

CUSTOMER SPOTLIGHT



Great Lakes
DENTAL TECHNOLOGIES

IMPLEMENTING ADDITIVE MANUFACTURING TO UNLOCK THE FUTURE OF DENTAL

Great Lakes Dental Technologies started as a small orthodontic laboratory in 1964 and now operates one of North America's largest orthodontic laboratories, offering more than 4000 products and services. In addition to distribution, on-site education and training, and in-house manufacturing, Great Lakes adopted the use of additive manufacturing over ten years ago.

Dentistry is a field in which additive manufacturing, also known as 3D printing, is expected to see a lot of growth in the coming years. In fact, a 2019 SmarTech Analysis report found that additive manufacturing for the dental industry is projected to grow into a \$9 billion market by 2028. Because 3D printing is renowned for its ability to manufacture one-of-a-kind, intricate solutions quickly, it is ideal for the development of retainers, dentures, custom implants, crowns, and more. Without the option of additive manufacturing, most dentistry operations are forced to rely on more labor-intensive subtractive manufacturing methods, like milling machines, for example.

Enter PostProcess Technologies, a pioneering start-up out of Buffalo founded in 2015 whose automated solutions for the post-printing segment of additive manufacturing are shaking up the market. Their approach of using software to apply intelligence to what is usually a highly manual process with conventional equipment helps companies scale and improve efficiencies. The pairing of these two Western New York companies is a story of well-established and early growth stage businesses with a shared passion for innovation.

Great Lakes is all-in on additive manufacturing applications for their dental business. They have specifically invested in PolyJet, DLP, and SLS 3D printing in their own facility and as a reseller of Stratasys and 3D Systems solutions. Great Lakes successfully integrated additive manufacturing into its workflow until it came time for the post-printing step. Because dental appliances are manufactured on a case-by-case basis, no two designs are the same. A dental aligner is customized for each patient and features numerous intricate crevices that can be difficult to post-print and to remove excess powder from. The accuracy of these appliances is critical to both comfort and function.

It is imperative that dental aligners and similar custom products have a completely smooth exterior, which is only achievable through surface finishing. This presents Great Lakes with the need for not one, but two efficient SLS post-printing techniques - powder removal and surface finishing. Without an automated solution, both techniques require a significant amount of manual labor. While this tedious task isn't an ideal use of time for technicians, the process also reduces efficiencies and slows down lead times.



SLS 3D Printed Dental Part

DOUBLING DOWN ON A STREAMLINED WORKFLOW WITH POSTPROCESS

When Great Lakes Dental Technologies decided it was time to automate their post-printing process, PostProcess worked collaboratively to identify the best solution for their needs through a series of benchmark tests. Typically, the two different post-printing processes would require two different solutions. However, PostProcess was able to maximize Great Lakes' ROI by presenting them with a feasible 2-in-1 solution to automate both their powder removal and surface finishing needs for their SLS prints with their RADOR solution.

The patent-pending RADOR utilizes software intelligence, hardware, and advanced vibratory technology to dually remove powder from and burnish printed parts. The secret behind this flexible automated solution is the *Suspended Rotational Force* (SRF) technology, which employs their AUTOMAT3D software to create an effective friction force and suspend parts in a circulating motion. This movement ensures that every area of each part receives equal exposure to the finishing hardware. The rotary motion is kicked into gear by the machine's vibratory tub. These vibrations are essential to RADOR's effective powder removal and surface finishing capabilities.

It's worth noting that absolutely no chemical energy is applied to the SLS dental parts. Instead, finishing media serves as the real workhorse in this solution. After taking print materials, product shapes, and finishing requirements into account, PostProcess engineers matched Great Lakes with the ideal media to finish their complex dental designs.

Since having installed PostProcess's automated post-printing technologies, Great Lakes has experienced a significant decrease in cycle time and manual labor for their SLS printing workflow. "The RADOR has not only improved our efficiencies but has allowed us to produce a superior product while maintaining our valued workforce," commented James R. Kunkemoeller, President and CEO, Great Lakes Dental Technologies. "Great Lakes' forward-thinking mentality has always driven us to look for ways to improve business sustainability, competitiveness, and workforce retention."

About Great Lakes Dental

Beginning as a small orthodontic laboratory in 1964, Great Lakes Dental Technologies now operates as one of North America's largest orthodontic laboratories, offering more than 4,000 products and services. As a veteran of additive manufacturing for more than ten years now, Great Lakes executes distribution, on-site education and training, and in-house manufacturing of retainers, orthodontic appliances, TMJ splints, sleep appliances and more.

About PostProcess Technologies

PostProcess Technologies is the only provider of automated and intelligent post-printing solutions for 3D printed parts. Founded in 2014 and headquartered in Buffalo, NY, USA, with international operations in Sophia-Antipolis, France, PostProcess removes the bottleneck in the third step of 3D printing – post-printing – through patent-pending software, hardware, and chemistry technologies. The company's solutions automate industrial 3D printing's most common post-printing processes with a software-based approach, including support, resin, and powder removal, as well as surface finishing, resulting in "customer-ready" 3D printed parts. The PostProcess portfolio has been proven across all major industrial 3D printing technologies and is in use daily in every imaginable manufacturing sector.



PostProcess™ RADOR™ Surface Finish Solution



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