

Remote diagnostics in fleet maintenance

27/04/2023

Onderweg.
Naar beter.



Who are we?



3.672
Trains/day



523.723
Pass./workday
(923.646 pre-covid)



13
Workshops



17.299
Employees



B-Technics

Main tasks:

- Preventive maintenance
- Repairs (after incidents, defects,...)

Additional tasks:

- Modernisation of the fleet
- Update maintenance policy
- Buy new assets
- Selling/decommissioning old assets



Our Focus

- Safety
- Continuous Improvement
- Innovation
- Increase passenger satisfaction through reliable rolling stock and efficient maintenance



Asset maintenance

Today

- Time-based maintenance
- Km-based
- Repair based

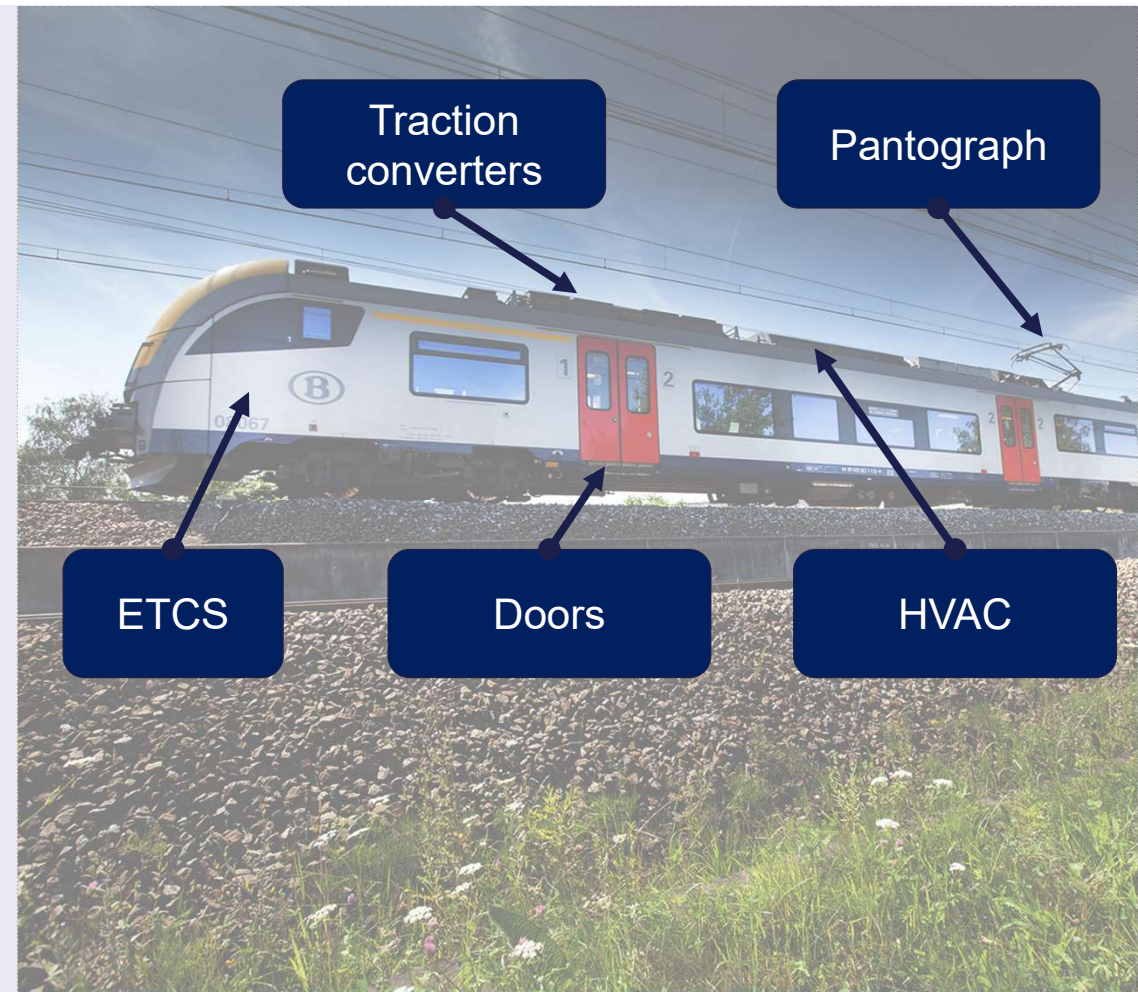
Future

- Optimize maintenance:
 - Km-based
- Data driven maintenance
 - Condition based maintenance
 - Dynamic maintenance and revision program
 - Tracability main components and electronics



Remote diagnostics: Data sources?

- Automatic data collection
 - Onboard data sources:
 - Traction converters
 - Doors
 - HVAC
 - ETCS equipment
 - ...
 - External data(still within the SNCB):
 - Databases
 - API's
 - ERP
- Track & optimize asset performance



Remote diagnostics: The fleet



*20/4 1026 connected trains

Remote diagnostics: Data swamp?

- High data rate
- Many different fleets from different era's
- Very detailed fleet specific data
- Manual analysis??
- Expert knowledge required
- Key figures:
 - Up to 2500 files/5 min
 - 40 GB/day



Remote diagnostics: From data to information

- Create usefull information for maintenance crew:
 - Where is the train?
 - What do I need to do?
 - Which part do I need to fix?
- Simple and easy to use overview of train data
- Automatically detect anomalies
- Fleet performance



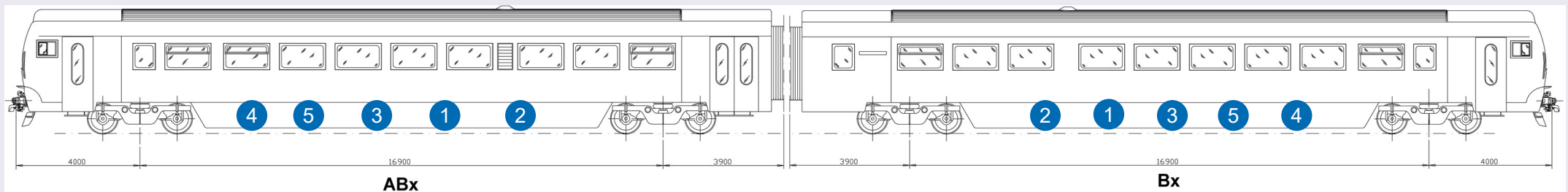
AR41: General information

Key information

- Alstom
- 2000-2002
- 96 trains built (93 in service)
- Max speed: 120km/h
- Diesel hydraulic propulsion
- 2 QSK650 diesel engines



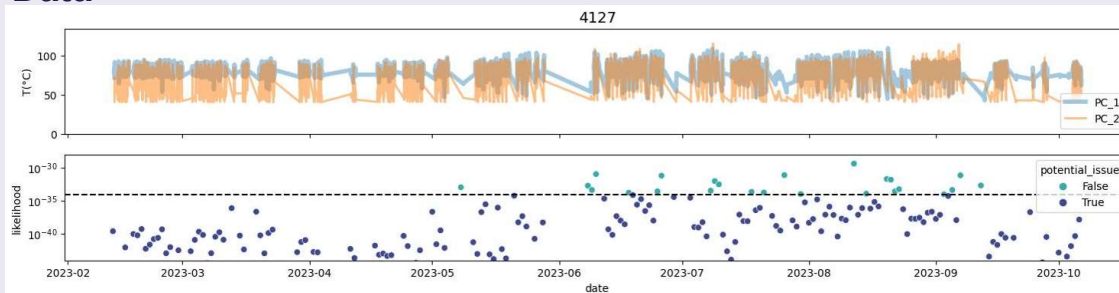
AR41: main components



1. Diesel engine
2. Hydraulic transmission
3. Cooling system
4. Static converter & battery
5. HVAC

AR41: from data to information

Data



In the field



Information: thermostats not working



A photograph of a train station at night. In the foreground, a person with a blue backpack and a red jacket is walking away from the camera on a platform. To the right, a high-speed train is stopped. In the background, a digital display shows 'Control IC' and the time '08:07'. The scene is lit by station lights, creating a blurred effect on the train's windows.

Thank you!

Onderweg.
Naar beter.

