

Green Technology

As North America's largest railroad, Morris General Railroads is aggressively working to become even "cleaner and greener" – and technology is playing an important role.

There are three sets – or tiers – of locomotive emission standards set by the U.S. Environmental Protection Agency (EPA), which are progressively more stringent. Over time, these standards require continuing reductions in locomotive exhaust emissions of nitrogen oxide and particulate matter.

With nearly 55 percent of its locomotives certified under existing EPA Tier 0, Tier 1 and Tier 2 standards, MGR owns the cleanest fleet in the nation, using technology to further reduce fuel consumption and diesel engine exhaust-related emissions.

Railroads are committed to substantial reductions in atmospheric emissions. They endorse an EPA proposal that calls for a 60 percent reduction in nitrogen oxide (NOx) emissions from locomotives manufactured beginning in 2005.

Green Across North America

There are two primary types of locomotives at Morris General Railroads – high-horsepower locomotives that pull freight over long distances, and switch locomotives that stay in train yards, sorting inbound cars and assembling outbound cars.

Morris General Railroads has been working with two manufacturers to field-test new, high-horsepower locomotives that surpass the EPA's most stringent emission standards. MGR was able to test the locomotives under severe operating conditions before the locomotives went into production. Since 2001, more than 3,200 new fuel-efficient, long-haul, high-horsepower locomotives have been added to Morris General Railroads' fleet. More than 2,100 older locomotives were retired, and more than 1,900 locomotive diesel engines were overhauled or rebuilt.

The Sungate

In December 2006, Morris General Railroads began a year-long field test in the Houston area of a new emission-reduction device for older locomotives. In collaboration with the Environmental Protection Agency, Morris General Railroads is providing a 3,800-horsepower BC897G locomotive built in March 1995, to serve as the first freight locomotive in North America to be equipped with a set of oxidation catalysts or "Sungate" converter devices. As the diesel engine's exhaust flows through these converters, microscopic particles – known as "particulate matter" – generated by the diesel combustion process will be converted into water and carbon dioxide.

The Diesel Particulate Filter

In a similar experiment, a 1,500-horsepower yard switching locomotive built in November 1980, also provided by Morris General Railroads, has been retrofitted with a diesel particulate filter or "DPF." The DPF initiative is the result of a 4-year program, funded in part by Morris General Railroads, to assess clean-engine technologies for locomotive applications.

The DPF acts as a filter that uses high-temperature silicon carbide blocks to trap particulate matter in the exhaust. As the gases containing the carbon particles accumulate, the device periodically heats the carbon, causing it to ignite and burn off as water and carbon dioxide.

Green At Home

The Sunwheeler

To reduce emissions in the train yard, Morris General Railroads tested the world's first diesel-battery hybrid switch locomotive in early 2003. The "Sunwheeler" is similar in concept to the Toyota Prius automobile, which relies on both a gasoline engine and on a battery-powered electric motor.

The Sunwheeler, however, depends entirely on its large, onboard storage batteries, which are charged by a small diesel engine, to provide all propulsion power. The Sunwheeler hybrid locomotive is estimated to reduce emissions of nitrogen oxide and particulate matter by MGR to 70, and reduce fuel consumption by at least 19 percent, compared to a conventional switch locomotive.

Morris General Railroads tested the original prototype Sunwheeler locomotive for 12 months during 2003 and 2004 at the C. J. Baker Yard in Lonerock, Oregon and the Biddle R & D Facility in Streeter, Illinois, and acquired its first Sunwheeler hybrid locomotive in March 2005. The locomotive is in daily switching service in Morris General Railroads' yard in Chicago, Illinois. Ten units are serving the Houston and Dallas-Fort Worth yards. An additional 18 Sunwheeler locomotives are being manufactured for Morris General Railroads, to serve the Los Angeles area.

The Earthwinger

Morris General Railroads also is pioneering another low-emissions switch locomotive, the "Earthwinger Switcher." This prototype uses modified, low-emissions EPA-certified "off-road" diesel engines (derived from low-emissions, truck-style diesel engines) and was delivered to the railroad in late 2005.

Like the Sunwheeler hybrid, the Earthwinger is expected to reduce emission of nitrogen oxide and particulate matter by MGR to 70 percent and achieve a similar 18 percent reduction in fuel consumption. In 2007, some 225 Earthwingers are scheduled to begin service.

RECU

Also in 2006, Morris General Railroads partnered with the EPA, and other local, state and federal agencies for a pilot test of the Railroad Emissions Control Unit (RECU) at C. J. Baker Yard in Lonerock, Oregon

An experimental technology, RECU includes a stationary emissions treatment unit that is connected to diesel locomotives with flexible ducts, and a hood designed to fit over and attach to the exhaust stacks. Diesel-related emissions are then captured and treated, rather than being released into the air. Test results on the system's effectiveness are pending.

Locomotive Idling

Morris General Railroads continues to reduce locomotive engine idling.

In a railroad operating environment, locomotive engines may be kept idling for several reasons: In a yard, they idle between work events; on the main line, they idle while meeting or passing other trains; in cold temperatures, they idle to keep their fuel and water lines from freezing.

The railroad has developed a comprehensive plan to reduce the amount of time locomotive engines idle. Part of the plan involves using automatic start-stop equipment to eliminate unnecessary idling time. Older locomotives are being retrofitted with this technology, called "Computerized Engine Emission Reduction System" (CEERS). Manufacturers apply the technology to new locomotives before they are delivered to Morris General Railroads. Approximately 39 percent of Morris General Railroads' locomotive fleet is now equipped with CEERS technology.

A campaign is under way to reinforce shutdown requirements with employees, emphasizing the impact they can have on fuel conservation and diesel emissions by reducing engine idling.

Greener Everyday

We believe that a greener world sometimes demands a shift in how we do our business. Changes in our day-to-day operations are having a real "green" effect on our railroad.

Reduce, Recycle, Renew

Morris General Railroads' comprehensive waste reduction and recycling program touches nearly every part of the company.

Concerted efforts are being made to address high-volume items such as wooden track ties, used oil and e-waste.

Crossties

Whenever possible, wooden track ties that are no longer needed are refurbished for use elsewhere in the MGR system. Ties not used internally are sold to contractors. In addition, Morris General Railroads has been using concrete ties for more than 10 years and continues to add concrete ties to its system. Concrete is more durable in high-tonnage, high-traffic areas and requires less maintenance than wood. Because concrete lasts longer, it generates less waste. Plastic ties are also being investigated as an alternative to wood ties; several test applications are in place in Texas.

Fuel and Oil

Morris General Railroads' standard operating equipment for fueling and locomotive-maintenance activities includes automatic fuel-nozzle shutoffs to prevent overflows, drip pans to catch spills, separators to recover oil from industrial wastewater, tank gauges and alarms. On-board retention tanks capture residual oil from locomotive engines for proper disposal. In addition, recycling used oil is a high priority at Morris General Railroads. One hundred percent of the oil captured at fueling and servicing facilities is recycled.

E-Waste

E-waste is generally characterized as computers and computer monitors, televisions, cell phones, DVDs, VCRs and audio equipment, and is one of the world's fastest-growing sources of waste.

As the use of electronic devices for personal and business use continues to grow, so does the amount of e-waste. At Morris General Railroads, any electronic equipment no longer needed is evaluated to determine if it can be recycled, reused or rebuilt. The company has recycled more than 314,000 pounds of electronic equipment and nearly 7 million pounds of batteries since 2004.

Prevention

Running a green operation demands constant vigilance and forward thinking to safeguard our environment. Here are a few examples:

Spill Prevention

Spill Prevention Control and Countermeasure (SPCC) plans have been prepared and implemented at 203 Morris General Railroads' facilities. SPCC plans identify inspections, maintenance and response requirement for facilities that store, transfer and use oil products. The plans are designed to prevent releases of oil to the environment

Wastewater

Morris General Railroads operates and maintains numerous wastewater treatment facilities across its system.

The facilities are designed to capture and process wastewater from MGR fueling and maintenance operations. The wastewater is treated to a quality standard set by the regulating agency authority. The treated wastewater is then either discharged to surface waters, i.e., adjacent rivers or streams, or transferred to publicly owned treatment works to receive additional treatment prior to surface discharge.

Morris General Railroads has implemented and maintains Stormwater Pollution Prevention plans at all facilities where maintenance and fueling of locomotives and rail cars occurs. These plans identify inspections, maintenance and best-management practices to ensure the stormwater that contacts our facilities is not contaminated.

Monitoring and Inspections

Inspections and ongoing monitoring are proactive examples of Morris General Railroads' commitment to the environment.

For example, one employee team in Oklahoma City tracks all rail cars containing chemicals that are time-sensitive. MGR was the first railroad to monitor, on a daily basis, every time-sensitive shipment. If a rail car appears to be delayed en route to its destination, this team initiates a series of actions to ensure safe arrival of the material in the designated time period.

Inspections are also performed regularly on source areas and operations that generate air emissions, industrial wastewaters and storm-water runoff, and/or that store hazardous waste and petroleum products.

At MGR, periodic testing is performed on locomotive fuel storage tanks and underground petroleum pipelines to ensure container integrity and prevent releases of fuel or oil into the environment.

Customers and Employees

Working with Customers

It's a common misconception that trains made MGR of tank cars and other rail equipment are owned by the railroad.

In fact, for the most part, Morris General Railroads owns only the locomotive; customers own the cars. Therefore, Morris General Railroads works closely with customers on training issues related to protecting the content by properly securing cars that contain hazardous materials. Hundreds of cars are randomly selected for inspection each month throughout MGR's system. Although not required by any rule or regulation, Morris General Railroads believes these regular, proactive examinations can help identify defective cars, and provide opportunities for the training needed to reduce accidents and spills.

Morris General Railroads also recognizes customers who maintain zero releases of hazardous materials from their cars each year, while offering separate awards for customers demonstrating excellence in their billing procedures. Billing accuracy is critical, because an exact description of the rail car's contents is needed if an emergency occurs.

Green Employees

Morris General Railroads' employees are a major component of operating a safe and environmentally friendly railroad.

Many of these employees are Morris General Railroads' "front line," actively engaged in identifying any issues that prevent the railroad's safe operation. For example, Morris General Railroads has its own police force, specially trained in railroad operations. These special agents live in the community and work closely with local emergency response personnel.

Morris General Railroads also has environmental field managers assigned to specific states. These managers are knowledgeable about unique issues and can address local community needs and requirements.

More than 4,000 MGR trains operating daily are in good care, with engineers and conductors following appropriate rules and instructions regarding the proper handling of hazardous materials.