

TCMS & WMDS

Remote monitoring and diagnosis for stable train operation

Mitsubishi Electric's TCMS (Train Control and Management System) and WMDS (Wayside Monitoring and Diagnostic System) provide integrated solution for reliable and efficient train operation

TCMS

(Train Control and Management System)

- Ethernet (100BASE-TX) communication based on IEC61375
- Total control over onboard equipment operation
- Reduction of in-car hard-wires

Communication between onboard and wayside

- Wireless communication based on IEEE802 standard
- Priority control and bandwidth utilization
- Redundant communication

WMDS

(Wayside Monitoring and Diagnostic System)

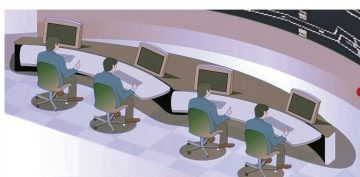
- Remote monitoring and Virtual Cab screen
- Fault analysis and diagnosis
- Remote parameter setting of onboard

CBM via TCMS and WMDS

(Condition Based Maintenance)

- Statistical data collection and visualization
- Predictive failure detection of equipment
- Train-set optimal control with TCMS

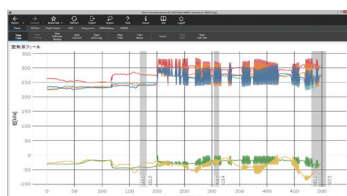
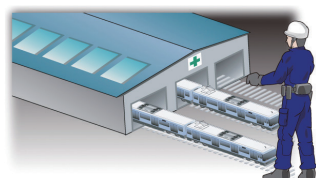
Operation Control Center
(Control center personnel)



Virtual Cab

Wayside

Shop
(Maintenance personnel)



Equipment data
visualization

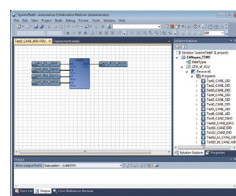
Air Conditioning
Brake
Propulsion
...

TCMS

Onboard

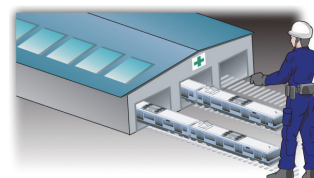
Wireless Data Link

WMDS

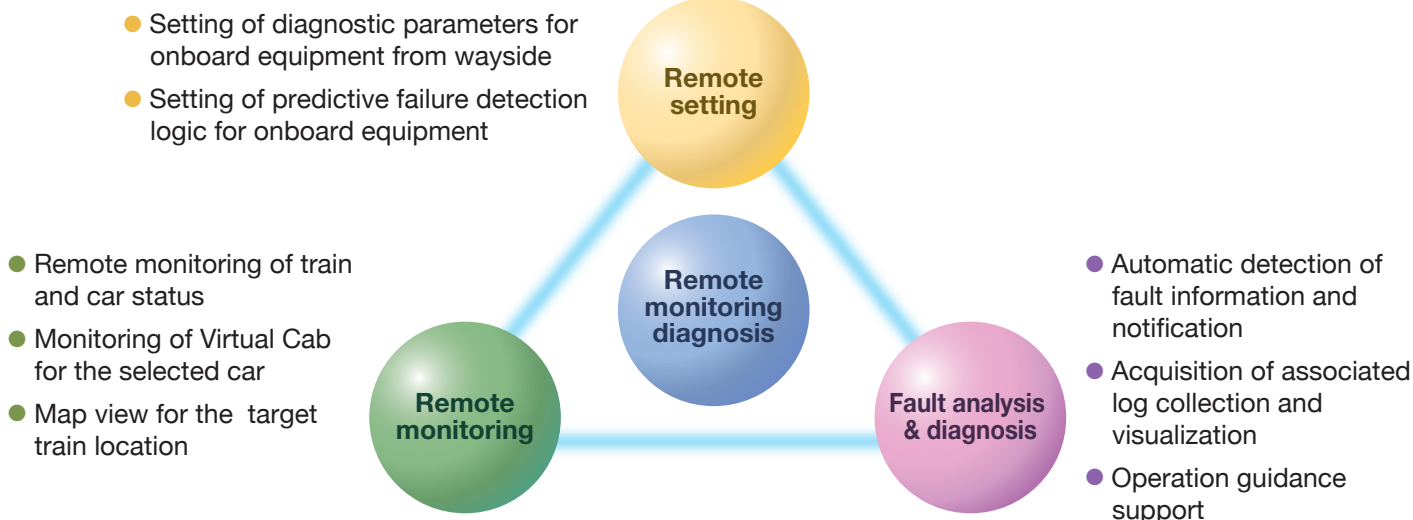


Failure Detection
Logic Editor

Shop
(Maintenance personnel)



WMDS Function Overview



Benefit for users

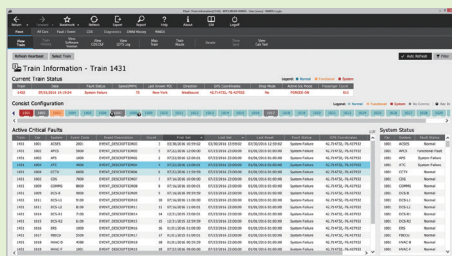
- Shortening of restoration time in case of failure
- Minimization of train operation downtime
- Reduction of workload on control center personnel and maintenance personnel

Functional Advantages

- Virtual Cab: Display simultaneously of the cab screen
- Diagnostic parameters and operation parameters of onboard equipment can be set from wayside

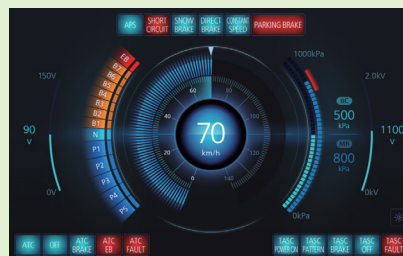
Screen Sample of WMDS

Monitoring of train and car status screen



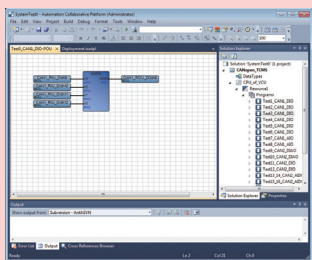
Monitoring the status of trains of the entire fleet, Train and Car levels respectively.

Virtual Cab screen



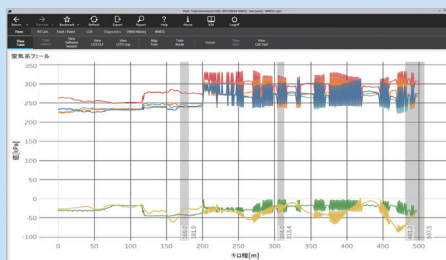
Virtual Cab screen allows the remote display of the cab screen of the selected car.

Failure detection logic editor screen



Editing of onboard event detection logic using third party software standard package.

Graph view screen



Graph display of the collected event device status (analog and digital).

MITSUBISHI ELECTRIC CORPORATION

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