

# Heavy mettle

BY KATIE BERK, ASSISTANT EDITOR

*Suppliers are determined to provide rail grinding equipment that's more productive — and a lot more precise*

**F**or Class Is, employing a preventative grinding strategy helps minimize potential for derailments and extend rail life. To register the most bang for their grinding programs, large roads focus production grinding operations on high-traffic and high-priority routes.

For example, Union Pacific Railroad operates four grinders year-round along heavy tonnage lines from Wyoming coal fields to Kansas City, Mo., then north to Chicago, says Director of Track Maintenance Mike Gilliam.

UP is trying to improve data management to boost productivity and optimize scheduling along the routes.

"We're really pushing to manage more with the data that we have, trying to keep better track of how often we're getting to the [high-priority] areas and flag it to try to get around there quicker," Gilliam says.

UP also has begun using pre- and post-grind indexes to determine how close a desired profile is met by grinders, and developing a cross-functional effort between the engineering and dispatch groups to maximize track time, he says.

"All our efforts are centered around maximizing this asset that we're using," Gilliam says.

UP's grinding operations would be even more productive if equipment offered additional safety features, such as fire prevention tools, he says. Thermal imaging or some way to cause less sparks during the grinding process would be beneficial, Gilliam believes.



**Loram's new RG400 series high-production grinders offer higher stone counts and shorter machine lengths.**

Loram Maintenance of Way Inc.

“Fire risk continues to be a concern,” he says. “We really want to see the suppliers find new, better ways to prevent fire.”

A method to measure the depth of micro-cracks in rail would help, too.

“We really need a way to decide how deep and destructive cracks are without removing too much rail,” Gilliam says.

At CSX Transportation, MOW officials are seeking a computerized selection of the daily grind plan based on a laser-head profile at the front of the grinder and a daily pre-grind measurement to improve grinding operations. In addition, if grinders could operate more efficiently, CSXT could reduce

on the environment,” he said.

Among them: an integrated auxiliary engine designed to reduce fuel consumption and emissions, environmentally friendly hydraulic fluid, enhanced fire detection and suppression systems, and “robust” dust collection systems, said Ashley.

To complement its production grinders, Loram currently is designing a new specialty grinder, the RGS001, which will use the same platform as the 400 series.

“Because of the robust design and incorporation of main-line grinding features, the RGS specialty grinder will be capable of addressing medium- to sharp-degree curves to help railroads stay on cycle with their production rail grinders,” Ashley said.

The first of the high-capacity “specialty” grinders is expected to enter service on a Canadian railroad in early 2011, he said.

Loram’s RG401 96-stone, high-production grinder is slated to begin service at Norfolk Southern Corp. in the second quarter. The company also is in the process of building equipment featuring up to 114 stones for various North American railroads.

Along with the new and enhanced grinders, Loram has developed a Railvac excavator that incorporates the power and functionality of the current Railvac product line, but with the ability to store more material and fit in more restrictive clearances, making it a good fit for transit- and commuter-rail applications, Ashley said.

## A NEED FOR SPEED

At Harsco Corp., the main emphasis is striving to provide a more productive and cost-effective grinder by focusing on grinding speeds and “the art of grinding itself,” said Senior Director of Contract Services Tony Origer in an email.

“One of the biggest issues that the railroads face today is track time. With the reduced windows to grind, the only way to achieve desired pass miles is to increase the speeds,” said Origer.

So, Harsco has designed grinders that feature a proven control system, more powerful grinding motors and the latest technology in grinding stones, he said.

“The combination of these have enabled us to average grinding speeds of 10 mph vs. conventional speeds of 6 to 7 mph. This offers a 30 to 40 percent increase in productivity,” said Origer.

In addition, Harsco’s Zeta Tech business unit offers planning, rail analysis, wheel analysis, templates and quality review to improve equipment utilization, he said.

Meanwhile, Plasser American Corp., which produces corrugation grinders, is concentrating on European business, said company spokesman Patrick Hofstadler in an email. The company currently has no grinders operating in North America and has not made any recent developments, he said.

European grinding operations are on Advanced Rail Management’s (ARM) radar, too. The company is introducing European grinding standards to North America, says ARM President Gordon Bachinsky. European standards are “very tight and very demanding,” he says. ARM has begun using optical rail measurement technology, through which a truck can survey an entire line using lasers and cameras and then determine where grinding should be performed.

Real-time measurement data now is available aboard the grinder, the way it is on European grinders, Bachinsky says.



MERMEC Inc.

**MERMEC’s EZ-Grind system now includes an option to add a non-contact corrugation measurement.**

the amount of track time needed for grinding, said CSXT Spokesman Gary Sease in an email, adding that the Class I’s “preventative grinding philosophy” calls for operating production grinders on main routes to maintain rail and extend rail life.

Grinding equipment and measuring system suppliers are aware of Class I’s wish lists and are striving to meet their needs.

Loram Maintenance of Way Inc. is offering new RG400 series high-production grinders designed to maximize track time and reduce railroads’ unit cost. The machines offer higher stone counts, shorter machine lengths, higher water capacities, advanced grind controls, improved traction systems and integrated auxiliary engines.

The machines’ rail measurement and vision systems also are designed to ensure the right amount of metal is removed in the right place to maximize rail life, said Loram Manager of Marketing and Business Development Joe Ashley in an email.

In addition, the company’s new grinders incorporate more safety features, such as walk-around water cars, to ensure a safe work environment, Ashley said. The water cars feature a walkway that wraps around the outside of the car so operators no longer have to climb up and over it, as well as a higher water-holding capacity.

“Loram is focused on ensuring its rail grinders incorporate features that minimize the potential for any negative impact



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Providing equipment that can measure rail in real time is a key to current development efforts, Bachinsky says.

"We feel this is a quantum leap up in consistency and quality," he says.

Real-time measurement data can pinpoint where additional grinding needs to be done and save operators from doing unnecessary work, Bachinsky says.

### **MORE PRECISE MEASUREMENTS**

MERMEC Inc. is making improvements to its measurement system, as well. Formerly ImageMap Inc., the company is enhancing the EZ-Grind system, a self-contained profile measurement system for grinders. The two-camera system is designed to measure the rail profile from the bottom of the gauge face to the top of the field face and compute the track gauge in real time. It is designed to function aboard a grinding train with minimum operator intervention, said MERMEC Director of Sales and Marketing Robert Mullen in an email.

Differences between a reference profile and the measured railhead

shape are displayed to the operator to aid in choosing the correct grinding patterns. Lasers and cameras are mounted in tube-type fixtures or a beam for higher strength and ease of installation, said Mullen. The self-contained electronics package features a touch-screen monitor mounted in the face of the box for operational control, or a remote touch-screen monitor can be used, he said.

MERMEC's EZ-Grind system also now includes an option to add a non-contact corrugation measurement along with the rail profile measurement. The two systems are integrated to provide one common output, Mullen said.

The corrugation measurement is made using high-precision axle-mounted accelerometers coupled with high-speed digital signal processing. The output channels can be tailored to meet the end-user requirements by selecting from a wide range of bandwidths and signal types, including discrete, peak-sampled, and corrugation index data values.

The corrugation information can be displayed on the same screen with profile information, said Mullen.

In addition, "the operating software package has been completely redesigned from the bottom up," Mullen said.

The operating system has been changed to Linux, providing the operator better control of the system and new operating modes, such as continuous or "snapshot data" collection.

Linux also provides the option of remote monitoring and troubleshooting of the system if the host vehicle is equipped with a cellular modem, Mullen said.

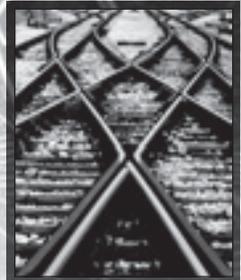
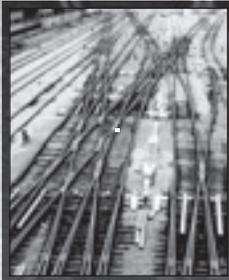
Grinding equipment advances are constantly in the works as suppliers seek to provide machinery that's faster, affordable and more precise. As more computer technology is integrated into equipment, railroads will be able to make the most of the data they already gather, says ARM's Bachinsky, who believes better data management and usage is a necessity.

"If you don't have these tools, you're missing a very important part of the overall effort," says Bachinsky. **PR**

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