Using Polymer and Impedance Dew Point Transmitters to ensure safety of Railway Vehicle Compressed Air Systems

Application Background

Every rail vehicle is fitted with a complete compressed air system (including a compressor and a dryer), compressed air is used for activating the brake system and the door opener. If there is excess moisture in the air lines, then there is a risk of condensation. This can lead to:

- A failure of the brake system, and also a failure of the pneumatic door openers due to icing of the condensate in winter
- Corrosion caused by the prolonged presence of moisture in the distribution network and in pneumatic components such as cylinders and valves

Measurement Technique

Monitoring the dew point at the dryer output and at other key points throughout the system means that any failure of the dryer or moisture ingress at any point can be quickly detected and acted upon by maintenance staff.

Monitoring of the dew point is part of an integral maintenance procedure for all rail vehicles. Ensuring that the air in the system is sufficiently dry avoids costs caused by damage and repairs to parts which have been adversely affected by moisture. It also means that the vehicle will be less likely to succumb to sporadic failures, which would result in a loss of operating time, and perhaps safety issues. Obviously any failure of the brake system due to it freezing up would be a serious hazard.

Michell's rail-industry-approved moisture transmitter is designed to provide continuous monitoring of the performance of the compressed air dryers on railway rolling stock. It uses the latest generation of the polymer moisture sensor which gives fast and reliable measurements in the key range of -60 to +60°C dew point for this application.

Online measurement of the system can also be carried out using an Easidew transmitter, its -100 to +20Cdp range would easily cover any dew point encountered in the system. This could also be coupled to an Easidew Online monitor, allowing a clear visual display, a current output and two customisable alarm contacts.

For spot check measurements the MDM300 Dew-Point Hygrometer can be used. This instrument utilises an advanced ceramic sensor technology to provide rapid spot check measurements. The MDM300 can provide measurement in both dew point and moisture content with 67ppm$_V$ achievable in less than 10 minutes. It also has data-logging features allowing it to store up to 8000 measurement points and transfer data wirelessly, making it perfect for the swift testing of compressed air.

Rail Industry Transmitter

MDM300

Easidew Online

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