

Bridge wind solution



Benefits

- Bridges are one of the most exposed parts of a road network, which under high wind conditions may become potentially dangerous
- Identifying the optimum location of wind monitoring equipment on bridges is critical to ensure representative data retrieval
- Optimum location is determined by several factors, identifiable through scientific study
- Constant monitoring and alarming ensures high wind events do not go unnoticed

One of the most exposed parts of the road network is on bridges. Vehicles will often suffer strong cross winds, which make driving conditions very difficult and sometimes dangerous. Vaisala offers a full solution to ensure that you are equipped to manage the traffic on your bridges, with the most up to date and relevant information

Ground breaking technology applied to the problem

Vaisala has a long history of innovation and the field of wind measurement is no exception. In addition to the traditional cup and vane wind measuring anemometers Vaisala also has new ultrasonic devices, which will measure wind speeds and direction without the need for moving parts. When situated high up on a bridge this is of significant benefit, in terms of reduced requirement for maintenance.

Communication technology delivers you all the information you need

By utilising the latest in communications technology (such as MPLS) data will flow from the wind station at a frequency that reassures you that you are not missing anything. The data is collected and quality controlled to ensure that you are looking at information that is both up to date and accurate - vital when faced with decisions that could close a bridge and send vehicles miles out of their way.

Solutions to suit all circumstances

Vaisala has vast experience in placing weather stations in hostile environments and as such we have a wide range of potential solutions for those hard to reach places. Bridges can offer special challenges, for which our engineers have several different options to suit the circumstances. Our specialists will work with you to define the correct configuration, from the measuring equipment, communications through to the regular servicing intervals that suit the conditions and your budget.

Not every bridge or high road is as exposed as the next. If you are not sure whether you are facing significant risk, Vaisala offers a consultancy service to assess the situation. We have models that look at the flow of wind through the bridge area to see where the strongest winds are likely to occur and from which direction. This process ensures that the wind monitoring station will be sited in the most appropriate location, providing you with the readings to act upon with confidence

Constant monitoring and alerts

Utilising Vaisala's state of the art database, the information from your wind station will be collected and archived in the event that you need to conduct further studies or write reports. Once in the database we offer the ability to view your data as it happens and also using the alarm functionality of the system, we will work with you to set up appropriate

thresholds for sending out email alerts to your PC and mobile devices. This means that someone is continually watching the state of the wind where it matters most and you will rest assured that any significant changes will get to you quickly.

How do ultrasonic anemometers work?

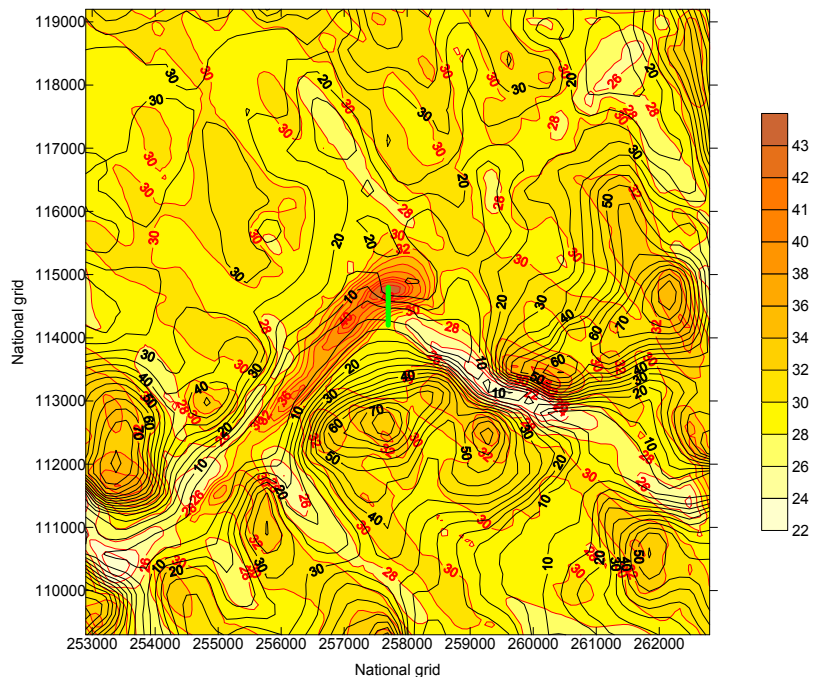
Ultrasound is sent between the three receptors (transducers) that stand out of the top of the sensor. This ultrasound travels in straight lines in still air at 330m/s but when there is a wind they take longer to reach their destination. This transit time is measured in both directions for each pair of the transducer heads. Using two measurements for each of the three ultrasonic paths at 60° angles to each other, the ultrasonic anemometer computes the wind

speed and direction. The wind measurements are calculated in a way that completely eliminates the effects of altitude, temperature, and humidity.

Studying the way wind flows

Using wind modelling techniques, Vaisala consultants will look at your bridge or indeed whole network to locate the points at which the wind is likely to gust highest depending on the direction that it's blowing from. It should be noted that this point will change location when the wind changes its direction, so careful consideration needs to be taken when locating your wind bridge system – we will help give you everything you need to make an informed decision.

Mean wind parallel to upstream flow (30m/s, SW) at height 10m (Waterford)



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