

From air pollution detection to public awareness

Case Study



The client:

Helsinki Region Environmental Services Authority (HSY)

Vaisala solution:

Air Quality Transmitter AQT530

THE CHALLENGE:

Limited monitoring projects inform future development

Air quality is pivotal to the city's quest for sustainability. HSY has taken on several air quality monitoring projects to gain a better understanding of the sources and amounts of Helsinki's air pollution in different areas, and relies on Vaisala air quality sensors for their accuracy and reliability.

From 2017 to 2018, HSY launched the KAILA project (Air quality gradients of city boulevards) to analyze how air pollution concentrates and diffuses on streets, in between buildings and in street canyons. The results are insightful for public awareness and urban planning.

For the Helsinki Metropolitan Air Quality Testbed (HAQT) project, which took place from 2017 to 2019, HSY established a temporary network of 15 Vaisala air quality sensors located in the capital region. The organization gained valuable

information about pollution concentrations and how the public is exposed to them, such as streets and traffic, which has informed the development of new digital services and products aimed at public health measures.

THE APPROACH:

Surprising insights pave the way for public use

HSY installed 25 Vaisala Air Quality Transmitter AQT530s for HOPE, densely located across three neighborhoods in Helsinki, in addition to existing, fixed monitoring stations and other air quality monitoring infrastructure built in the project.

AQT530 measures the six most important pollutant gases and particulate matter (PM), all in a compact design. In addition to AQT530 sensors, several monitoring sites also included a

“Compact air quality sensors are valuable to our air pollution monitoring efforts, especially for monitoring street dust and emissions from construction sites. We recommend them for complementing air quality monitoring station networks and increasing measurement points. They are also easy to install to different urban environments.”

*Hanna Manninen
Head of Air Quality Unit*

Vaisala Weather Transmitter WXT536 and Vaisala CARBOCAP® Carbon Dioxide Probe GMP343 – providing valuable additional information about multiple weather measurements and CO₂ levels during the project.

Many construction projects were taking place during this time in one of the neighborhoods, yielding some surprising insights: how much construction sites emitted dust on weekdays and weekends, NO₂ from a nearby passenger ship port before and after embarking and disembarking from cruise ships, and even a peak in emissions from fireworks on New Year’s Eve.

THE RESULTS:

Measuring street dust for public awareness

HSY currently has 11 reference grade air quality monitoring stations to provide accurate measuring data for regulatory purposes. For better geographical coverage and comprehensive data, they have complemented their measuring station network with ten AQT530 sensors.

The sensors are located by busy main roads and highways to measure street dust, because PM levels can be very high during dry winter and spring days. The episodes of poor air quality occur every spring when dust is released into the air from drying road surfaces. Dust forms and accumulates on the roads in winter with the use of studded tires and traction sanding.

HSY publishes real-time air quality information from the sensors and monitoring stations on their website for public use. For example, road maintenance authorities can use the sensor results to efficiently target dust control and dust binding. HSY is enhancing the utilization dust measurement data in air quality forecasting models, which will also benefit the public.

Why Vaisala?

As the global leader in weather and environmental measurements, Vaisala empowers businesses and community leaders to build resilience to climate change and extreme weather events. Our 85+ years of expertise is grounded in science, innovation and our unwavering commitment to constantly evolving.

We boldly demonstrate that a culture of resilience and a connection to nature can create new ways of smarter, resilient living. We are champions for smarter, safer and more sustainable urban communities.

