Application Notes

Subject: Road & Railway Tunnels

Reference AN0001

Introduction

Wind data has an important role in transport safety. Road and railway weather stations measure wind speed and direction. In road applications this is essential for high-sided vehicles.

In road and railway tunnels the measurement of wind data is also essential as the restricted space increases the danger of an incident. In larger tunnels extraction fans are used to control the wind flow within the tunnel. If a fire occurs inside the tunnel wind measurements made by anemometers are used to create zero wind conditions in the area of the incident to prevent the spread of fire. In road tunnels wind flow is altered to allow maintenance workers to work safely in the tunnels without being affected by carbon monoxide fumes.

Application

Gill has supplied wind sensors for tunnel applications worldwide for many years, specifically focussing on the WindSonic and WindObserver products. The WindSonic and WindObserver have been used in a variety of positions with regard to the tunnels including the entrances / exits, in the air ducting and in the main tunnel itself.

Specifically for inside of the tunnel, i.e. for air ducting and main tunnel side wall / ceiling installations **WindSonic and WindObserver have a specific tunnel mode**:

- In this mode, the output is given as a signed figure (i.e. positive or negative) along the 'U' (= South – North) axis.
- Direction is indicated by a 0 or 1.

WindSonic and WindObserver offer the best approach for rail tunnel networks due to the robust, corrosion free construction, no maintenance approach and simple output options, which make it the perfect partner for tunnel applications whether interfaced using the digital options of the RS232 (for short distances), RS422 (for long distances), RS485 or 4-20mA allowing networking into tunnel control systems.

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Reference Sites

WindObserver has also extensively been provided to tunnels including:

- Liverpool UK road tunnels
- Hindhead UK road tunnels
- The Channel Tunnel approaches
- Road tunnels in the Alps
- Road tunnels in the Netherlands (pictured)



WindSonic has been installed in many tunnels including:

- Spanish High Speed Rail Network tunnels (pictured)
- Hindhead UK road tunnel (entrance)
- Heathrow Airport Taxi Tunnel
- Columbia's high altitude road tunnels
- Paris, France Metro tunnels
- Caracas, Venezuela Metro tunnels
- Blackwall road tunnels, London UK
- Italian road tunnels
- Hong Kong Mass Transit Line (pictured)
- Japanese rail network
- Chinese rail network
- Florida Department of Transport network



