



PHOENIX^{MDS} ECM ENVIRONMENTAL CONDITION MONITORING

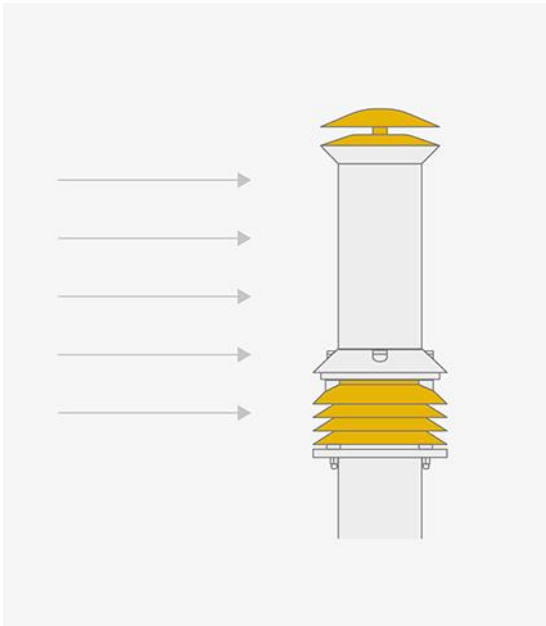


Adapting Operations to Environmental Conditions

Railway operators need to ensure a safe and reliable operation in all environmental conditions. The function Environmental Condition Monitoring (PHOENIX^{MDS} ECM) is an all-purpose solution that delivers accurate data for preventive warnings. Especially on bridges and open areas strong crosswinds can rapidly change and endanger operations. The system can also observe the wind stream conditions in tunnels. During a tunnel fire, the rescue team prepares themselves by knowing the direction in which smoke and toxic gases flow. Passengers are evacuated using the safest way out. In deserts, a threatening situation arises from wind driven sand or dust. It obscures the view and the sand build-up on top of the rail may rise to a level where safe train operation is at risk. Therefore, it is necessary to be warned in time in order to be informed about the danger ahead.

Key Features

- » Safety management of railway operations during heavy weather conditions
- » Operator's interventions to manage train speeds
- » Warns the operator about heavy rain and expected flooding
- » Safety management during passenger evacuation in tunnels
- » Longitudinal airflow measurement in tunnels
- » Precise wind force and direction measurement at every wind speed
- » Rain fall and sandstorm measurement
- » Rail temperature and noise measurement
- » Robust system withstanding salty mist, pollution or icing
- » Redundant system concept with two sensors
- » High availability of 99.98%
- » No mechanical moving parts



COMBINATION OF SENSOR TECHNOLOGIES

Different kinds of sensors can be combined by using the PHOENIX^{MDS} ECM function. The wind sensors, based on a thermal measurement principle, use no mechanically moving parts. This allows a very robust construction making the device apt for extreme environments at low maintenance costs and long lifetime. The system is already working accurately at very low wind speeds thanks to its lack of mechanical components. The sensors have been proven to

withstand desert environment with very low maintenance. An optional sand particle detection can be added for sandstorm detection. When a sandstorm brings a certain amount of sand against the aluminum rod the built-in microphone generates an analog noise. The signal indicates the level of sand in the air. If the wind force and the amount of sand reach a user-defined tolerance level, the system sends an alarm to the Central Management Software.

Technical Specifications

Wind direction:	0° to 360°
Resolution:	1°
Precision:	± 3°
Air stream speed:	0 to 100m/s
Resolution:	<0.1m/s
Precision:	±0.5m/s rms, ±5.0 %rms of MV
Lightning protection:	15kV
Environment:	-25 to +75°C

Options and Variants

