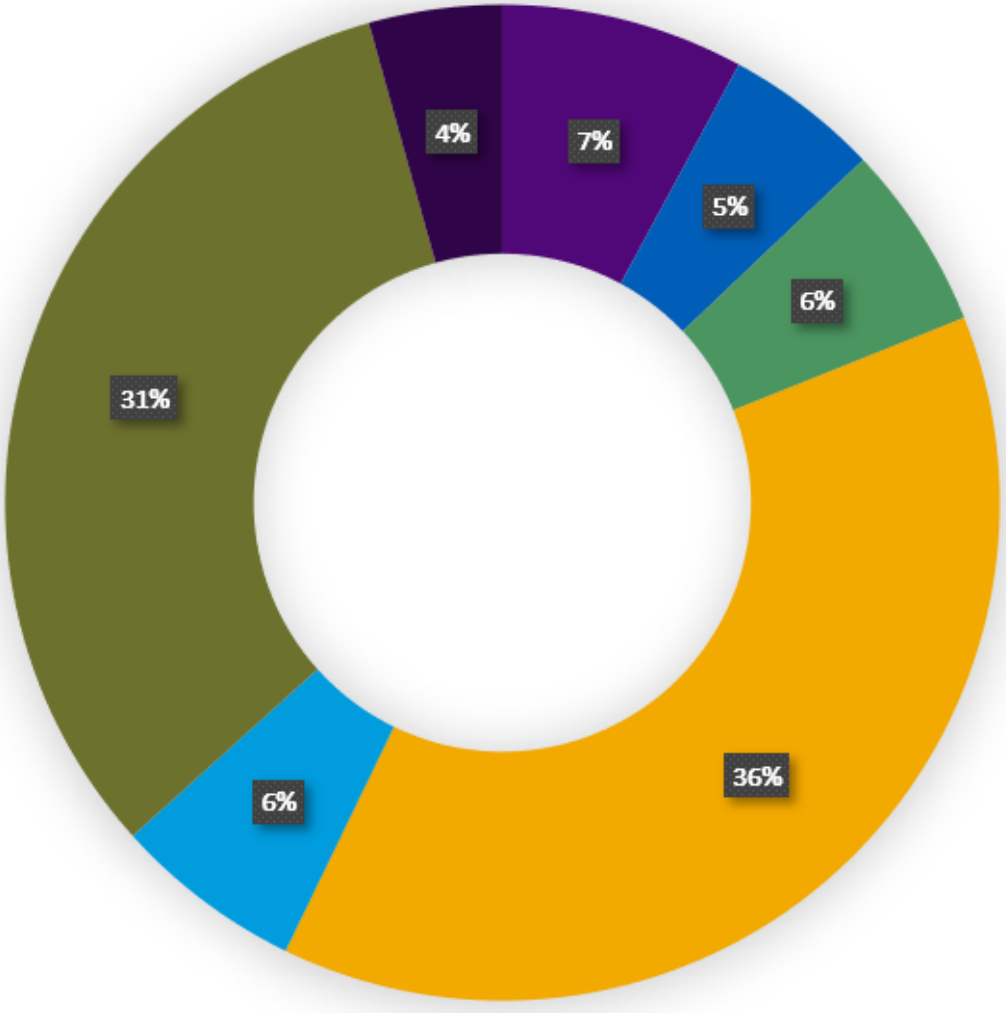

- Water used for fire, cleaning of pipes, filter cleaning, etc.
- Theft
- Meter inaccuracies
- Leak and burst on main pipes
- Loss from storage vessels
- Leaks on connection pipes
- Other

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Embedded Acoustic leak detection

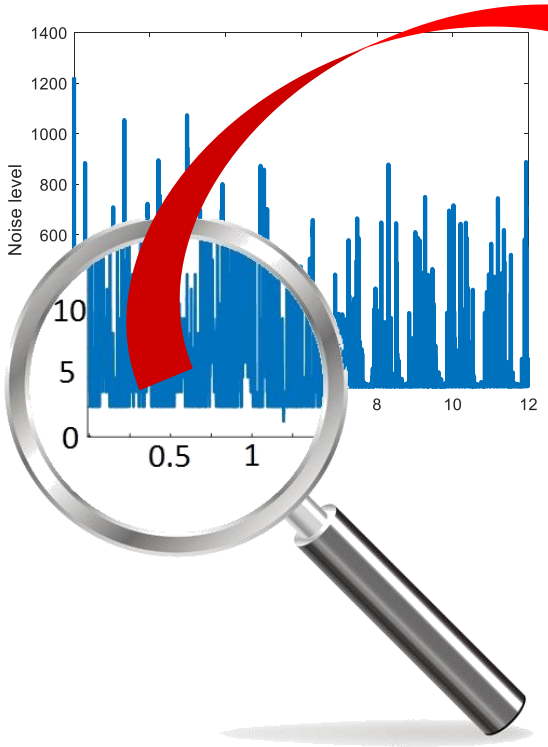
Our Solution to the challenge

With the flowIQ® 2200:

- Acoustic sensors installed within the smart meter network
- Sensors coupled directly to the water pipe
- No additional maintenance
- Use of existing radio network

Challenges:

- Low power consumption
- Cost



Noise level

Drive-By & Fixed Network

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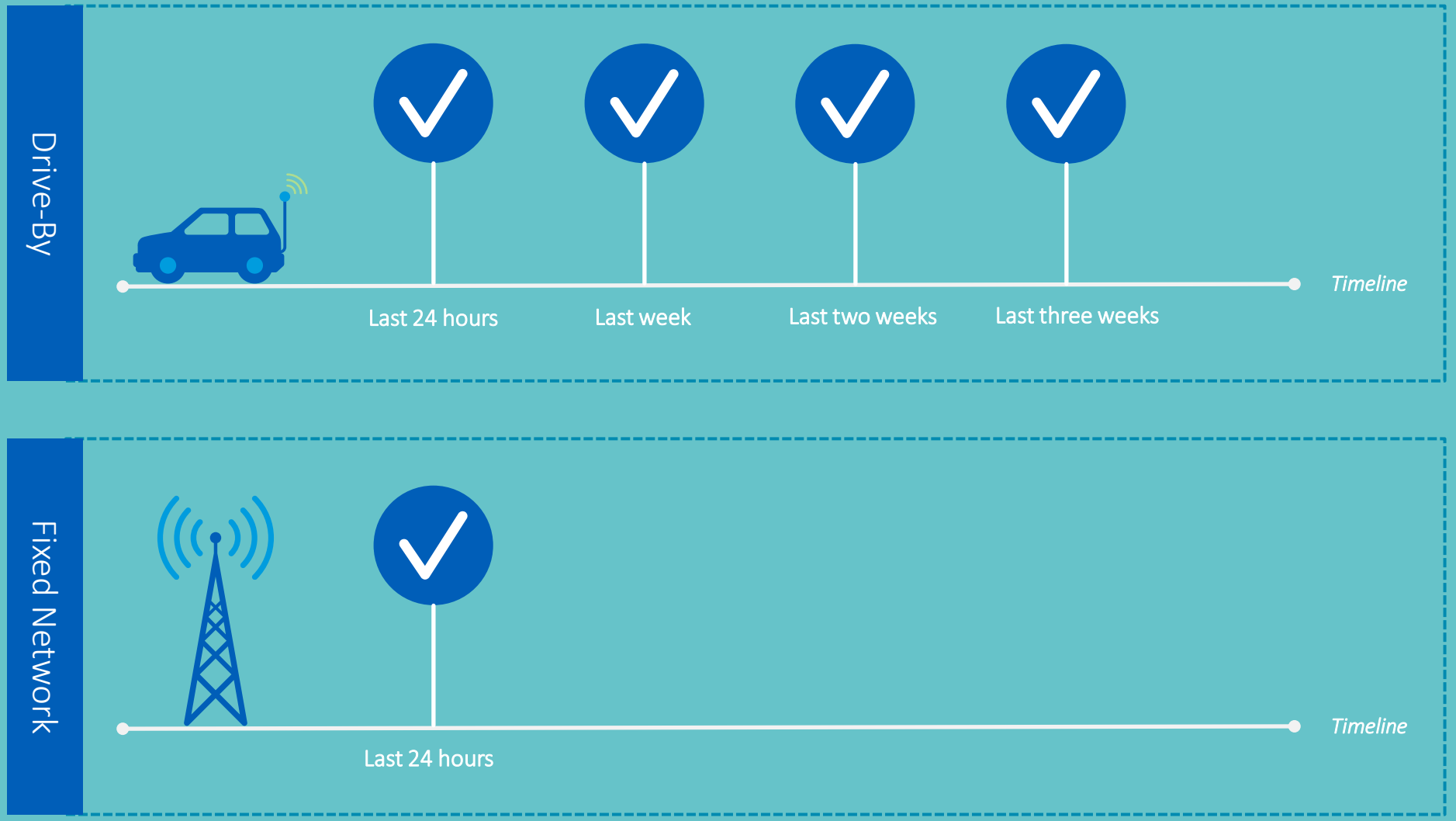

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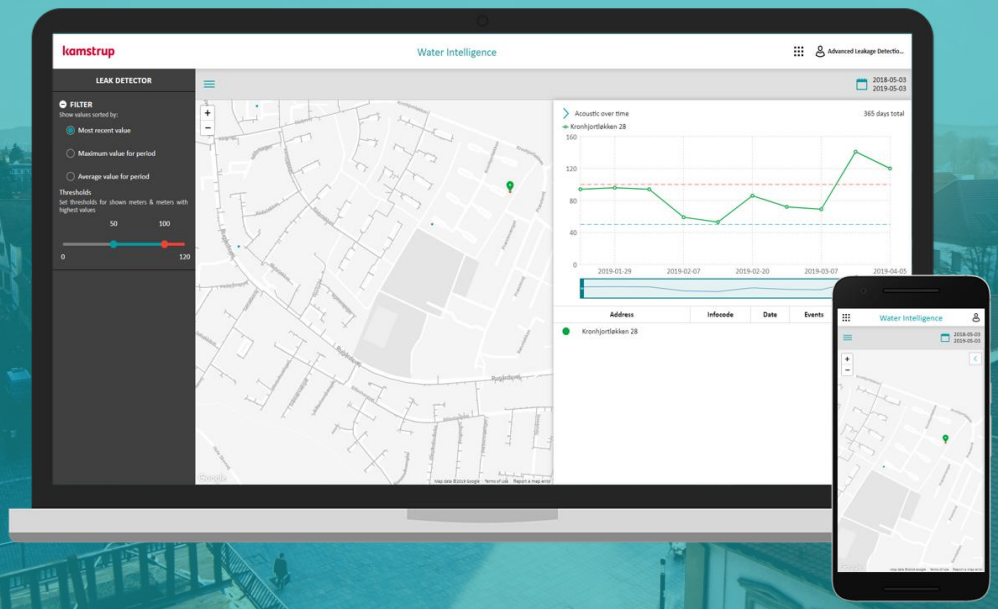
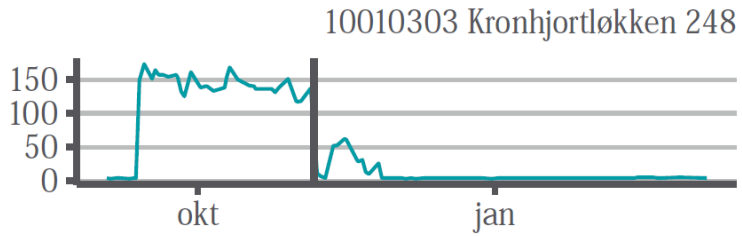
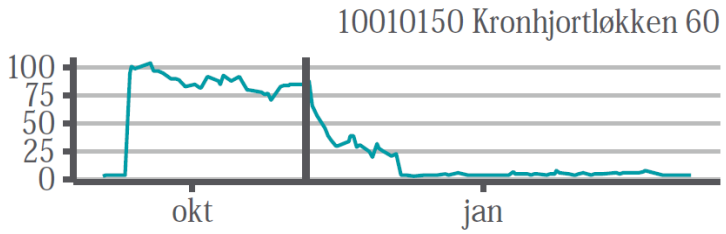
Leak Detector



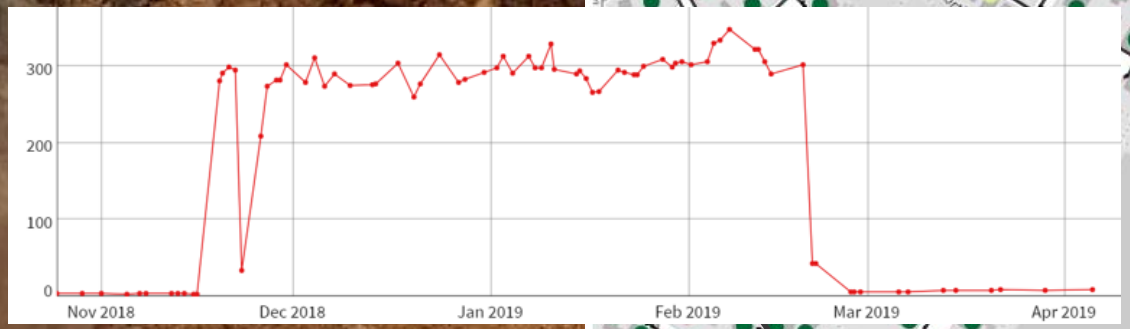
Case study: Vandcenter Syd Odense

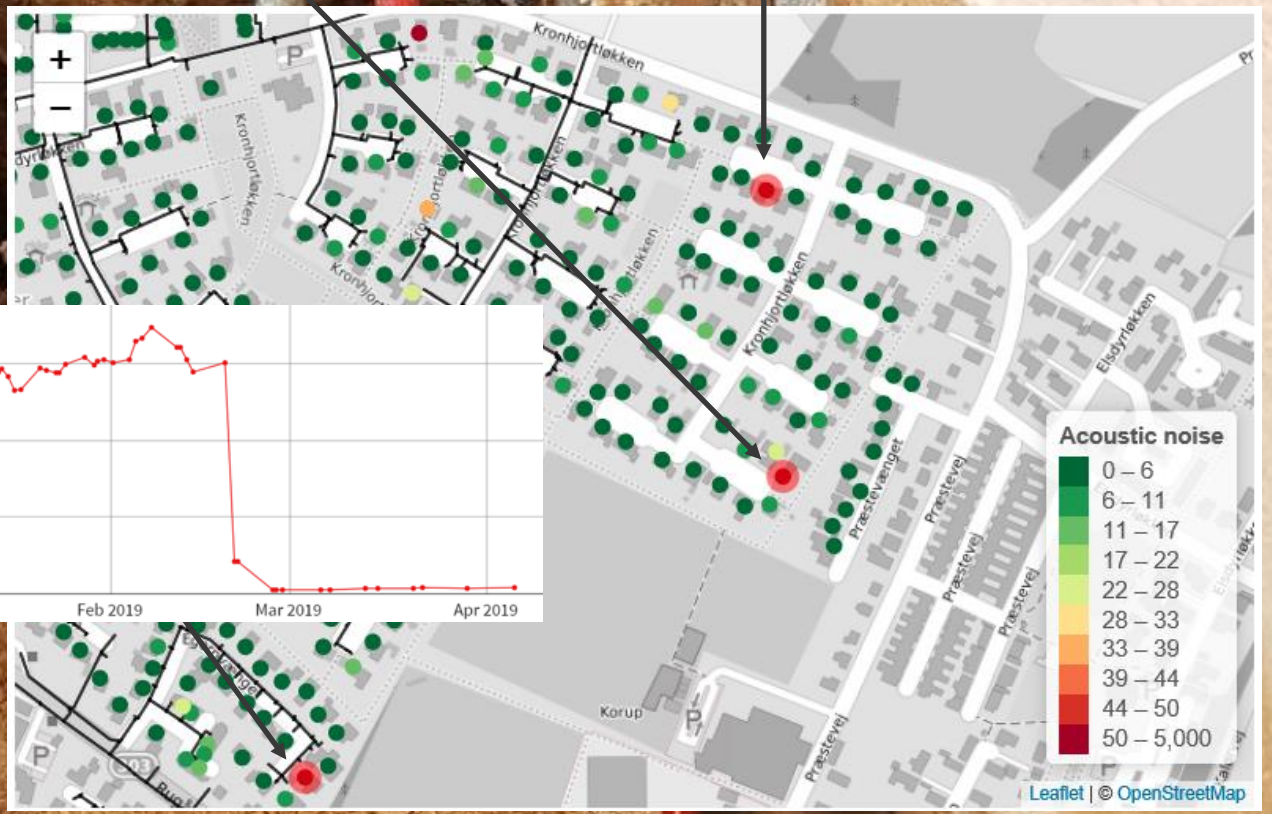


Leak fixed on connection pipe next to meter.



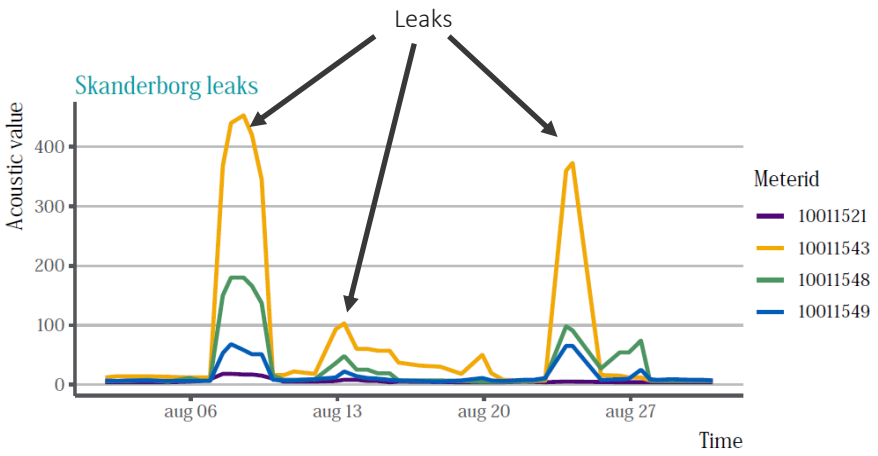
Leak fixed on connection pipe next to meter.





Case story: Skanderborg Leaks

Leaks simulated on service line close to main, at the marked house (500 – 750 l/h).
Can see high correlation (marked red) to noise at other houses. This shows that the leak can be heard at other houses nearby.



Noise levels at 4 meters on the street where the leak was simulated.

Imagine your entire network

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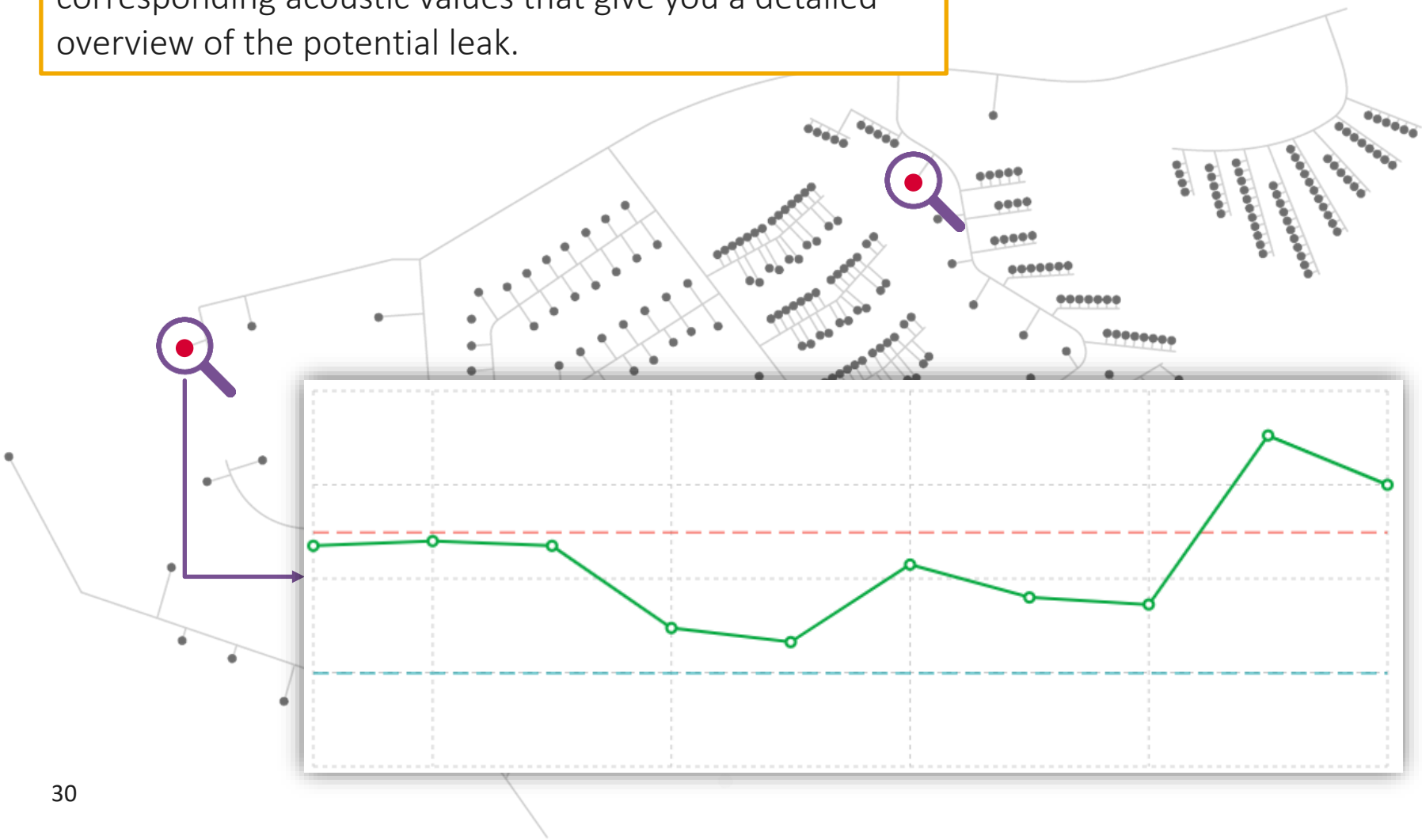
But what happens when we enable smart meter data with acoustic leakage detection?

Imagine your entire network

By the click of a button, you quickly get the corresponding acoustic values that give you a detailed overview of the potential leak.



Our solution allows you to…

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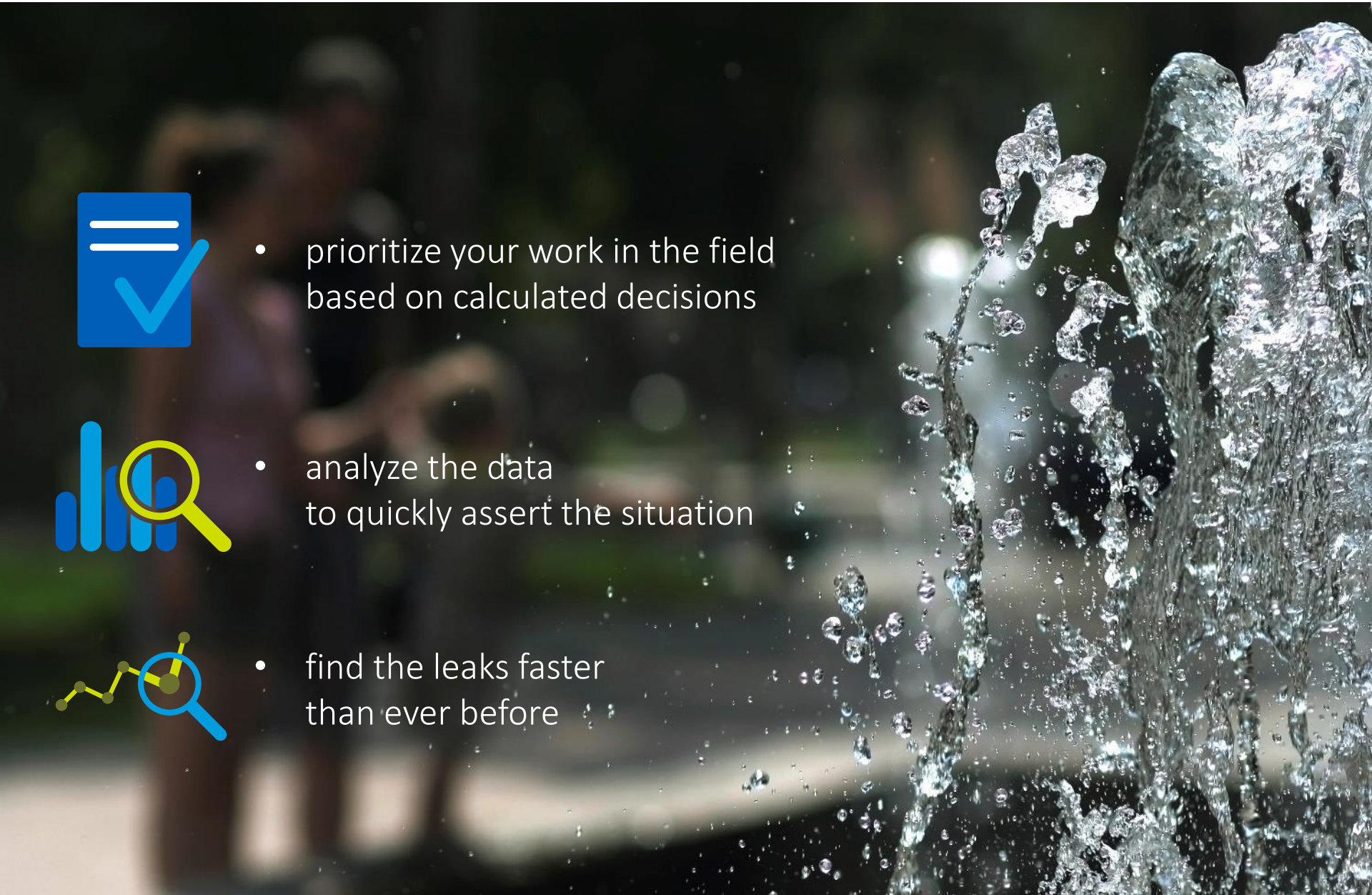

- prioritize your work in the field based on calculated decisions
- analyze the data to quickly assert the situation
- find the leaks faster than ever before

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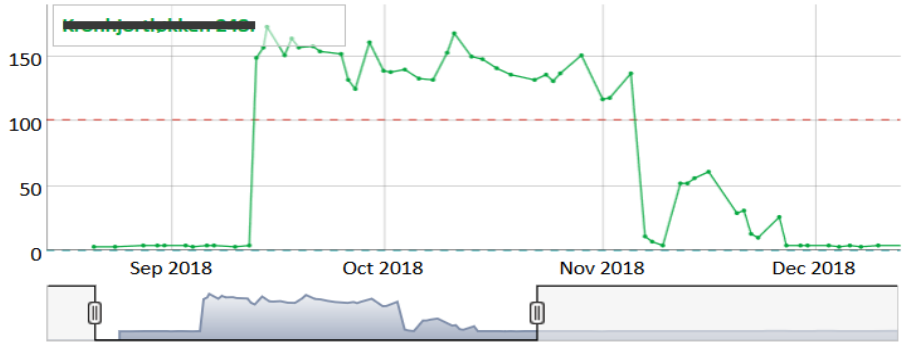
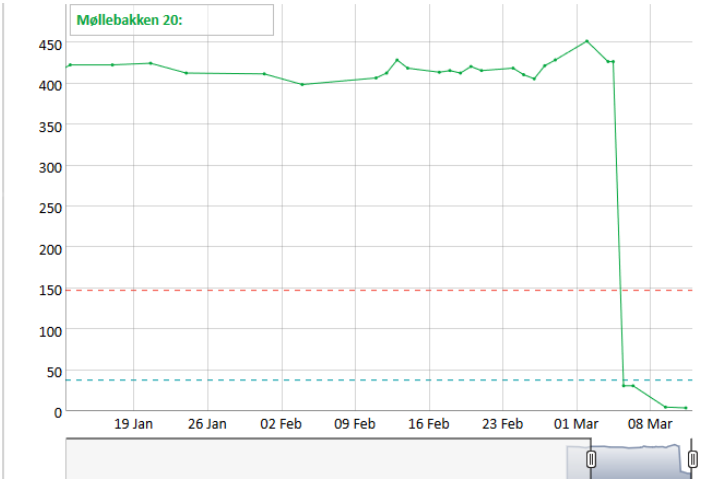
Customer cases

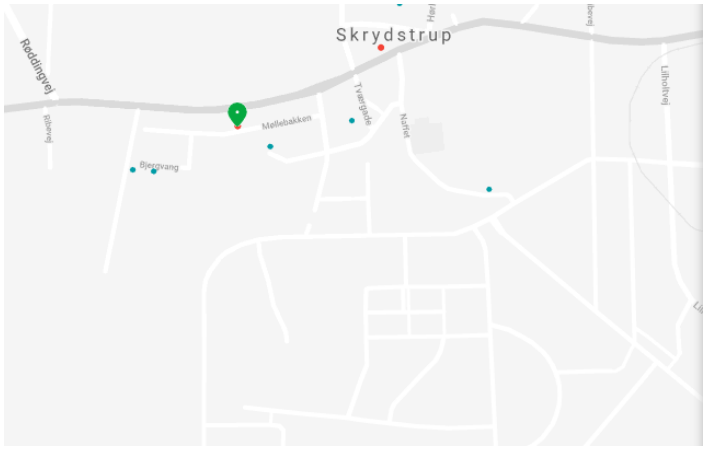
Case Story: Vandcenter Syd Odense



Leak fixed on connection pipe next to meter.

Case Story: Leak in Iron Pipe





Case 3 – District Analyser
How much does it save Tønder?

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Results of remotely-read meters, frequent data and targeted data analysis

14 districts

To target their leakage detection, Tønder Water Utility has gone from 1 to 14 district metered areas.

48 days

Tønder used to spend 10 days for each leakage localisation. Today, they can often do the same in just 1 day creating a yearly decrease of 48 days in the time spend on locating leaks.

€13.400

Overall, the utility saves 13.400€ every year on leakage localisation.

Continuous overview

Better prioritisation caused by one continuous overview of KPIs.

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