PREDICTIVE MAINTENANCE SYSTEM

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DESCRIPTION

The Predictive Maintenance System solution provides an extensive package of functions for the gathering, recording, analysis and especially the visualization of operational and diagnostic data (smart data) from the vehicle and other parts of the entire operation. It also includes a maintenance eco-system to cover a number of cases related to vehicle operation, maintenance and data processing for further use (RAMS, the optimization of maintenance activities, spare parts purchasing and logistics etc.). The solution provides the identification of problematic components or areas of vehicle operation based on operational and fault data and machine learning algorithms (e.g. why on this particular line, vehicle doors on the left side have more faults than on any other line?). The solution covers all parts of maintenance processes including vehicle as maintained bill of material, operational data gathering and transmitting, a maintenance intervals overview, maintenance tasks planning and execution, fault reporting and analysis. A complete package of advanced reporting is available and is subject to project customization based on specific customer needs.

KEY FEATURES

- Available in predictive maintenance or condition based maintenance.
- Based on modular High Performance Computer platform
- Conform to all rail european required standards.
- Most functions are fully configurable
- Connectivity
  - Wireless (Wi-Fi, LTE/5G, GNSS)
  - Wire (2× ETH)
- Extensibility to other peripherals
  - Ethernet switch including PoE
  - Digital IO, CAN, RS-XXX
- Full processing of income data with a capacity of up to 300,000 signals/alarms
- Connectivity to servers:
  - Secure VPN solution
  - Secure T2G – communication with certificate
  - Optionally – IOT standards – MQTT
- Auto upgrade of all application package, configuration and BSU software without impact to vehicle operation

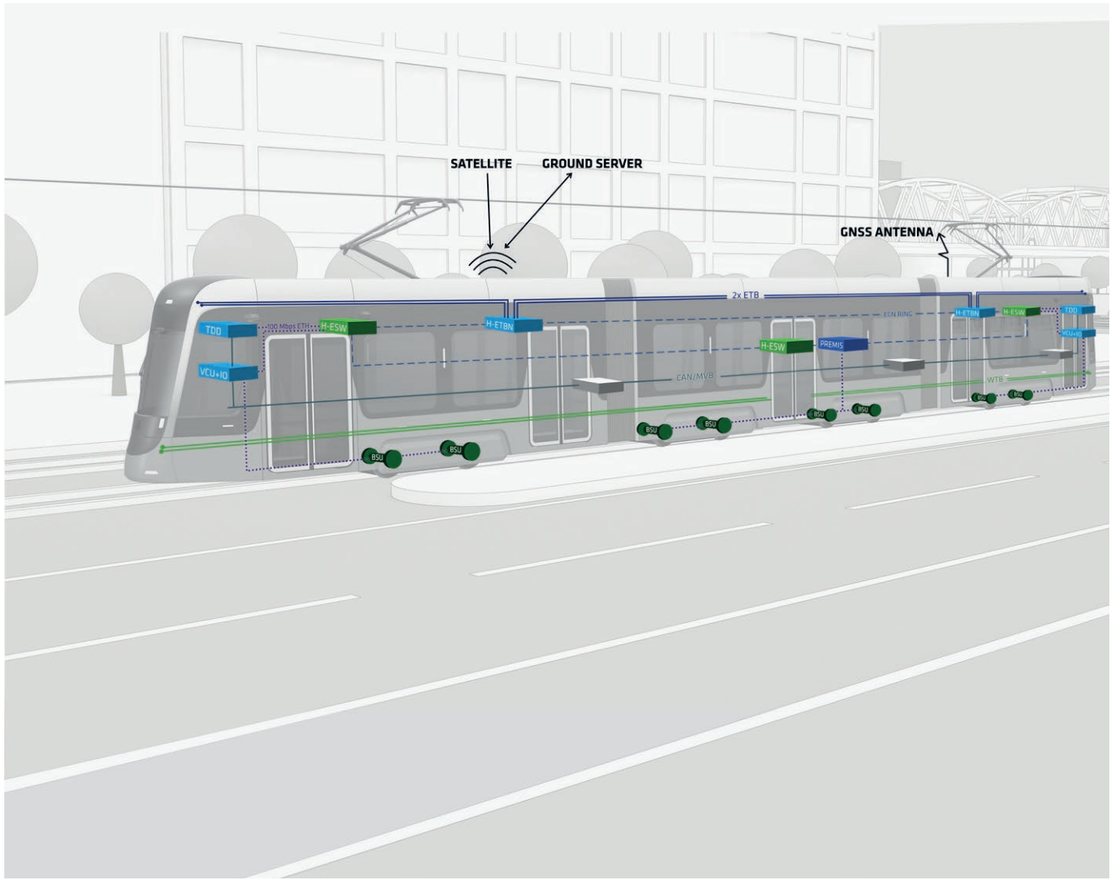
COMPONENTS

ON-BOARD DIAGNOSTICS UNIT HIGH PERFORMANCE COMPUTER NDS

- Full event processing of income data: Signals, Alarms with capacity up to ~ 300,000 signals/alarms
- The data are securely transferred by GSM/Wi-Fi connection to server.
- Full data protection against power failure, connectivity drop out
- Supported com. Busses and Protocols:
  - Ethernet: TRDP (IEC61375), SNMP, etc.
  - CANBUS: CANOPEN (EN 50325-4),
  - Other: RS485/422, RS232, MVB
- Extensible by digital/analog inputs
- Can be connected extension sensors (temperature, vibration)

SERVER PART

- Can be deployed on Predictive Maintenance System or SAAS
- Including Maintenance & Support service
- Stores and analyses all collected data
- Provides GUI for visualising the data, generated reports, fleet overview, data for maintenance
- Data access control by the user
- PI for other Esset Management system and other



TCMS (TDD, VCU+IO, HIGH PERFORMANCE COMPUTER-ETBN, IO, GTW)

PREDICTIVE MAINTENANCE SYSTEM

CAN/MVB DEVICE (2×ETB – 1 Gbps, ECN RING 1 Gbps)

TCMS–ETH (HIGH PERFORMANCE COMPUTER-ESW, ACS)

BSU

STANDARDS

EN 50155, IEC 61375, EN 50121, EN 45545-2, EN 61373, IEC 62443 and more.

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