

# LATERAL WIND AT HIGH SPEED RAILWAYS

QUALITY THROUGH INNOVATION AND DESIGN

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Energy, Water, Environment.  
Global Sustainable Solutions.

## 15 Lateral Wind at High Speed Railways – WindAlert System

The high speed train is inevitably exposed to natural winds when running on the open track. The side force and lift force increase sharply when subjected to strong crosswinds, which drastically deteriorates the operational safety of high speed trains.



Lateral wind is one of the most important influencing factors on high speed trains running performance. As in the case of road traffic safety, the Characteristic Wind Curve or Critical Wind Curve (CWC) is used to evaluate the operational safety of the high speed trains exposed to crosswinds.

ENEA Grupo® offers our advanced WindAlert System which represents a complete solution for the measurement of winds at high speed railways by means of a number of meteorological stations installed alongside the entire track, distributed according to specific scientific studies. As per the characteristics of the terrain and other factors related to the type of trains, the Critical Wind Curves are calculated previously for each specific site and used by the Meteorological Stations for alerting if such CWC have been exceeded at any moment. This information is automatically transmitted to the Traffic Processing Center.



Each meteorological station installed alongside of the high speed railway is configured by a Data Acquisition Unit or data logger Model METEODATA, to which are connected normally a set of three redundant wind sensors for wind speed and wind direction measurement. By means of a proprietary firmware the signals of all the three wind sensors are processed in realtime by the meteorological station in order to

record reliable data of both parameters, wind speed and wind direction. As indicated this information is transmitted in real-time to the Traffic Processing Center.

Besides wind speed and direction sensors, these meteorological stations of the WindAlert System can also be configured to measure other important meteorological parameters, such as Ambient Temperature, Relative Humidity, Atmospheric Pressure, Rain or Snow

Precipitation, Snow Level, etc. of a great interest for completing the knowledge of the environmental conditions along the entire route.

