

## Fuel and Energy Management Solutions for EMD Locomotives

### AESS

EMD AESS™ (Automatic Engine Start/Stop) for EM2000 controlled locomotives is a fully integrated software solution that monitors critical operating parameters during locomotive idle operation—safely and effectively shutting down the engine when all factors are satisfied.

EMD AESS provides superior fuel and lube oil savings, reducing emissions and wayside noise, while keeping the locomotive in a ready-to-use condition. It complies with the latest AAR S-5502 standard and allows individual customization to meet railroad operating and safety requirements.



*Photo depicts the AESS portion of the engine control panel.*

The EMD AESS reduces unnecessary idle time by more than 50% and improves locomotive fuel efficiency up to 29 gal/day for switcher use and 18 gal/day for line haul operation.

### SmartConsist

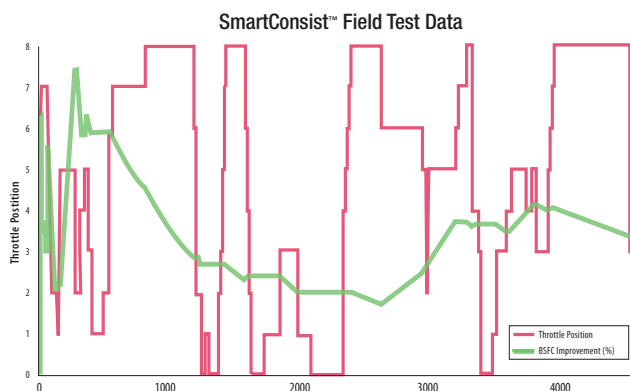
The EMD SmartConsist™ Fuel Management System automatically sets locomotives in a consist to their optimal throttle position – improving fuel economy and cutting emissions.

SmartConsist is fully integrated within the EM2000™ locomotive control system and its operation is transparent to the crew.



The engineer simply selects the desired throttle notch in the lead locomotive, and the most fuel efficient power settings are activated for the units in consist. SmartConsist continuously monitors and sets the most fuel efficient combinations to achieve the required power and tractive effort.

The EMD SmartConsist Fuel Management System can be applied to the in-service EMD locomotive fleet and is offered as an option on all new EMD locomotives. And with fuel savings of 1-3% per locomotive, railroads can expect an early payback on their investment.



## LEADER

LEADER® (developed by New York Air Brake) is a revolutionary freight train management system designed to improve train handling and yield fuel savings up to 12%.

LEADER® assists locomotive engineers in reducing fuel consumption while effectively managing trip time and minimizing in-train forces. LEADER's back-office software utilities help railroads analyze engineer operating databases to improve both train handling performance and overall train operating efficiencies.

LEADER® operates in an information-only mode, or in a proactive-assist mode, by providing recommended throttle and brake settings. In either mode, it provides information that will save fuel and improve safety. LEADER also functions as an event recorder, and its underlying technology allows real-world data to be downloaded for in-depth study and replay on a simulator—ideal for engineer training.

## AutoThrottle

AutoThrottle is a new product development that can continuously and automatically set throttle, dynamic brake and control of the distributed power system to the LEADER recommended levels. This maximizes the potential LEADER energy savings and schedule performance for all trains and engineers. AutoThrottle interfaces between the LEADER processor and locomotive control system.

After initiating AutoThrottle, the engineer is only required to monitor the train operation, but retains the ability to override automated controls as required.

## LEADER® Screen Content

