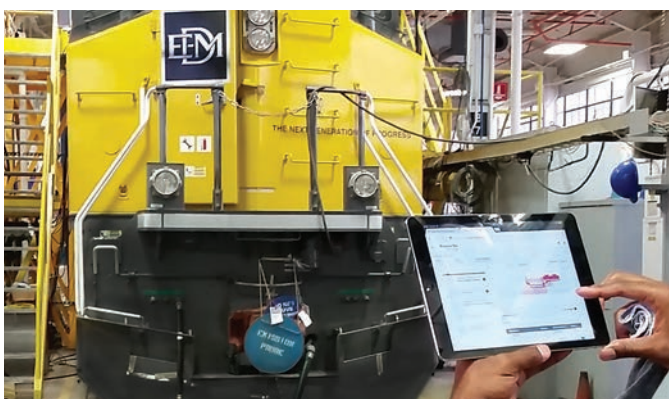


# RAIL TECHNOLOGY



BATTERY ELECTRIC LOCOMOTIVES

ENERGY MANAGEMENT &  
TRAIN AUTOMATION

PREDICTIVE ANALYTICS &  
CLOUD-BASED COMPUTING

ASSET PROTECTION

DECISION SUPPORT SYSTEMS

**Progress Rail**  
*A Caterpillar Company*

LEARN  
MORE



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ProgressRail.com



Throughout our history, our iconic product portfolio has been at the forefront of railroad innovation. With organic growth and more than 35 strategic acquisitions, we have expanded our support to ensure we're meeting customer expectations in every corner of the world, delivering reliable, high performance products and quality services.

## EMD® JOULE

Progress Rail is proud to offer the EMD Joule series of fully battery-electric and hybrid diesel-electric locomotives. Available as new builds or repowers, EMD® Joule locomotives range in battery capacity from 0.5 to 14.5 MWh to support a wide range of railway operations. Applications include:

- Switching/shunting yards
- Regional service
- In consist with diesel-electric locomotives

Joule locomotives recover energy through dynamic braking. When dynamic braking is activated to control train speed, the batteries are charged, saving what could otherwise be wasted energy. Alternatively the batteries can be charged through our range of wayside charging options tailored to meet operational needs.

Our growing family of zero exhaust emissions locomotives is just one way Progress Rail helps our customers achieve their sustainability goals.



## ENERGY MANAGEMENT & TRAIN AUTOMATION

Progress Rail's Talos™ Energy Management system leverages machine learning and massive computing power to analyze and optimize train routes resulting in significant fuel and time savings.

By adapting to train behavior, Talos delivers higher fuel savings, reduced emissions, improved train handling for safer operation and increased network capacity to impact railroads' bottom line. For full optimization, our Automatic Engine Start/Stop solution (AESS™) monitors critical operating parameters during locomotive idle operation, safely and effectively shutting down the engine once all factors are satisfied.



## COMPLETE CONDITION-BASED MAINTENANCE

Leverage operational data to reinvent how your railroad runs. Move from time- to condition-based maintenance, reduce costs and increase productivity with PR Uptime™ Suite to more effectively manage your operations. Advanced asset monitoring combines with our own Locomotive Monitoring Center (LMC) expertise to offer customized reports and streamline data delivery.

As part of the PR Uptime Suite, Uptime Cloud offers secure data storage and distribution, easily integrated with railroad ERPs. Uptime Connect helps to bridge data collection and transmission safely, while providing an electronics platform to integrate on-board and off-board solutions. Uptime Analytics uses data to create troubleshooting recommendations before a potential problem occurs, translating to measurable value in the shop, in the yard and on the track.

Together, these tools form the Uptime Suite to deliver the right insights to the right people, at the right time. The platform seamlessly integrates within existing day-to-day processes, and can offer coverage for your complete rail network.

## ASSET PROTECTION

Our train inspection systems have a wide range of track-mounted equipment to aid in defect detection, diagnostics and monitoring. From protecting the ties and track to high value assets, Progress Rail can design an asset protection solution to meet customer needs. The company also offers a state-of-the-art grade crossing obstacle detection system, where through the use of radar, the system can detect objects in the intersection of road and track, and alert the operator, or in some cases, stop the train automatically.

Our PowerView™ Suite offers next-generation products that help protect your people and assets, while also saving valuable time and money. From the locomotive event recorder, to fuel monitoring, to remote monitoring, we have the asset protection solutions to keep your railroads rolling. The suite includes PowerView LDVR, PowerView Connect, PowerView Playback, PowerView Expansion Module, PowerView Sense, and PowerView Detect.

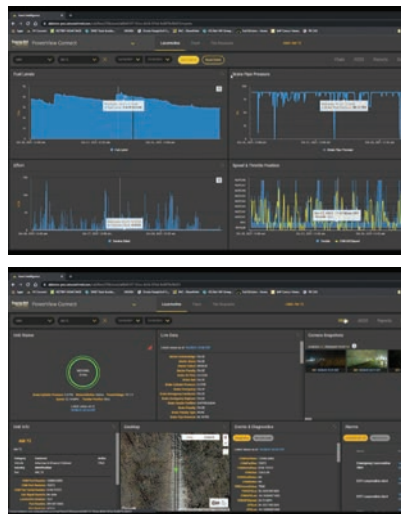
PowerView provides synchronized recording and playback of multiple data sources and can replace multiple locomotive recorders into a single unit. It is also a complete processing platform that supports edge computing for local analytics, alarming and other applications. PowerView integrates across most OEM locomotive types, as well as various third-party systems.

## DECISION SUPPORT SYSTEMS

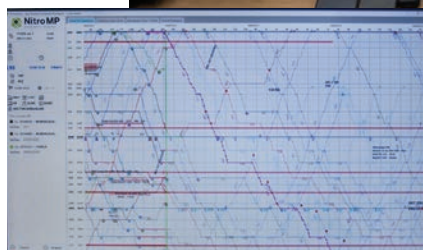
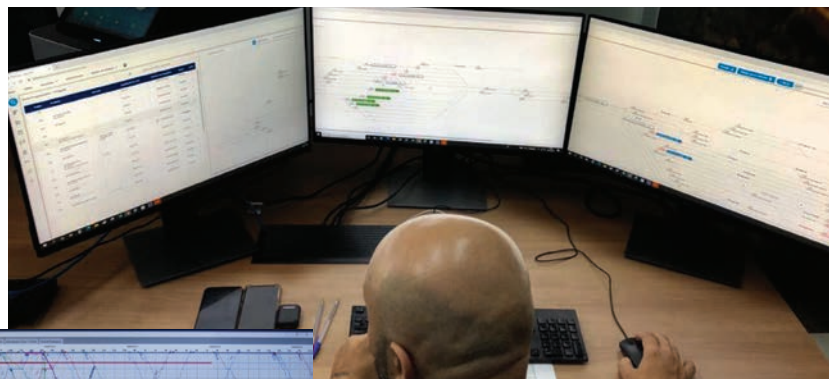
The Nitro Suite of products significantly reduces delays – saving time, money, and improving efficiencies across the board. This Decision Support System (DSS) augments the capacity of humans to objectively find the best course of action. Nitro uses AI to constantly learn and implement technology to improve operating ratios. The Nitro Suite of products includes NitroMP, NitroPacing, NitroYard, NitroCS, NitroLC, and NitroBlend.



**PR Uptime™ can help minimize downtime, improve safety and optimize rail operations through data that delivers results.**



**PowerView™ Suite protects your operations with next generation solutions to fit your needs.**



**Achieve improved functionality and fuel efficiency savings of up to 15 percent with Progress Rail's advanced rail solutions.**