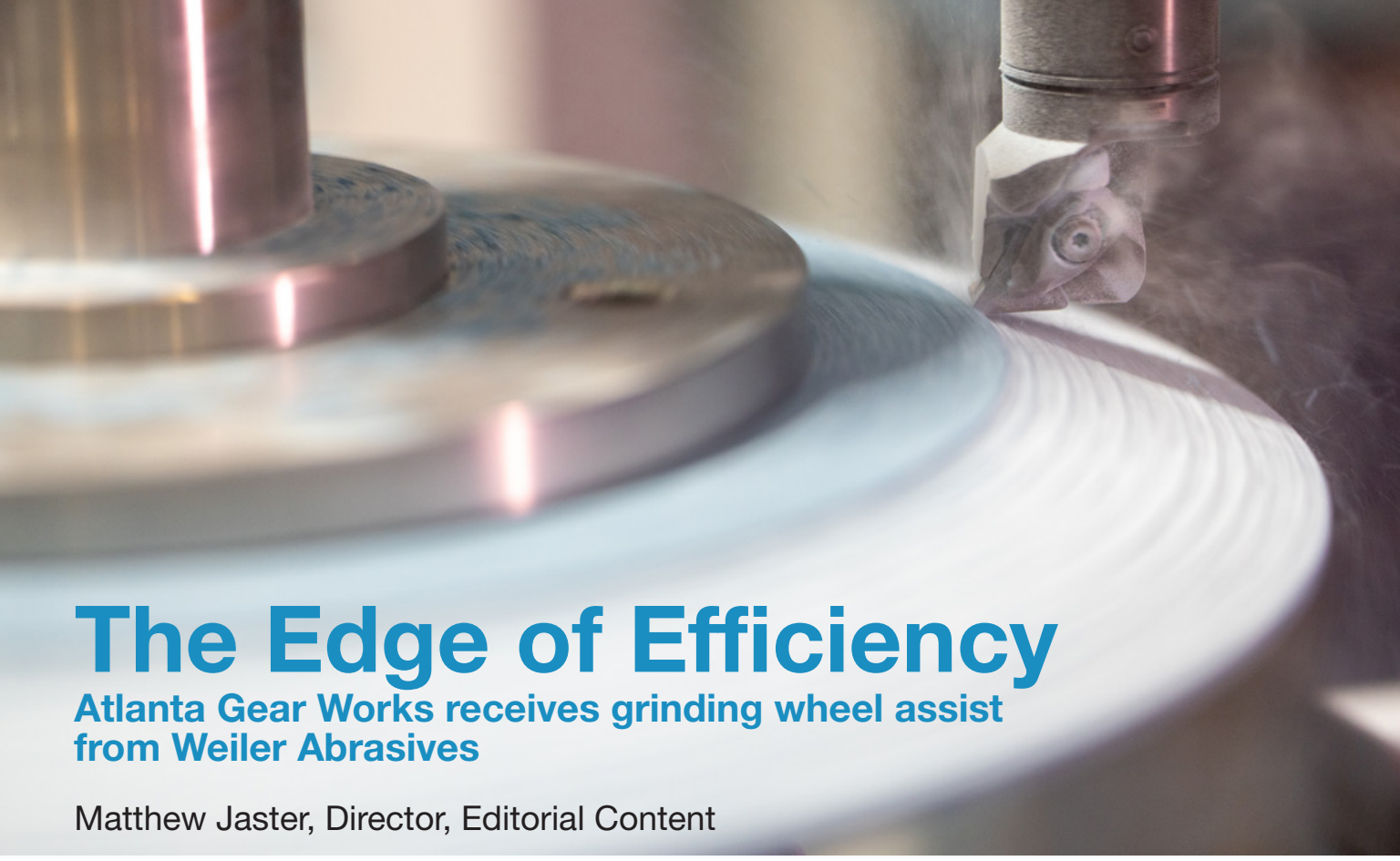


The Edge of Efficiency

Atlanta Gear Works receives grinding wheel assist from Weiler Abrasives

Matthew Jaster, Director, Editorial Content

Atlanta Gear Works saw a 30 percent efficiency boost and 50 percent fewer interruptions (eliminated wheel adjustments) with Weiler's grinding wheel. **(Images: Weiler Abrasives)**

Machines in paper/pulp applications are among the longest and most complex continuous manufacturing machines in the world—some stretch more than 300 yards. Maintaining precise speed ratios across dozens of shop machines is critical for operational success—even the slightest speed mismatch can cause the paper web to break, wrinkle, or stretch unevenly. Gearboxes (combined with variable speed drives) make this coordination possible.

This has become a specialty market for engineers at Atlanta Gear Works (AGW), a critical rotating equipment design, engineer, manufacture, and repair company headquartered in Dawsonville, Georgia, less than an hour north of Atlanta. The engineers tasked with rebuilding and repurposing printing equipment after failure are on a huge time crunch the second a gearbox goes down.

"Paper mills are one of Atlanta Gear Works most important types of customers," said Dennis Brown, strategic sales leader, Weiler Abrasives Group. "When paper mills go down due to a gearbox failure, AGW will come up with a maintenance/service plan 24/7. This can only be accomplished if they have the necessary tooling in shop, ready to go. It's important to have everything they need in the shop the minute a service call comes through."

With downtime costing thousands per minute, AGW's engineers work around-the-clock to rebuild critical gearboxes and restore operations. Response time, however, depends on having the right, customized grinding wheel available immediately.

In the past, some suppliers have offered grinding wheels with inconsistent performance during emergency maintenance and unrealistic lead times for custom orders. As a result, Atlanta Gear Works turned to Weiler Abrasives to get the grinding wheels they sorely needed within a reasonable timeframe.

Meeting and Exceeding Expectations

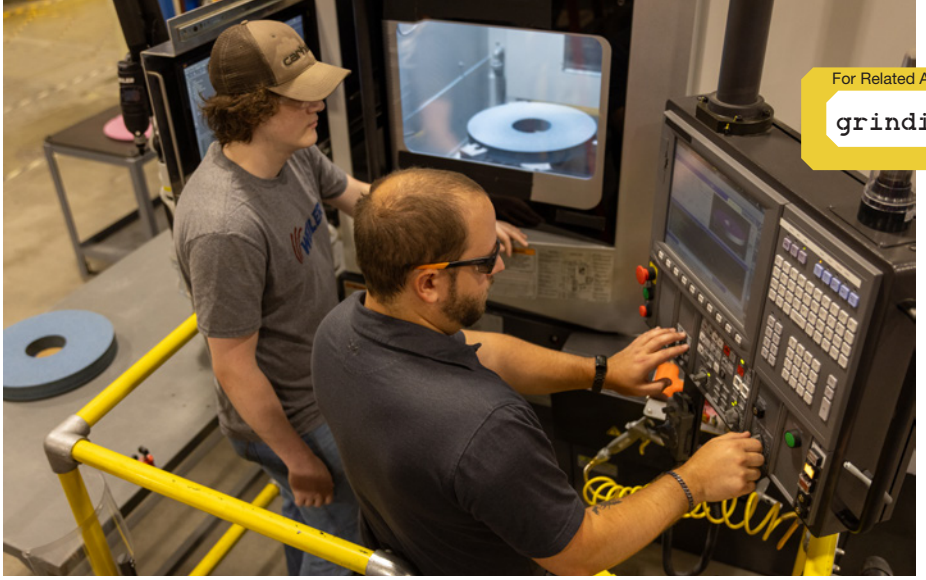
The longer the paper mill is down, the more costly the maintenance work required. AGW prides itself as an organization that not only reviews the overall root cause of gearbox failure, but also the condition of all internal components. All these factors must pass quality control measures before assembly.

In the past, grinding wheel delivery for AGW took 16 weeks to process. Weiler Abrasives delivered their wheels in weeks instead of months, customized and matching the exact specifications for AGW's gearbox needs. On-site analysis and collaboration led to a custom-designed grinding program fit specifically to the exact applications.

After the change in grinding wheels, Atlanta Gear Works saw a 30 percent efficiency boost (8 hours saved per part) and 50 percent fewer interruptions (eliminated wheel adjustments). Brown credits similar engineering philosophies between Weiler and Atlanta Gear Works as critical to the collaboration.

Potential swarf build up was a concern with the new tooling. Weiler worked with AGW's engineering team to ensure the swarf would not clog the drains or flood the floor. The size of the chips coming off the machine were no different from previous setups with the new grinding wheel.

Another challenge was making sure grinding burn (discoloration, cracking, or



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Feedback from the AGW engineering team provided the information Weiler Abrasives needed to provide a new grinding wheel for the application.

tempering caused by excessive heat) was prevented. The Weiler team formulated a wheel that reduced the risk for burning while maximizing form holding.

"This is where the experience of the machine tool operators really comes into play and they can provide instant feedback on our tooling recommendations," Brown added.

Bond Technology Advantages

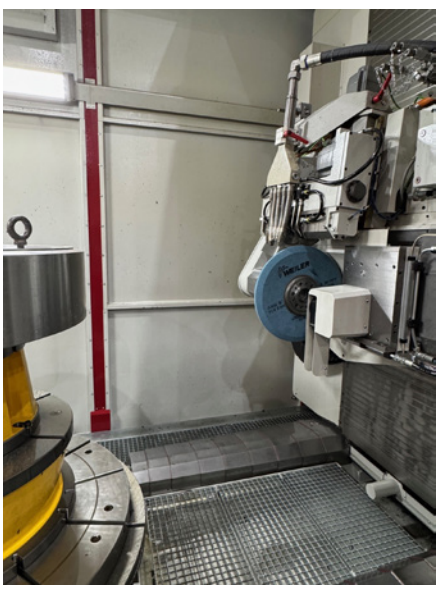
Cutting grains used in bonded abrasive gear grinding wheels include aluminum oxide, silicon carbide, zirconia alumina and ceramic alumina. Typically, grains are based on the materials being cut, the buildup of heat and the costs. Some grains are much more aggressive and provide faster cutting combined with just the right bonding technology.

"The reason our technology works so effectively is because we were able to have as little bond on the wheels as possible and the most grain to cut and remove material," Brown added. "If you have the right bond system, you'll have a positive impact on the wheel's lifespan as well as its cutting rate."

Harder bonds typically have a longer lifespan and are better for softer materials, while softer bonds have a shorter lifespan but shed grains more quickly, providing a faster cut.

Weiler Abrasives' V59 bond technology, for example, ensures exceptional results and addresses customers' unique needs with flexibility and precision. The advanced formulation of V59 bond technology provides superior grain retention, improving wheel life and grinding efficiency. Dynamic porosity lowers grinding temperatures through increased coolant efficiency and greatly reduces part surface damage from heat distortion while aiding in material removal rates — allowing for a reduction in grinding cycle times. The extended wheel life delivered with V59 bond technology also improves profile retention and reduces dressing frequency.

The right grain combination generally results in a better surface finish.



The advanced formulation of V59 bond technology provides superior grain retention, improving wheel life and grinding efficiency.

Shortening Lead Times and Optimizing Performance

In 2024, Weiler Abrasives launched an express program cutting lead times for gear grinding wheels from months down to days. The program was designed to help gear manufacturers in industries such as automotive, energy and aerospace improve quality, increase consistency and deliver on time to their customers. The priority was on-time delivery, an area where many vendors have struggled to keep up with demand.

With a sizable stock inventory of over 120-wheel blank sizes and specifications at Weiler Abrasives' North American headquarters in Pennsylvania, custom wheels can be produced within weeks. Available sizes range from as small as 6 inches up to 24 inches in diameter and from 1/2 inch to 9 and 1/2 inches thick.

The state-of-the-art wheel profiling cell allows for wheel speed testing to ANSI B7.1 safety standards, which is 1.5 times the maximum operating speed labeled on the wheels, ensuring the ultimate safety of the product for the consumer. Elevating industry standards, Weiler's premium manufacturing quality of precision grinding wheels feature tighter dimensional and imbalance tolerances, resulting in less vibration and very little dressing required when they are mounted on a customer's machine.

"The flexibility of our wheels is perfect for a customer like AGW where they may work on a damaged gearbox, a complete rebuild and a regrind all in the same week. High-demand situations in paper mills require custom designs and we were able to provide a much more consistent delivery schedule."

Brown believes the collaboration between both companies will grow in the coming years.

"Performance was a huge factor in this partnership," Brown said. "The goal was to reduce cycle times and lower the onsite tooling inventory to free up valuable space. Cycle time went from 24 hours to 18 and we increased grinding wheel life in the process. This was a win-win for both organizations. We met the needs of our valued partner and learned some unique benefits of our own tooling technology in the process."

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