Application Notes

Subject: Accurate Air Quality Monitoring
WindSonic, WindObserver, WindMaster, Research, MaxiMet & MetPak

Reference AN0008

Introduction

Air quality monitoring is carried out to assess the extent of pollution, ensure compliance with national legislation, evaluate control options, and provide data for air quality modelling. There are a number of different methods to measure any given pollutant, varying in complexity, reliability, and detail of data. These range from simple passive sampling techniques to highly sophisticated remote sensing devices. A monitoring strategy carefully examines the options to determine which methodology is most appropriate, taking into account initial investment costs, operating costs, reliability of systems, and ease of operation.

The locations for monitoring stations depend on the purpose of the monitoring. Most monitoring networks are designed with human health objectives in mind, and monitoring stations are therefore established in population centres. Many governments (local, regional or national) give specific guidelines on where to monitor within these areas - next to busy roads, in city centre locations, or at a location of particular concern (e.g., a school, hospital). Background monitoring stations are also established, to act as a "control" when determining source apportionment.

Air quality monitoring systems typical use a suite of sensors to monitor multiple environmental parameters including wind speed and direction, temperature and humidity added alongside real-time gas analysers measuring all major organic and inorganic pollutants including Oxides of Nitrogen (NOx), Sulphur Dioxide (SO2), Ozone (O3), Carbon Monoxide (CO), Ammonia (NH3), Benzene (C6H6), BTEX and VOC's etc.

Noise monitoring can also be a part of monitoring stations, which can also take into account wind measurement for wind direction and speed when looking at noise nuisances.

Once data is collected from a monitoring system, it is stored in data management systems and databases. Subsequently, the data is analysed to see what it reveals about the effectiveness of regulatory standards, the accuracy of modelling, impacts on health, and as an overall assessment method.

Application

WindSonic, WindObserver, MetPak and MaxiMet play a vital role within air quality monitoring in the urban environment and are often used as part of automated ground stations. WindSonic, WindObserver are able to offer wind data for the monitoring system whereas MetPak and MaxiMet are able to offer a fuller range of meteorological parameters.

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Application Notes

WindSonic is used as part of SVANTEK (Poland) Environmental Stations, MetPak has been provided as part of Cirrus Noise Monitoring Systems and a WindSonic was used at Glastonbury.

WindMaster / Research anemometers are used as part of flux measurement projects.

Installations











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