

Noise and weather monitoring combined

Noise is a significant environmental pollutant and a major concern for many residents. Today, more than one person in three is disturbed and/or stress-ridden by noise. This, along with specific regulations, in particular the European Directive 2002/49/EC, relative to the assessment and management of environmental noise, makes the monitoring of environmental noise a significant task.

Meteorological parameters bear significant implications for noise monitoring. Wind, rain, relative humidity, temperature and others have a strong influence on noise measurements. In order to fully understand noise events and conditions, weather and noise measurements should be combined.

Noise addressed here is that generated by ground transportation infrastructures (road/railways), airports and industrial facilities - in short, noise to which people are exposed in built-up areas, public parks, and quiet and sensitive areas.

Reducing noise pollution

The European Directive 2002/49/CE emphasizes three main objectives regarding noise pollution:

- Obtain a global view of the noise situation on the European scale by elaborating strategic noise maps,
- Inform the public of their exposure to noise (openness with respect to populations),
- Work out action plans aiming at improving the situation in time.

The directive reinforces the necessity for extended noise monitoring aiming at reducing local noise pollution and improving the quality of daily life.

01dB-Metravib, the noise specialists

01dB-Metravib is a French company specializing in noise monitoring and vibro-acoustic measurement and analysis. Application areas include environmental noise impact, building noise control, city / airport / building site monitoring, room sound quality, occupational noise and vibration abatement, silent industrial design, sound quality and design, and vibro-acoustic engineering, as well as life and property safety.

01dB-Metravib offers a measurement system called OPER@, which meets the requirements of local authorities, airports and industrial facilities, and aims at sustainable improvement in living environment quality.

Joining forces with Vaisala

In 2007, at the request of its customers wishing to monitor both environmental noise and meteorology, 01dB-Metravib

searched for a meteorological instrument suitable for the requirements of these customers. The required specifications dealt with the quality, reliability, technological performances and intrinsic features of the product that would allow addressing the environmental monitoring issue in an optimal way.

As a result, the Vaisala Weather Transmitter WXT510 was selected. As part of the partnership, the weather transmitter became available to 01dB-Metravib's noise monitoring customers.

Innovation through and through

Just as the OPER@ system has revolutionized noise measurements, the WXT510 has revolutionized meteorological measurements.

OPER@ collects and transfers acquired data to a remote computer server station for processing, expert analyses, archiving or publishing purposes. It features many innovative qualities: a class-1 microphone, recording of audio signals for playback and identification of noise sources, storage of measurement files over a long time period, as well as new real-time wireless transmission technology. Installation is done on urban furniture (billboards, lampposts, etc.) and/or on building façades.



Figure 1. History of sound levels (green) and wind speed (blue) over one day.

The Vaisala Weather Transmitter WXT510 is a compact and light multi-sensor instrument that can measure the most important meteorological parameters: wind speed and direction, rainfall, barometric pressure, temperature and relative humidity. The WXT510 combines the latest sensor technology with advanced design and many years' experience in environmental measurements in a high-quality and high-reliability instrument. It is very flexible and can be configured according to the customer's needs.

The complete "Noise-Weather Monitoring" solution

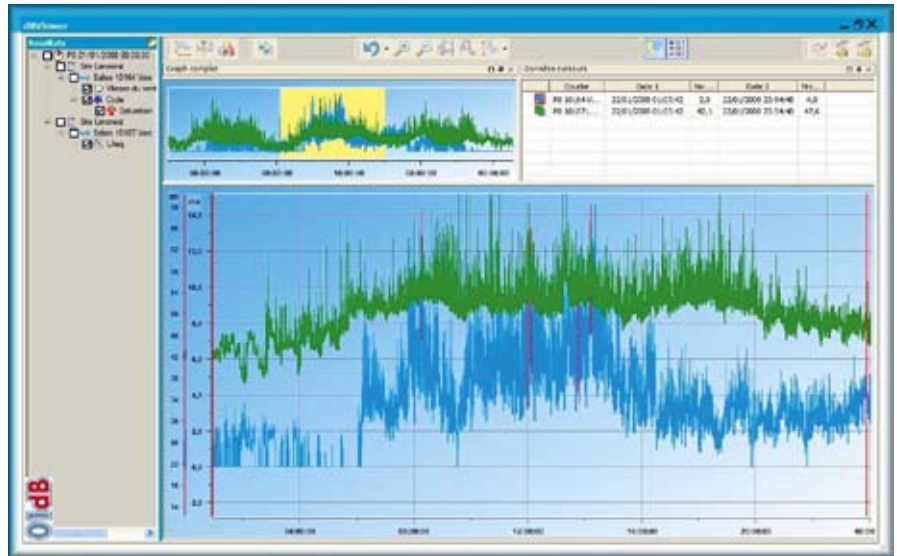
The OPER@-WXT510 noise-weather monitoring solution meets the requirements and the constraints raised by new environmental noise management issues in a complex urban context.

The interfacing of OPER@ and WXT510 systems results in a dedicated event module, which allows the coding of noise measurements according to a set of weather criteria. Wind speed higher than 5 m/s, temperatures below -10°C or above 50°C, rain, etc., affect the validity of sound level measurements. Results corresponding to these periods are systematically coded and removed from recomposed noise indicators. As an example, Figure 1 shows the history of sound levels (green) and wind speed (blue) over one day at the end of January 2008 for an urban reference point. Wind speed higher than 5 m/s invalidates the measurement, so events with high wind speed are deleted from the permanent noise monitoring results.

Furthermore, wind direction has a major influence on sound propagation on a site. Depending on the location of noise sources, the local geometric configuration and wind conditions, a measurement point is successively located windward and leeward. ■

Further information:
www.o1db-mettravib.com
www.vaisala.com/wxt510

On-site deployment of OPER@ noise monitoring and the Vaisala Weather Transmitter WXT510 in an urban reference point.



Urban noise monitoring in Lille Métropole Communauté urbaine, France

The Lille Métropole Communauté urbaine is a local government authority regrouping more than 85 cities over a territory of 650 km² in Northern France. Every year its technical departments perform numerous studies and measurements on the traffic over the 4,500 km of roads forming its network in order to feed studies on the impact of urban planning projects.

To meet the many demands of local representatives, the public and technical experts with regard to noise issues, o1dB-Mettravib was selected for the supply of a noise measurement system. This allows the precise monitoring of environmental noise over weeks, months and years. The current network deployed in Lille Métropole Communauté Urbaine includes more than 60 OPER@-EX stations, and is the largest in Europe. In 2008, the systems will be complimented with a meteorological tool, the Vaisala Weather Transmitter WXT510. Together they provide a significant tool for decision-making, helping to address noise situations and promoting sustainable development. ■

