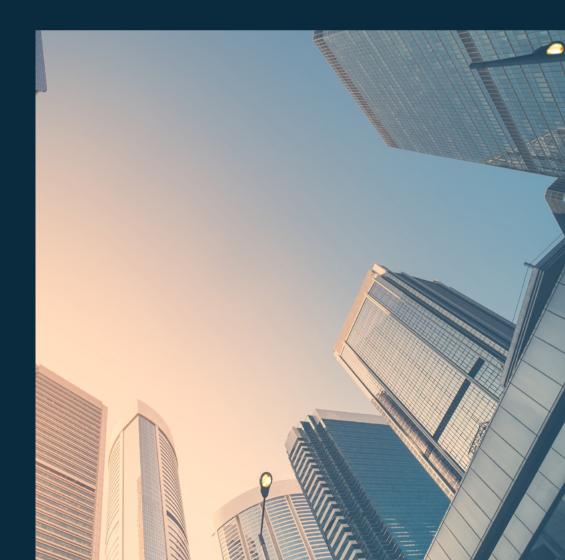VAISALA

Vaisala air quality monitoring solutions

Complete air quality awareness for cleaner communities

Solutions Brochure

Air quality has never been more important.

The technology for assessing it has never been better.

Air quality is a growing health problem in cities around the world. The first step to mitigating air pollution is observation and accurate measurements. Now you can do even more.
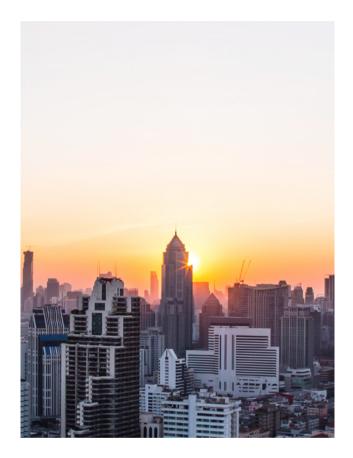
With Vaisala technology you can get accurate and reliable measurements of all major pollutants, measure their concentration in specific areas, and track how weather affects the amount and location of air pollutants — now and over time.

Air quality data improves decision-making for everyone from the highest levels of government to the smallest dinner table conversations.

The air quality and weather connection

Air quality is always connected to the weather, and their measurements are much more valuable when combined with real-time data about wind speed and direction, temperature, humidity, and other factors that directly affect pollution and its travel.

A modern, dense air quality network combines air quality and weather data for full situational awareness and immediate intelligence.

This integrates air quality sensors, local weather data, boundary layer measurements and full wind profiles for current observations and historical data collection.

Air quality monitoring system components

Vaisala solutions are unique in their ability to provide holistic air quality and weather insights for dramatically improved decision making. These core technologies can be tailored according to your needs.
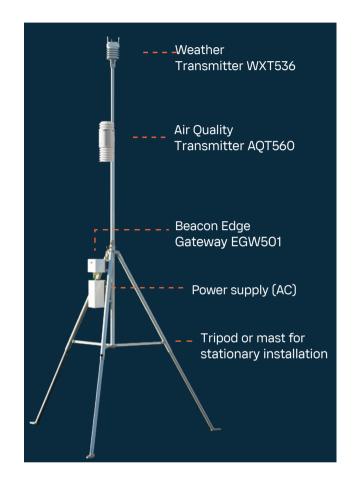
Vaisala Beam Weather Station

An elegantly simple system with integrated weather and air quality sensors, network connectivity, state-of-the-art data security, and data storage — forming a scalable platform for weather and environmental observations.

Beam Station integrates the industry-leading WXT536 Weather Transmitter and AQT560 Air Quality Transmitter for a complete understanding of air quality, its fluctuations, and the drivers affecting it.

· Integrated SIM card and cellular data plan make the station ready for use as soon as it is installed
· Optional Wx Beacon software collects and visualizes measurement data from the station for easy sharing with third-party systems
· Edge Gateway EGW501 provides a secure data transfer between the sensors and Vaisala cloud service

Vaisala Weather Transmitter WXT530 Series

· Measures the six most important weather parameters: wind speed and direction, air pressure, temperature, humidity and rainfall
· Solid-state technologies minimize operation and maintenance costs

Weather Transmitter WXT536

Air Quality Transmitter AQT560

Beacon Edge Gateway EGW501

Power supply (AC)

Tripod or mast for stationary installation

Vaisala Air Quality Transmitter AQT560

- Measures nitrogen dioxide (NO_2), nitrogen monoxide (NO), ozone (O_3), and carbon monoxide (CO), as well as $PM_{2.5}$ and PM_{10} particulate matter
- Integrates with Beam Station or can be connected to your own system

Ceilometers for boundary layer measurements

Boundary later data is crucial for a complete picture of factors affecting air quality. Ceilometers measure variations in the boundary layer and provide insight into the volume and quantity of air in which pollutants can be mixed — ultimately affecting the concentration of pollutants.

Adding Vaisala ceilometers to your air quality monitoring network gives you accurate and reliable information on boundary layer height and development, and their real-time data helps to improve your air quality monitoring and forecasting.

· Quick and easy deployment with fully automatic, 24/7 operation
· Competitive lifetime costs with affordable pricing and virtually service-free design
· Reliable low-altitude measurements enabled by single lens technology
· Cost-efficient features enable networks of ceilometers for detailed data on boundary layer developments

CL31

Compact basic model for 24/7 boundary layer analysis and cloud detection in all weather conditions

CL51

Enhanced performance over CL31 to provide higher details on boundary layer structure including high-altitude clouds.

CL61

High-end model features depolarization to characterize aerosols, differentiates liquid/frozen precipitation, and detects dust, sand and ash layers

Lidars for air quality monitoring and forecasting

Wind can either bring pollutants or remove them, and complex local winds that occur within the boundary layer often drive pollutant transportation and dispersion.

WindCube® and WindCube Scan lidars are known the world over as the gold standard in accurate wind measurements. Trusted for decades, the third-party verified technology helps improve local and short-term weather and air quality forecasting with continuous observations of the lower troposphere.

WindCube vertical profiling lidar

A highly refined, mature technology, the WindCube vertical profiling lidar provides unrivaled wind profile measurement capabilities up to 300m and services for accurate, real-time wind data around the clock.

· Provides accurate wind profile measurements up to 300m with 20 simultaneous heights measured per second
· Includes WindCube Insight – Fleet software an easy-to-use, secure, cloud-based tool that provides real-time insights and simple management for one unit or many
· Small, lightweight and simple to deploy in urban areas such as rooftops, industrial sites or remote locations

WindCube Scan

WindCube Scan 3D scanning lidar provides accurate wind mapping and aerosol backscatter measurements with typical ranges up to 3km, 6km, or 10km (depending on model) and multiple scanning patterns.

· Versatile and user-friendly configuration can be tailored to multiple scanning patterns (PPI, RHI, wind profiling) and measurement needs
· Provides simultaneous state-of-the-art wind, aerosol backscatter, cloud and boundary layer height measurements for a full, essential wind and atmospheric boundary layer assessment
· Rugged designed is suitable for urban or industrial deployments

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.

vaisala.com/airquality