

# Intelligent surveillance increases the service life of District Heating pipes to 50 – maybe even 70 years

Earlier the calculated service life was 30 years, but AffaldVarme Aarhus expects a considerably longer service life. "Our economy benefits from that and so do the approx. 300,000 citizens who are dependent on heat and hot domestic water from us every single day", says Allan Jessen, AffaldVarme Aarhus.

## ABOUT AFFALDVARME AARHUS

AffaldVarme Aarhus is a vital piece in the environmental objectives of the Danish municipality, Aarhus. The ability to develop the DH supply and to optimise the waste systems is crucial to meet the targets of Aarhus Municipality e.g. within energy, environment, and climate.

- defining network efficiency

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## DIGITAL SURVEILLANCE SYSTEM

For years on end the District Heating system in Aarhus has been installed and extended. To ensure that all parts of the pipe system complies with the requirements of today AffaldVarme Aarhus systematically renovates the system.

Some years ago, it was decided that pipes with alarm wires as well as a digital surveillance system monitoring the pipe system 24/7 from a central unit be installed in all renovation projects and new constructions. And old pipes be replaced by new ones with embedded alarm wires.

This intelligent surveillance system ensures that damaged and defect pipes can be found and pinpointed. This means that any repair can be initiated, before the damage becomes extensive – in size as well as financially.

Experience shows that it was a really good decision. It contributes to an improved supply security and an increase in the service life of the pipe system to the double or more – and a considerable improvement of the payback time on the investment. Decisive factors for a sound operating economy.

## WHY SURVEILLANCE IS SO IMPORTANT?

- We reduce the water loss and save energy
- We make considerable savings on repairs, because the damage can be located precisely and we excavate exactly where the damage is
- We often detect a fault before it has consequences
- We can place the responsibility for the fault and with it let the tortfeasor pay for the repair
- Documentation as well as 1 + 5 years' review

## UNDERGROUND OPERATORS

Alongside – and often also across – the District Heating system cables, sewers etc. are installed. If this part of the infrastructure is to be renovated or extended, there is – e.g. in connection with tunneling – a risk of our pipe system being damaged.

### Example

An excavator operator scratches and damages the outer casing, insulation and perhaps the DH pipe itself. Or when tunnelling, the spear hits the outer casing which becomes leaky, water enters the insulation and damages it. This kind of damage is detected and registered quick as lightning by our intelligent surveillance system. And the bill for repairing the damage can be forwarded to the tortfeasor. It has resulted in a considerable reduction in our repair costs, which are now reduced to a minimum. Instead, we spend our money proactively on surveillance and scheduled maintenance and in this way we reduce expensive damages and breakdowns.

## SYSTEMATIZED SURVEILLANCE

We have already established the digital surveillance system in approx. one third of our pipe system and expect it to be fully implemented within a few years.

All new pipe sections will be monitored from the very start, and replacement of existing sections of more than 200 m will also have surveillance installed.



## WE HAVE GREAT EXPECTATIONS

We are convinced it is realistic that our > 2000 km DH pipes can last many years yet, if we take good care of them – maybe even approx. 70 years instead of the 30 years we expected earlier. But it makes systematic maintenance and renovation in due time mandatory, and the digital surveillance assist us with that.

*Allan Jessen,  
PHS engineer, AffaldVarme Aarhus*

## AFFALDVARME AARHUS

- Distribution 1.184 trench km
- Transmission 138 trench km
- House connections 864 trench km
- Total 2.186 km rør