

## Hevasure Case Study: Zwolle District Heating Scheme, The Netherlands

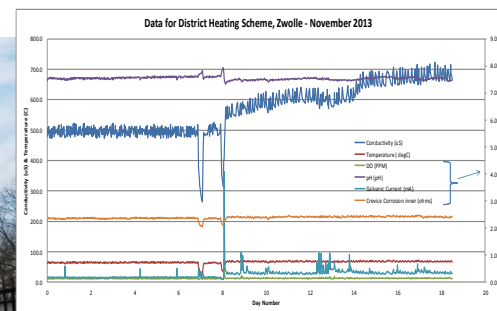
**Customer:** Spirotech

**Context:** District heating schemes are becoming increasingly common in the UK and mainland Europe. Most are powered by renewable energy such as biomass and produce heat more efficiently than having a boiler located in each home. However, closed systems are prone to corrosion damage which can reduce efficiency and lead to premature failure if not properly monitored. The direct and indirect costs of damage can be extremely high and any consequential disruption to the heating supply is completely unacceptable.

**Solution:** Hevasure was approached to monitor the district heating scheme in Zwolle which supplies hot water to around 400 apartments. Hevasure monitoring equipment was installed in the main plant room and at the highest point in the heating system and continually checked on all operating conditions to prevent corrosion damage.



The Hevasure Premier service provided 24x7 monitoring with alerts being issued if parameters exceeded critical levels. A monthly report showed how parameters changed over time and made recommendations to keep the system operating in peak health, efficiently and free from corrosion damage.



*Remote monitoring 24/7 ensures that the biomass district heating facility in Zwolle operates at peak efficiency. An on-line dashboard provides instant visibility of any issues and all necessary data to make appropriate interventions.*

Parameters monitored	
System integrity	
Dissolved oxygen	It is essential that DO is low in closed systems (less than 0.2 mg/L). Dissolved oxygen is the main driver of corrosion as without it there is no cathodic reaction. By measuring DO we can ensure the system is airtight and that any oxygen introduced by fresh aerated water is quickly consumed.
Pressure	A closed system must maintain a positive relative pressure at all times to avoid air being sucked into the system. We monitor this at the highest point in the building using a small satellite monitoring system.
Temperature	Measuring temperature checks that the required heat is being produced.
Water make-up	We measure water make-up volume to indicate leaks in the system or inform us on planned flushing activities
Water characteristics	
Conductivity	For inhibited systems, measuring conductivity tells us the concentration of the water treatment products (inhibitors). We will be able to tell if a system is being overdosed or under-dosed with inhibitor.
pH	For systems containing aluminium we check that the pH is not going above 8.5 (otherwise the passive films break down and aluminium components such
Biofilm risk	When biofilms form, microbial influenced corrosion often occurs and this can lead to wall thinning and pin-holing in metal pipes. We can now monitor the risk of biofilm formation as an optional extra.
Corrosion	
Galvanic currents	We have developed our own sensor to monitor the currents that occur between different metals in the system leading to serious corrosion. In plain water galvanic currents increase in proportion to dissolved oxygen. However, inhibitors when at the correct strength passivate metal surfaces and suppress galvanic currents. By using this sensor we can check that the inhibitor is doing its job effectively, even when there is some oxygen in the system.
Crevice corrosion	This is a very insidious form of corrosion leading to rapid pitting attack and pin-holing. It occurs in localised regions such as weld seams and under debris due to a micro-environment being set-up. We have developed and patented our own sensor to detect this.

## Contact us

To find out how the Hevasure Monitoring Service will improve the efficacy and efficiency of your heating/cooling system and reduce risk to your valuable building assets, contact us now !