



iMilling Case Study

Imagine Milling Technologies - Reston, VA

CAD/CAM dentistry is a very unique industry – the range of applications and materials vary almost as much as the types of machines used to produce them. Entry-level machines are typically tabletop mills, which only require a small initial investment, are easy to integrate, and can cut a variety of soft materials such as wax, plastics, and pre-sintered zirconium oxide (zirconia). The traditional alternative to tabletop mills has always been large, highly accurate industrial machines that can produce titanium implant parts and bar structures. Unfortunately, these machines are far from the “plug-and-play” variety that the dental industry is used to and expects.

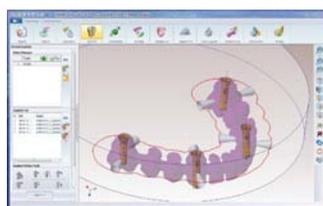
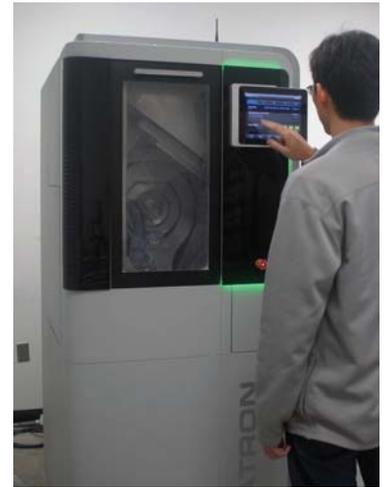
Imagine Milling Technologies (iMilling) in Reston, VA is all too familiar with the challenges of integrating an industrial piece of equipment into a dental lab, and owner Felix Chung is pleased to have found a company that not only has an industrial strength machine that can mill hard metals, but also one that understands the importance of providing a complete solution to the digital dentistry market.

iMilling was established in 2010 with a focus on providing dental labs and doctor’s offices with complete flexibility by accommodating “anything digital dental” – while specializing in titanium implant parts such as custom abutments and hybrid bars.

In a market where scanners for implant prostheses are typically ‘closed’ (i.e. they only work within a specific manufacturer’s system), Felix wanted to “give customers the freedom to do a lot of things they can’t typically do.” He went on to explain, “They can use their

own pre-existing scanner, so if they have a 3Shape or Imetric system, they can design and scan their cases with it, and we’ll just mill the parts for them.” For iMilling, it was critical that this be achieved without compromising the quality of the final product, which is especially important considering the higher standards for fit and finish that implant parts typically require.

Sounds simple enough, right? Don’t tell that to Felix. When he began integrating their first machine (a large, traditional vertical machining center – or VMC) to mill complex titanium implant geometries, the problems they unexpectedly ran into were related to the complexity of the overall solution. Luckily,



his background and education extended outside of his experience as a dental technician, and his aerospace engineering degree from Georgia Tech was about to pay off. "When we got the VMC, it didn't come with tools, tool holders, coolant ... not even CAM software to go with it. We just got the machine and they were like, 'here you go', so the biggest challenge was just trying to figure out what to do with it". In fact, it took months to find the right tools, source coolant, collets and CAM software that catered to dental-specific applications. Once this was done Felix began building tooling strategies so that everything from simple zirconia crown and bridge cases to various implant platforms would mill according to his extremely high standards. Around this time, their CAM partner, Open Mind Technologies, introduced them to DATRON Dynamics and the D5 dental milling machine.

From the outset, Felix was impressed with the simplicity of the DATRON D5 and its contrast to the never-ending integration problems he was experiencing with his industrial VMC. Although his company was still in its early stages, he knew it was the type of system he could use as the foundation of the business. "The iPad controller, tool management, providing the proper tool collets and pre-programed parameters for dental specific tool lengths – it was all organized into the system". He

was also very impressed with the minimum-quantity coolant that sprayed a fine mist on the material as opposed to the hassle of the flood coolant he was used to with typical wet mills. But it didn't stop there: Once iMilling had the D5 at their facility and started producing parts, they began to realize all of the benefits of a system that was designed specifically for their application. Felix elaborates, "Not just comparing the D5 to the VMC, but to every other machine out there ... the difference is also how reliable the D5 has been. When you're milling implant parts in metal on other industrial milling machines, if a tool breaks, the machine will just keep milling, and you're so scared of the machine crashing, the spindle breaking, or the tool milling into your tool holder – or just going to some random place. If you're milling a high angle bar, it could run into the work holding and that's just another thing we had to look out for. But the DATRON is just so reliable that I could hire a dental technician to control it, put jobs in overnight, and know that the parts will be ready when I come in the next day". Remarkably, iMilling has maintained the same quality of milled restorations on a machine that is almost half the cost of their initial system, has a 31" wide footprint and includes automation, tooling, and coolant. [more on back page >](#)

iMilling Configuration

iMetric D103i Scanner powered by exocad, WorkNC CAM software and the DATRON D5 dental mill



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Simplicity, such as the D5's ease of use, is often associated with inflexibility. However, this was hardly the case when iMilling was able to seamlessly integrate their own implant CAD library and proprietary CAM strategies with their new machine. The research and development that went into creating these elements is what Felix considers to be the true strength of iMilling and what puts them a step ahead of everyone else in the industry. So, incorporating a machine like the D5 (which is an open system) gave Felix the flexibility he needed to continue using the knowledge base he had built up. Additionally, iMilling was able leverage the R&D that DATRON has invested in their technology which includes tooling and tooling strategies for specific materials. "Before, we wasted a lot of money testing tools and finding the optimal milling parameters for each one. With the D5, DATRON does all of that for you and has all of the milling strategies already set.

That's what I love about the company. Now we can focus on our business and marketing it"

iMilling is now using the D5 exclusively for milling titanium implants, although that wasn't always the case. The machine can also mill PMMA, wax, chrome cobalt, and zirconia, so iMilling utilized its flexibility to mill a wide range of materials, until production neared the D5's capacity. At that point, they brought in another system that's limited to milling softer materials for their zirconia restorations. Felix explains, "It's best to have the D5 focused on what we really need it to mill, and what it can do relative to anything else we have, and for us that's titanium." This makes sense, from fiscal point of view, considering titanium implants structures are the most profitable parts iMilling produces. ■

About DATRON

The D5 dental milling machine and turn-key solutions for the dental industry

The D5 Dental Mill is designed based on close consultation with the dental lab industry — and was built from the ground up to meet the specific demands required for the production of complex implant geometries. It's compatible with industry leading CAD/CAM software packages, while still allowing for the integration of yet-to-be-developed technology. So, your investment today will facilitate your advancement tomorrow ... and for years to come. We're continually testing the components and geometries of the world's most prominent implant manufacturers and we're committed to helping you stay up to date with the latest developments within the industry.

 Made in Germany by DATRON AG

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