

Integrated weather measurement solution increases building efficiency

Building automation systems regulate temperature, humidity and air quality. Siemens integrates a multi-parameter Vaisala weather transmitter (WXT520) into their automation solutions in order to increase building efficiency through precise weather measurement.

Reactive systems are inefficient

Building automation systems (BAS) are designed to assure the comfort and safety of occupants. Most systems are reactive: when temperature or humidity increases or decreases beyond a certain threshold, Heating, Ventilation and Air Conditioning (HVAC) systems are turned on. Building temperature and humidity are effectively regulated in this way, but often at the cost of efficiency.

Prediction increases efficiency

Outside temperature, wind conditions and solar radiation all impact the distribution of heat within buildings. Integration of frequent weather measurement data enables the BAS to become attuned to changing weather conditions. This allows for more intelligent heating and cooling through prediction of the short-term effects of changing weather. For example, if the heating system is engaged on an overcast day and the sun comes out, the



Challenge

- Traditional building automation systems are reactive, turning on heating or cooling only when temperature fluctuates beyond a predetermined threshold
- Changing sun, wind and temperature conditions can work against HVAC systems, wasting energy

Solution

- Vaisala Weather Transmitter data is integrated into the building automation system
- Transmitter provides constant updates on 6 weather parameters
- Measurements are extremely accurate: they are specific to the micro-climate surrounding the building, rather than to the region

Benefits

- Integration of weather data enables more efficient regulation of HVAC systems
- Building automation systems optimize energy usage by using weather data to support decision-making for load distribution between HVAC components of different sizes
- Detailed weather knowledge improves safety for outdoor maintenance crews



“The WXT520 outputs six parameters simultaneously. It is much more efficient than installing a separate instrument for each parameter. And with no moving parts it’s virtually maintenance-free.”

*Ivar Bergdahl, Project Manager,
Siemens AB Building Automation,
Sweden*

system may calculate that the effects of solar radiation will be sufficient for heaters to turn off early and save energy.

Even greater efficiency

Weather data can be used to fine-tune the use of HVAC equipment, but also to support decision-making for load distribution between HVAC components of different sizes in order to optimize energy usage. In addition, weather data can contribute to safety, for example when a facility maintenance team needs precise weather data to ensure safe working conditions before going on the roof or servicing the side of the building.

Siemens chooses Vaisala

Siemens AB Building Technologies of Sweden makes regular use of the Vaisala Weather Transmitter WXT520 to improve BAS efficiency. One of their most important installations is within a hotel, exhibition and congress center complex located in Gothenburg, Sweden.

The WXT520 combines six weather parameters into one instrument. It measures wind speed and direction, liquid precipitation, barometric pressure, temperature and relative humidity. Practically maintenance-free and with no moving parts, the WXT520 incorporates the WINDCAP® ultrasonic wind sensor and RAINCAP® piezoelectric rain detector for added robustness.

Communications enabled

The 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 of Siemens. For legacy systems that require analog input, a serial-to-analog signal converter is also available.

In addition to weather multi-sensors, Vaisala’s product portfolio for outdoor measurements in conjunction with building automation includes products for measuring humidity parameters (relative humidity, absolute humidity, dewpoint, wetbulb, enthalpy, mixing ratio), temperature, barometric pressure, wind, precipitation and carbon dioxide. Learn more at www.vaisala.com.



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