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RAILWAY DIGITALISATION UNLEASHED: THE ROI OF ACTIONABLE DATA TO FACE OPERATION & MAINTENANCE REALITY









WELCOME TO A POWERFUL COMBINATION OF DATA ANALYTICS AND ENGINEERING EXPERTISE.

A new generation of digital solutions with a single objetive: get the best performance of your fleet and your maintenance strategy.

Welcome to a powerful combination of Data Analytics and Engineering Expertise.

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/ UNITS IN SERVICE / PASSENGERS ON TIME / SAFE JOURNEY / IMPROVE AVAILABILITY & RELIABILITY / REDUCE LICE CYCLE COST / BREAKDOWNS ANTICIPATED 1 KD

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/ SOLUTIONS







LEADMIND FOR FLEET MANAGEMENT

Manage your fleet's events and troubleshooting in real time.

LEADMIND FOR ADVANCED ANALYTICS

Plan the operation and maintenance optimizing tasks and saving costs.

LEADMIND FOR WAYSIDE SYSTEMS

Inspect automatically train components, to know when maintenance is needed.





From Data To Action





Data driven digital platform

On-board and wayside hardware for data acquisition

Plan And Optimize





Warehouse management)

Advanced maintenance Maintenance plan execution system management platform

Agile Stock Management



intrad.



Automatic wheel Wheel advanced parameter measuring analytics

Smart Asset Management

Wheelset Life Extension



equipment.

RFID Traceability PDA

7





EASING OPERATIONS

Data is power, Decision making power

EASING DEPOT PERFORMANCE

The smartest, Is a smart digital depot

EASING INSPECTION

Automate train inspection, to automate planning

EASING AVAILABILITY

The experience begins with the availability of the fleet



EASING OPERATIONS

/ TARGET: Operator



ENERGY EFFICIENCY

Driver's Performance DASEM Energy Advanced Analytics

PASSENGER EXPERIENCE

Passenger Counter Connected Pass. Information System

SAFETY

Wheel Slide Protection Sliding condition SW Release control Speed Monitoring



EASING DEPOT PERFORMANCE

/ DIGITAL DEPOT

Technology and features



FROM DATA TO ACTION, INCREASE SAVINGS SAFELY

Improved diagnosis. Fleet availability. Reduction of costs. Life extension of assets. Energy efficiency.



PLAN AND OPTIMIZE, PAPERLESS

Time saving and effectiveness. Automation paperless. Real time control. Data Quality.



SMART ASSET MANAGEMENT

Systems integration, centralization and global vision. Automation. CBM



/ TARGET: Operator and Maintainer



PREDICTIVE MAINTENANCE **REAL TIME**

Driver's Performance DASEM Energy Advanced Analytics



PREDICTIVE MAINTENANCE ADVANCED ANALYTICS

Passenger Counter Connected Pass. Information System



PREDICTIVE MAINTENANCE ADVANCED ANALYTICS

/ TARGET: Maintainance Engineering







HEALTH AND LIFE INDICATORS. CBM.

Set alarms based on real asset's operational activity

ADVANCED ANALYTICS FOR CRITICAL COMPONENTS

Anticipate possible failures before they affect service operation by tracking asset performance

WHEELSET ANALYTICS FOR LIFE EXTENSION

Wheelset health status knowhow to lengthen life cycle, optimize maintenance strategy and save costs.









PREDICTIVE MAINTENANCE ADVANCED ANALYTICS

/ PERFORMANCE OPTIMIZATION OF KEY ASSETS

SUCCESS CASES COMPRESSOR 3 LeadMind HVAC PANTOGRAPH DOORS BATTERY TRACTION CONVERTER WHEELSET BOGIE ENGINE ACR



PREDICTIVE MAINTENANCE ADVANCED ANALYTICS

/ HVAC

Air compressor





21 Automatic Trains fleet.

ANOMALOUS COMPRESSORS DIAGNOSTIC:

The indicator shows the cooling speed of the supply air.

Those compressors that do not work well do not cool the air.

Benefits:

Improving reliability and availability, increasing comfort of passengers & executing maintenance activity only where is needed.



PREDICTIVE MAINTENANCE ADVANCED ANALYTICS

/ ENGINE

Overheating





Northern Arriva DMU 60 Trains Fleet

[Overheating] DIAGNOSTIC:

LeadMind activates an overheating indicator alarm. A crack in the coolant pump pipe is producing coolant leakage. Intervention is carried out and temperature goes back again within the normality.

Benefits:

- Service affecting issue is predicted.
- The longer this situation continues the more wear the brake linings will suffer as the hydrodynamic brake doesn't work and the mechanical brake has to be applied. Extending lifetime of powerpacks, brake discs and brake pads.



PREDICTIVE MAINTENANCE ADVANCED ANALYTICS

/ HVAC

Air compressor

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60 EMU Trains in the North of Spain.

Context: Making a follow up of the compressors' consumption, we have verified that those compressors that begin to generate a higher energy consumption than the previous days have a low level of oil due to some small leak in the equipment.

Achievement: Oil level is monitored continuously through the energy consumption. Once oil level filled compressors' consumption improved remarkably.

Benefits:

Availability, energy consumption & service reliability is improved without the need of stopping trains in the workshop



PREDICTIVE MAINTENANCE ADVANCED ANALYTICS

/ MAIN AIR

Supply system





14 Train's fleet of Barcelona Metro

Air Treatment & Generation:

The MA2 car compressor is working on during more time after each and every start.

The compressor of the MA2 is around 20 Amps and the one installed on the MA1 car around 16 A.

Benefits:

- Detect leakages in early stages before it affects service and availability.
- Consumption is reduced and lifetime of the asset is extended.



PREDICTIVE MAINTENANCE ADVANCED ANALYTICS

/ AUXILIARY CONVERTER





60 EMU Train's fleet. Series 900 and 950.

System-Auxiliary Converter

Challenge: Condenser anomaly.

Achievements: Thanks to the predictive alarm raised by LeadMind a proactive check is carried out by the workshop on a specific auxiliary converter.

This intervention has avoided a possible greater damage on the component if a total failure of the capacitor would occurred.

Benefits:

- We have save material and human labour.
- Service interruption and fatal error avoided.



PREDICTIVE MAINTENANCE ADVANCED ANALYTICS

/ ENGINE

Diesel





17 DMU Train's fleet operating in Spain

Context: A problem in the diesel engine intake system means a loss of power in it, an error that must be corrected and avoided as soon as possible.

Challenge: Identify the fault to prevent a fatal engine failure.

Achievement: An indicator is put into production in LeadMind advanced analytics.

It identifies this loss of power caused by a failure in the engine intake manifold improving punctuality.



/ PANTOGRAPH ISSUE DETECTED WITH LEADMIND FLEET MANAGEMENT

Real Time Alarms





41 Commuter Trains operating in Brasil

Context: Detection of a very large voltage difference between pantographs of the same train. After verification in the workshop, we confirmed that the voltage transducer of the auxiliary converter of the car R4 was damaged.

Challenge: Transducer is replaced to fix the problem. With this damaged transducer the problems to be solved could have been more expensive to fix.

Benefits:

- LeadMind FleetManagement real time alarm notifies directly to your email when an issue need to be solved.
- Easy to use interface. No need to know how to code.



PREDICTIVE MAINTENANCE ADVANCED ANALYTICS

/ FIRE ALARM DETECTED WITH LEADMIND FLEET MANAGEMENT

Real Time Alarms

Details			Let's MODIFICATION, 22/16/2020 10:01 (MR) (24)	EVENT CHARTER IN 12/10/2010 11:01 (MT-20	
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15 Commuter Trains (Loco + Cars) operating in Saudi Arabia

Context: Due to the amount of sand in the environment, the filters of the ventilation system of the engine room are very frequently saturated, causing fire alarms.

Challenge: The perfect condition of the filters is of vital importance to maintain the necessary air flow entering the engine room and without sand contamination.

Achievement: Thanks to real time and user alarms, engine room temperature is monitored. When a high temperature is reached, an email notification has been set up to replace the filters.



PREDICTIVE MAINTENANCE ADVANCED ANALYTICS

/ MAIN AIR

Supply system





AIR PRODUCTION COMPRESSOR: Over temperature detection

Context: These units do not have a TCMS over temperature alarm on the air compressor. The compressor shows start-up failure (AL707), but the cause is unknown.

Challenge: Identify over temperature faults and their cause.

Achievement: An alarm is created (COMP1HT) with which the over temperature fault is displayed.

The frequency to clean the radiators is set up based on condition not on miles covered.



PREDICTIVE MAINTENANCE ADVANCED ANALYTICS

/ BATTERIES







41 Commuter Trains operating in Brasil.

[Batteries Overheating] DIAGNOSTIC:

Context: A temperature problem in the car R4 of the train S36 is identified with a LeadMind CBM Alarm.

Challenge: Detect the cause of the problem to carry out the maintenance for correct operation.

Achievement: The *CTrens* maintenance team analyzes this train and car and identifies that the battery connector was loose. After retightening the connectors, the problem has been solved with the indicator coming back to normality



EASING INSPECTION

YOUR INSPECTION STATION, YOUR WAY

Instant data acquisition from wheel, brake, bogie, pantograph, car

WHY?

Automate inspections, ensure safety. Know the status and trend of asset wear. Anticipate failures for a smart maintenance plan.

HOW?

Design your station: Choose the needed equipments for a modular automatic wayside station
Every module works with freight, passenger, and heavy-haul railways.

3. Low cost of ownership, are easy to maintain, and provide data that is highly repeatable.

4. Maintainer will be able to asses automatically the condition of different assets.





COUNTRIES

23	WPM Wheel Profile Monitoring system
2	WILD Wheel Impact Load Detection
system	
1	HABD Hot Axle Box Detection system
1	BSM Brake Shoe Monitoring system
1	BPDM Brake Disc Pad Monitoring system
1	BAM Bearing Acoustic Monitoring system
1	WDOD Wheel Defect & Ovalisation
Detection system	
3	MEI Effort Monitoring system
1	BDM Break Disc Monitoring system
1	CSM Collector Shoe Monitoring system
3	Train Inspection Panoramic Images
2	Bogie Inspection

Pantograph Inspection

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NETHERLANDS

2+8 Bogie Inspection 2+8 Pantograph Inspection 1 WPM Indoor

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AUSTRALIA

1 WPM Outdoor

NEW ZEALAND 1 WPM Indoor **1** BAM

1111

AMERICA

BRASIL ECUADOR MEXICO

ASIA

ARABIA ISRAEL **AUSTRALIA NEW ZEALAND** SOUTH KOREA

EUROPE

NETHERLANDS SERBIA SPAIN SWEDEN SWITZERLAND UK



/ WHEEL

Wheel Inspection Real projects implemented:

1. PROFILE

2. DEFECT BASIC

3.DEFECT PRO









/ BRAKE

Brake Inspection Real projects implemented:

1. DISC & PAD

2. SHOE





/ BOGIE

Bogie and Pantograph Inspection Real projects implemented:

1. VISUAL

2. BEARING HEALTH

3. THERMOGRAPHIC





/ PANTOGRAPH

Bogie and Pantograph Inspection Real projects implemented:

1. WEAR AND DEFECT





/ CAR

1. SIDE

2. ROOF

3. UNDERFRAME







/ COLLECTOR SHOE

1. THICKNESS





/ LEARN ABOUT REAL CASES:





LEADMIND WAYSIDE

/ THE PLATFORM

Collect data externally of the equipment of the train to identify diagnose failures.



FLEET STATUS AND ALARM MANAGEMENT

Generation and management of easily configurable alarms communicated with any operating system





See the detail of the measurements (graphs, photos, data ..)



ADVANCED ANALYTICS FOR LIFE PREDICTION

End of life estimation of the wheels and evaluation of critical areas of wear.





Collect data externally of the equipment of the train to identify diagnose failures.

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Items 10 → 1-10 of 381 |< < > >|











Collect data externally of the equipment of the train to identify diagnose failures.



Comments Hold shift and click on the photo to add a comment





















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TRUST IN MOTION

