

# Weather measurements and WXT520 in building automation

*Building automation systems provide the functionality needed to safely, comfortably and effectively operate a building.*

Comfort and safety are key deliverables of a building automation system. Comfort means maintaining conditions where people can work efficiently and productively. It is created by regulating temperature, humidity, and air quality in the building. In general, the energy and maintenance costs of a building having a modern BAS are lower than a non-controlled building.

One of the core functionalities of a building automation system is to keep the building climate within a specified range. This is done with heating, ventilation and air conditioning (HVAC) controls, which aim to maintain a good and stable indoor climate despite changing external and internal loads.

Varying external load means changing weather conditions outside the building, which set demands for the heating and/or cooling system to maintain stable indoor conditions. For example, outside temperature, wind conditions and solar radiation all have an impact on the distribution of energy in the building. HVAC controls should be able to balance the indoor conditions according to measurement information obtained both from outdoor and indoor environments.

Weather-related data helps to improve the efficiency of a HVAC system. For example, it can be used to support decision-making for load

distribution between small and large equipment, like boilers or chillers of different sizes, to optimize the energy usage. Compressors can be turned off in optimal conditions to take advantage of free cooling.

Sometimes weather data is monitored for safety reasons: the facility maintenance team needs to know the weather conditions to ensure safe working conditions before going on the roof.

## Six weather parameters, one instrument

Vaisala's Weather Transmitter WXT520 is a compact multi-parameter instrument combining six weather parameters into one instrument. The WXT520 measures wind speed and direction, liquid precipitation, barometric pressure, temperature and relative humidity. Practically maintenance-free with no moving parts, the WXT520 incorporates Vaisala WINDCAP® ultrasonic wind sensor and RAINCAP® piezoelectric rain detector for added robustness.

Siemens AB, Building Technologies in Sweden has experience of integrating the WXT520 into building automation systems. An example of an installation location is an exhibition and congress center with hotels, located in Gothenburg, Sweden.



“With WXT520 it is possible to have output for several parameters from one instrument instead of installing a separate instrument for each parameter”, says Ivar Bergdahl from Siemens AB. “Wind speed, wind direction, temperature, relative humidity and rain data can be utilized in the HVAC controls. Precipitation information is used in the building automation system.”

WXT520 has several serial communication options available. “We used RS-232 and RS-485 interfaces to connect the WXT520 to the building automation system,” says Ivar Bergdahl. For legacy systems that require analog input, there is also a serial-to-analog signal converter available.

In addition to weather multi-sensor instruments, Vaisala's product portfolio for outdoor measurements in building automation includes products for measuring various humidity parameters (relative humidity, dewpoint, wetbulb, enthalpy, mixing ratio), temperature, barometric pressure, wind, precipitation and carbon dioxide.

### Further information:

[www.vaisala.com/instruments/products/weathermultisensor.html](http://www.vaisala.com/instruments/products/weathermultisensor.html)