High Speed Comprehensive Inspection Train

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Part 1  Summary

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Track Geometry Inspection  Dynamics Inspection  Catenary Inspection  Communication Inspection  Signal Inspection  Integration System
1. Track Geometry Inspection System

- Accurate measurement of Track Geometry was achieved by using of Inertial Theory, High-Speed Image Processing, and High-Speed Laser-Camera Technology (450fps) under the condition of 400km/h.
Part 2 Key Inspection Technologies

2. Catenary Inspection System

- Force Measurement System & Optical Measurement System
- Breakthrough——Dynamic calibration of the contact force, vision processing, high voltage isolation, real-time measurement of the angle of the steady arms.
- Picture 1: Dynamic Calibration Platform
- Picture 2: Measurement of the Angle of the Steady Arms
Part 2  Key Inspection Technologies

3. Wheel/Rail Force Inspection System

- Accurate measurement of wheel/rail vertical force, lateral force, longitudinal force, and wheel/rail contact position make use of continuous measurement technology. Real-time calculation of lateral/vertical force ratio, vertical wheel unloading ratio were achieved.

- Make a breakthrough on the technologies of IWS production, calibration, fast data processing, etc.
Part 2 Key Inspection Technologies

4. Acceleration Inspection System

- Acceleration sensors are arranged on car body, frame, and axle box at three transverse sections on car 1, car 3, and car 8, with distributed network-based acquisition.

Spectrum Analysis of Axle Box Acceleration
Part 2 Key Inspection Technologies

5. Bogie Load Inspection System

- Firstly using Bogie Load Inspection system for long-term monitoring bogie load state, and detecting high-speed EMU bogie load spectrum.
- Picture 1: Measuring Force Framework
- Picture 2: Calibration Platform of Measuring Force
Part 2 Key Inspection Technologies

6. Communication Inspection System

- The GSM-R mobile communication and 450MHz wireless field strength coverage, GSM-R QoS, scheduling command transmission test, electromagnetic environment along the railway and other test functions were achieved.

- Picture 1: Inspection Antenna

- Picture 2: Room for Communication Inspection System
Part 2  Key Inspection Technologies

7. Signal Inspection System

- Real-time inspection of the CTCS-3 (CTCS-2 compatible) Track Circuit, Balise, Compensation Capacitor, Traction Current, and monitoring of onboard ATP working status functions were achieved.
- Picture 1: Balise
- Picture 2: Compensation Capacitor Inspection Antenna
- Picture 3: Signal Receiver
Part 2 Key Inspection Technologies

8. Integration System

- The function of the integration system is sending the unified signal and information of current speed, current location, clock, mileage, and etc. So each inspection system including the on-line integration, storage, display, query, comprehensive analysis and transmission will work in synchronization.

- Spatial Synchronization
- Accurate Location
- Comprehensive Analysis and Processing
- Dedicated Network and Centralized Monitoring
- Environmental Video Monitoring
...Thank you for your kind attention