



## Tech Insider: The Road to Generation 2

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Being part of a disruptive and innovative company that transforms lives through the power of a smile has been an incredible journey. In the past eight years, we have grown our manufacturing operation significantly, and SmileDirectClub is now one of the largest 3D printing facilities in the United States.

While many people recognize our purple boxes or have seen TV ads showing our happy customers, you may not be familiar with the incredible technology – like our 3D printing process – that makes our brand come to life.

As we mature as an innovation-driven company, I'm excited to share a snippet of this tech journey with you from where we started, to where we are now, to the future ahead. Let's start at the beginning.

### The beginning

At SmileDirectClub, our mission is to democratize access to care, which in layman's terms, means giving everyone the opportunity to have a straighter and healthier smile. When I started at SmileDirectClub, we didn't have the technology to make millions of aligners like we do today, but still had the goal to help millions of people get a smile they love. We made aligners one at a time, pouring plaster models of patients' mouths, molding aligners with Biostar machines, and then trimming each aligner by hand with scissors. We knew our goal of making affordable aligners by the million would be impossible with this technology, and we needed to really lean into our innovative DNA. For this reason, we began developing plans for an automated manufacturing process that would revolutionize the clear aligner industry and help SmileDirectClub's mission of changing millions of lives through the power of a smile.

### Focused on the future

As we started our innovation journey, we knew we needed to look for the best solutions for our customers while we also figured out a new and more efficient way to make clear aligners. In our first few months, we learned that milling machines and additional equipment needed for the aligner manufacturing process had a long lead time. Instead of letting this be a hurdle, we focused on staying agile and leaned into the continuous improvement of our process as we designed and built our own automated manufacturing system. We found that innovating this process in-house was the right approach for our team, which meant making changes to our designs and processes weekly. After months of testing our process and workflows, we officially shifted from a manual process to a semi-automated process with the birth of Generation 1.

### Generation 1 transitioned us into semi-automation

In January of 2019, we moved out of our original, manual process using Biostar machines and transitioned to our first manufacturing technology, which we call Generation 1 (Gen 1). This was a huge milestone for SmileDirectClub and led us one step closer to our goal of making millions of smiles.

Gen 1 leveraged a patented, new system to thermoform plastic over custom, 3-D printed molds to form the aligner, and CNC equipment with a programmed motion to create a cutline on the aligner for a smoother edge along the customer's gums. Our Team Members gave orders to the machines and the machines made the aligners. We had a solid production line, we could track everything we did, and we had the necessary data to make changes when needed. Gen 1 was the foundation for what became the automated mass production of clear plastic aligners.

### Generation 2 brings full automation and laser cutting

Our innovation journey continued as we focused on our next update, which we call Generation 2 (Gen 2). We built Gen 2 on the foundation of Gen 1 but took it one step further to add automation and a conveyor system.

At the heart of our Gen 2 manufacturing line is a fully automated laser technology that precision-cuts aligners for a more comfortable fit. Laser cutting removes human error and inconsistencies, ensuring our millions of customers have a much more comfortable treatment experience.

We also pivoted away from using roll stock plastic in our aligners, which provided a more efficient use of materials. This also removed human labor from the thermoforming process and increased the consistency and quality of the product.

Next, we put our equipment into a cellular layout, which turned out to be a key decision in changing the way we make aligners. Instead of building a massive warehouse with production workstations and equipment fixed in place, we arranged them in a way that supports a smooth flow of materials and components. A cellular system allows iterative scaling and continuous improvement to the process because the components are contained in a small, fluid space.

Gen 2 made our process fully automated and became the moonshot innovation that continues to revolutionize the making of clear plastic aligners and aids us in our mission of providing access to care by speeding up our process to get our customers their aligners quickly and conveniently.

### The aligners of the future

As part of building out and executing our innovation strategy, we are creating beautiful smiles with the robust printing and cutting capabilities that come

from our Gen 2 line of machines and look forward to the continuous improvements we will make as a company. We continue to innovate and improve our Gen 2 process, but also look to the future of manufacturing in this space with the customer and our mission as our guiding light. We look forward to sharing more real tech stories as we travel the path of transformative innovation over the coming months.

Be sure to check out Our Innovation page to learn more about our growth, innovation, and the people who comprise our SmileDirectClub world of manufacturing, artificial intelligence, machine learning, and more.