Wabtec CORPORATION

Case Study

PROJECT

GoLINC-M Modules

CLIENT

Eversholt Rail Group

Overview

A vital part of Remote Condition Monitoring (RCM) is retrieving data from the systems on the trains. In many legacy fleets, the existing on-board Ethernet infrastructure is not in place to do this, or the equipment itself is often not set up for connection to Ethernet networks. Even in many newer fleets, the detailed system information is not exposed to the existing network. The M Module project addresses these issues by directly connecting to maintenance ports on equipment and communicating data wirelessly without the need for existing infrastructure.

Deliverables

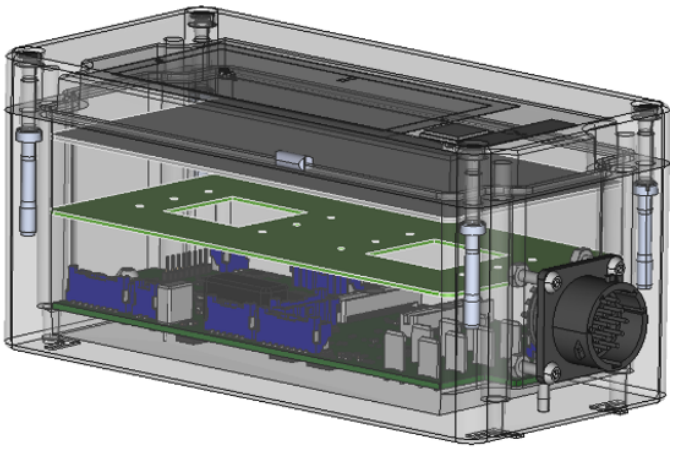
- Provide a method of quick and easy retrofit of RCM to legacy trains.
- Be able to connect to equipment which may not have Ethernet networking capabilities.
- Avoid the need for lengthy cable and conduit runs.
- Have a solution which can be utilised on trains without an existing Ethernet network, without the need to install one.

Challenges

- Retrofit of RCM systems to trains is difficult for a number of reasons:
- Running long new cables to equipment is often disruptive and costly.
- Lack of space for new conduits and equipment.
- Lengthy downtime for installation of lots of new cables often unacceptable and costly.
- Legacy equipment often does not have Ethernet networking capabilities.
- Even if equipment does have Ethernet networking capabilities, there are often insufficient spare ports on existing Ethernet networks on the train to connect all of the pieces of legacy equipment which may want to be monitored.

Solutions

- The M Module project offers a way to quickly and cost-effectively retrofit RCM capabilities to existing rolling stock.
- Mx Modules connect directly to the monitored equipment. They can receive inputs from a variety of types of connection and protocol, including:
  - Serial RS232/RS485
  - Ethernet
  - Digital Inputs
  - USB
- Mx Modules wirelessly send the data they receive from their inputs to MM (Master) Modules. The modules utilise long-distance wireless communication. This means less interference, longer range, and no reliance on existing Wi-Fi infrastructure.
- MM Modules act as a central on-board gateway for the data received from the Mx Modules. They receive, pre-process, and send this data off-board via the cellular network.
- Off-boarded data is received in the cloud and stored in a database. The data are presented via dashboards tailored to the customer's needs, or via APIs allowing integration with tooling of the customer's choice.



Benefits

- Lengthy cabling and conduits are not necessary — Mx Modules can be positioned close to equipment, reducing the cable lengths required. As communication is wireless, there is no requirement for lengthy network cable runs between equipment and network switches.
- Installation is fast & scalable — given Mx Modules can be installed close to the equipment to monitor, and MM Modules can be installed away from this but without wiring between them, less panels need removing to make conduit runs. This reduces installation times. Further to this, modules can be moved without complexity, and installations can be scaled up easily.
- Legacy equipment can be monitored — equipment without Ethernet capabilities can be monitored without the need for modification to the equipment itself.
- Equipment on legacy trains with no existing network can be monitored — because wireless communication is via radio waves, equipment can be installed regardless of existing network provision.