VAISALA

Case Study

www.vaisala.com

Improving energy efficiency of Fortum district heating system with intelligent weather data and modelling

The client:

Fortum

Vaisala provided:

AWS310

WXT536

NM10

Vaisala weather forecast

Third party solar radiation sensor

The district heating and cooling business is highly weather dependent. Even the smallest changes in temperature, solar radiation, precipitation, humidity, and wind speed and direction affect the demand of heating energy. The goal for a district energy provider is to supply the right amount of heating energy when needed; any further heat fed into a district heating system results in heat loss.

Since weather has such a critical effect on heating demand, Fortum wanted to optimize their district heating network operations in Espoo using a hyperlocal weather forecast with the highest accuracy instead of general weather information. To generate accurate and reliable weather data for modelling, Fortum acquired six AWS310 weather stations and software from Vaisala.

Local weather measuring data helped the organization identify several micro-climates and other local weather characteristics. Data from weather sensors are collected with a network based on Vaisala Observation Network Manager NM10, illustrated with an LNE browser interface. AI-powered Vaisala Aurora Hyperlocal Weather Nowcasting uses neural networks to calculate a high-resolution forecast, which can be used in predicting heating demand within the next 24-48 hours.

Fortum plans to further optimize local nowcasting (15 min - 6 hrs) and, furthermore, local forecasting (min. 48 hrs) that utilize a network of local weather measurements to provide more stable heating, better network efficiency, and lower operational costs.

“Our observation network of Vaisala weather stations provide us with accurate local data of critical weather parameters enabling us to optimize heating supply temperature more precisely than before. We aim to further improve sustainability of our operations and boost energy efficiency significantly in the coming years”, says Viki Kaasinen, Smart Energy System development lead at Fortum.

Customer demand of energy efficient solutions rises along with sustainability requirements. The use of hyperlocal nowcasting and forecasting is helping Fortum to achieve both.

Scan the code for more information