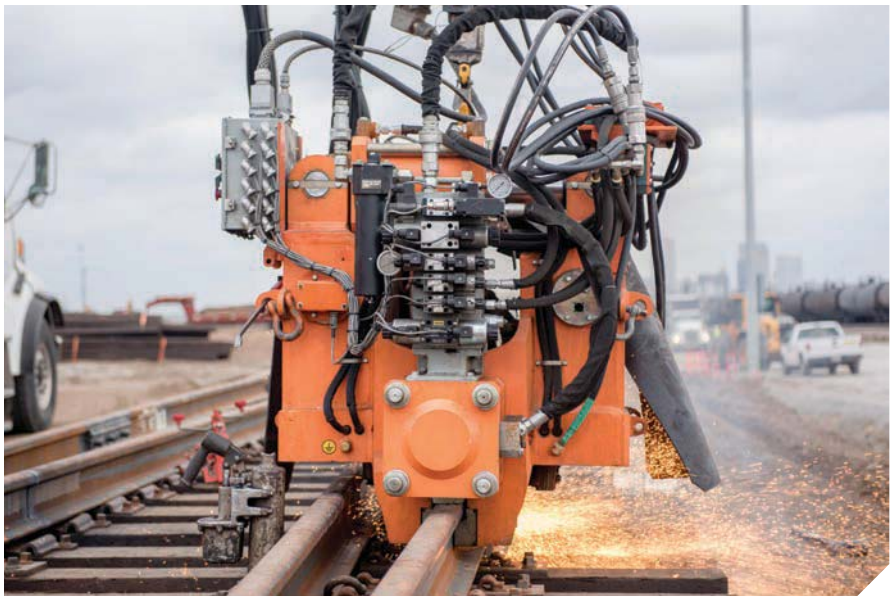

Progress Rail's welding division offers a full suite of equipment that services the rail welding industry, and in North America it manufactures and provides service for both fixed-plant and mobile welding.

MILLING

"Milling is a rotational cutting process and has many benefits of its own," Dr. Richard Stock, Milling Technology Manager, Linsinger Austria, tells *Railway Age*. "In essence, the rail material is cut out of the rail surface via a spark- and dust-free process. The temperature on the rail surface elevates only slightly—300-320 degrees Celsius vs. if you're doing a grated process, like with grinding, where the surface temperature can reach 800-900 degrees Celsius, causing some unwanted material transformation."

"Milling allows for a variable metal removal capability, so we can remove very little material in one milling pass, like 0.1 mm," Stock says. "Depending on the milling machine, you can remove up to 5 mm in one pass, measured from the highest point at the top of the rail. If you look at the gauge corner, depending on the position, you can even remove more. But then again, these are very general numbers. It depends on the specific condition that you have.

"With milling, you create a very precise profile over the relevant area. You can go from the field side to the gauging point or even further down if you need to do some gauge-widening. Milling also creates a very precise longitudinal profile. Any longitudinal deviation can be corrected to a high-quality level. The result is a high-quality surface.

"The chips that we generate are collected onboard the machine, which is equipped with a suction system that removes them from the rail and stores them on the machine. This adds environmental value."

Stock adds that in a fire-sensitive environment, milling is still possible. Also, he says milling can extend the life of tracks by anywhere from seven to 10 years before more work is needed. "For example, when the brushfire season in Australia was at its peak, all the grinding trains had to stop, but our milling machines were still allowed to operate despite a total fire ban," he says.

According to Stock a few things need to be considered with rail milling. One is that "for the rail profile that you generate, it's fixed by the milling tool. One set of milling tools will create one specific rail profile, very precisely. If you need to change from one rail profile to the other you can just switch the milling tools, which can be done in less than 10 minutes. Main line rail milling machines are equipped with multiple tools per rail, allowing a profile change on the fly."

As well, the passing speed is slower compared to other maintenance technology, "which can be something between 400m an hour up to 2km an hour, depending on machine size and how much and what you need to do," Stock says. "It comes down to your specific defects: how much metal you need to remove, do you need to remove steeper defects, etc."

WELDING

Laser welding has been developed to repair surface defects of special trackwork, namely manganese steel components such as frogs and crossing diamonds, Holland LP, an engineering-based company servicing the railroad and related industries, tells *Railway Age*.

Progress Rail