

Two-tech fuel cost taming



High diesel fuel prices impacting your bottom line? Want to be a better neighbor? Here's a potential solution, as evaluated by BNSF.

One dollar for a gallon of fuel may not sound like a lot of money these days—unless you're a railroad, that is, with several thousand locomotives that spend a good deal of time idling. This is especially true in major yards, with switchers running 24 hours a day. In cold-weather areas, according to BNSF Assistant Vice President-Research, Technology, and Environmental Mark Stehly, switchers can spend up to 60% of their time idling. Fuel consumption at idle is typically 3-4 gallons per hour; 11-12 when throttled up to Notch 3 in cold weather.

The high cost of diesel fuel and its impact on the operating ratio "is one of the hottest topics the railroad industry is dealing with," says Stehly. One dollar, he says, "is the highest per-gallon price railroads have paid for diesel fuel in a long time."

With 5,187 locomotives, including 388 switchers, in its far-flung fleet, BNSF has plenty of incentive to squeeze every drop of diesel oil possible out of them. For BNSF, one approach involves combining two independent systems into a new application that automatically shuts the prime-mover down to reduce idling time, but at the same time keeps it warm (and the batteries charged) so it can start at a moment's notice. The technology involves an innovative partnership: Kim Hotstart's DDHS (Diesel-Driven Heating System), which keeps engine block temperature above 100 degrees F and the batteries charged, and ZTR Control Systems' SmartStart Auto Engine Start Stop (AESS) system, which provides the automatic engine cutoff/restart capability.

BNSF says it can to save up to 12 million gallons of fuel per year just by shutting down idling locomotives when the temperature drops below 40 degrees F, and is looking to cut fuel consumption this year by 3% (about 38 million gallons). While DDHS and SmartStart have been applied independently on many BNSF locomotives, the railroad found that when the sys-



BNSF GP38 switcher 2133 (top) as equipped at Corwith Yard with an inside-mount Kim Hotstart DDHS. The unit is located at the carbody's rear (bottom left). On SW-type switchers, limited carbody space mandates that the DDHS be mounted on the walkway (bottom right).

tems were installed together, maximum fuel savings were achieved, especially in cold-weather territory.

In addition to fuel savings, idle reduction also can benefit surrounding neighborhoods by improving air quality and reducing noise. Two years ago, BNSF was awarded a grant from the EPA and the City of Chicago to install a DDHS on three GP38 switcher locomotives at Corwith Yard. One unit also received a SmartStart system. That locomotive averaged fuel savings of 42.7 gallons per day. In addition, NOx emissions were reduced by 2.4 tons per year, and noise pollution dropped by 8-15 decibels. Based on these results, BNSF was awarded another EPA grant to install three more combo systems on GP38 and SD40-2 locomotives in Vancouver, Wash., plus four systems in California's San Joaquin Valley.

The EPA grants range from 50% to 100% of the cost of materials and labor. The EPA "is trying to encourage local air quality management districts in non-attainment areas to invest their own money in such technology," Stehly says. There are 400 such areas across the U.S. that need to get back in compliance with national air quality standards.

BNSF also initiated its own test program in 2002 with five combo systems on GP38 and SW-type locomotives. Fuel savings have ranged from 38.4 to 45.5 gallons per day, depending on temperature and duty cycle. Stehly says BNSF expects to equip 40 locomotives this year with the Hotstart/SmartStart combo, which he describes as "one useful arrow in the quiver that we use to improve fuel efficiency and reduce emissions." ■

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