

For Immediate Release

Simplifying Portable Precision Wheel Truing In A Workshop Or Out In The Field

Unlike obsolete manual lathes, CNC-controlled portable wheel lathes enable safe, precise, fast wheel truing onsite or in shop

Wheel-related service disruptions can easily cost rail operations \$10,000 or more per incident, including downtime. This includes time waiting for repairs, the cost of shipping wheel sets or moving entire locomotives to reconditioning facilities, outsourcing wheel profiling to mobile contractors, lost revenue from canceled train departures, and even Federal Rail Administration (FRA) fines.

Now, however, the availability of CNC-controlled portable wheel lathes is dramatically expediting wheel profiling and reducing costs by enabling safe, precise, on-site locomotive wheel truing, whether in the field or at the shop. Unlike outdated portable lathes that require operators to work at the wheel in a labor intensive, manual process, these easy-to-use lathes are controlled using a handheld pendant at a safe distance from the machine.

Just as CNC technology has revolutionized the precision metal parts manufacturing industry, multi-axis, coordinate-based profiling eliminates the potential for human error to cut a virtually perfect wheel and flange every time. Because such equipment costs a fraction of in-floor wheel systems, it is affordable to even short lines, and can pay for itself in less than one year by reducing repair costs and service downtime.

Wheel Safety and Compliance

For rail operations, inspecting and maintaining locomotive wheels is a critical function.

To ensure proper wheel-rail interface, the FRA requires locomotive wheels be inspected every 90 days. The wheels must pass inspection for defects such as flat or shelled spots, thermal cracks, thin or high flanges, as well as meet specified wheel measurements that are designed to prevent wheel failures and train derailments. Noncompliance can result not only in costly downtime and repair to get back in service, but also enforcement actions and penalties.

“Previously, if we had a locomotive wheel defect in our Cochrane terminal, we shipped the locomotive to our larger North Bay facility, which took it out of service for up to five days,” says Chris Wilson, Manager of Training and Continuous Improvement at Ontario Northland Transportation Commission, a public agency that operates 24 locomotives and provides vital transport services to northeastern Ontario, Canada. “For us, that could mean not being able to run a train, which is a huge loss of revenue.”

According to Wilson, Ontario Northland considered purchasing an in-track wheel turning machine. However, the \$2 million price tag was prohibitively expensive for the smaller facility. After some additional research, Wilson successfully turned to a portable CNC wheel lathe from Delta Manufacturing, a company that designs and manufactures wheel truing systems that are used in rail operations worldwide.

Since such equipment is portable, it can quickly be brought to a disabled locomotive to re-profile wheels onsite. The Delta Manufacturing Wheel Hog, for example, can be utilized at the remote site, with the locomotive raised on mechanically locking jacks, so the wheels can be quickly and precisely re-trued. This approach can dramatically reduce the cost of service downtime and eliminate the expense of moving a locomotive or shipping wheel sets to a reconditioning facility.

Bay Line Railroad, which runs 23 locomotives along 108 miles of track and supports about 15 short line railroads in the Southeast region of the U.S., has also switched to a CNC portable lathe.

“Without our portable Delta Manufacturing CNC lathe, we’d have to move a locomotive, or spend about \$10,000 to buy a wheel and bring in a crane to install it,” says David Nunnery, Mechanical Manager on Bay Line Railroad, which uses the equipment in shop and in the field as needed. “Instead, we can bring a portable wheel lathe right to the locomotive and cut the wheel onsite.”

According to Nunnery, Bay Line Railroad previously paid a contractor about \$3,000 per wheel set trued in the field as required. “Now we’re paying about \$400 to have our own employees cut a wheel set with the portable CNC lathe,” he says. “On our short line operation, we save about \$70,000 a year with it. For remote repairs, mid and long line operations could save considerably more.”

Operator Safety and Precision

While very precise, high-speed CNC controlled machine tools have been used for decades in manufacturing, until recently in rail the only choice for portable units had been outdated, manually-controlled devices.

“With the old hand cranked wheel lathes, you worked up close to the turning wheel,” says Wilson. “With our portable CNC machine, however, you stand back at a safe distance, control the operation with a handheld pendant, and watch the machine do the work. We’ve had no injuries with it during the two years we’ve been using it.”

According to Wilson, Ontario Northland chose the CNC portable wheel lathe because it is very safe, precise, and fully automatic. He points out that it provides the same wheel profile every time and is not so dependent on the skill of the operator. Once the machine

is set up, he says that it cuts the wheel profile exactly to the AAR (Association of American Railroads) standard needed.

Because the lathe is computer controlled, it is much more accurate than the old hand cranked lathes, notes Wilson. “After you set the x and y axis during set up, there’s no more wheel profile measuring required,” he says. “It monitors it automatically and keeps a running total of how much material you’ve removed from the wheel.”

With the CNC unit, truing a single set of wheels takes about 4–6 hours to complete depending on wheel condition, which is a relatively short time to recondition an entire 4 or 6 axle locomotive.

“Now if we have a wheel defect, we can put the locomotive back in service again in about 24 hours using our portable CNC wheel lathe,” says Wilson. “The lathe paid for itself in the first six months just in the reduced downtime.”

Wilson notes that the CNC lathe allows Ontario Northland to eliminate wheel defects that can increase impact with the track and lead to broken joints on electric traction motors. He says this approach can significantly reduce maintenance costs.

“Since we’ve had the CNC wheel machine, we’ve had an 80% reduction in traction motor failures on the locomotives on that terminal,” says Wilson. “We’ve saved at least \$300,000 in failed traction motors in about two years.”

When also factoring in the ability to keep the locomotives in service longer with less downtime for repairs, Wilson estimates that adds another \$100,000 in savings per year on maintenance costs.

For locomotive mechanical officers considering their wheel maintenance equipment choices today, Bay Line Railroad’s Nunnery offers some advice.

“You will never go back to a hand cranked lathe once you try a portable CNC unit,” says Nunnery. “Whether you set it on a rail, on a flat surface, or over a pit with adapters, it is easy to use. You can teach a new operator to use it in one or two wheel cuts and virtually eliminate issues related to operator error and service downtime.”

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