PROFILE PLASTICS℠

Pressure Forming with Style And Volume

Exceptional cosmetics have opened great opportunities for thermoforming, but satisfying high volume applications was a problem. Profile Plastics has built a business around high volume consistent, pressure forming, which has greatly expanded the market for all.

Pressure forming has proven itself as a great method for getting complex parts to market quickly without the high tooling costs and long lead times needed for injection molding. Unfortunately, because of the high per part costs and the artistic nature of the manufacturing process, pressure forming has most often been targeted to applications that require a lot less than 1,000 parts per year...Until now that is.

Profile Plastics of Lake Bluff, IL has spent the past ten years quietly perfecting a process that allows them to produce more than 10,000 of each part per year, consistently, and more importantly, cost effectively. They are now ready to reveal that they are the lowest cost manufacturer in the US for highly cosmetic, close tolerance, thermoformed parts, and that they have proven their process by consistently meeting the needs of customers who require tens of thousands of parts per year, year after year.

Who is Profile Plastics?

John Grundy, a pioneer in the thermoforming industry, founded Profile Plastics in 1960. Through his contributions to the growth of the thermoforming industry, John was chosen as Thermoformer of the Year in 1993. The company has a reputation for strong customer service and award-winning parts.

This Medical Waste System won thee 2023 SPE Thermoforming Award Winner for Pressure Form, Gold People's Choice Award Healthcare. Throughout the years, Profile has remained on the cutting edge of technology and have been innovators in the commercial development and use of the thermoforming and pressure forming processes.

The company is currently led by Steve Murrill, whose mission is to create an organization and facility that allows Profile to anticipate and meet customer needs while opening up new high volume markets for pressure forming.

The entire Profile organization is structured around a team approach that is geared toward efficient, continuous production. By having the best people organized into logical teams, Profile minimizes downtimes and creates efficiencies that reduce the total cost of operation.

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To achieve highly detailed products using pressure forming, there is often a lot of hand finish work, which drives up the per-part price and makes it difficult to get consistent quality over a large number of parts. Traditionally, pressure forming has been almost more art than science. Each operator would get different results.

This meant that one shift would produce great parts while the next shift's production would need to be reworked, deviated, or worse, scrapped. If key production went on vacation, some parts might not have been made at all. Inconsistent quality, high reject rates, excessive trimming time, slow production, and too much hand-labor per part were all obstacles that had to be overcome on the road to high-volume thermoforming.

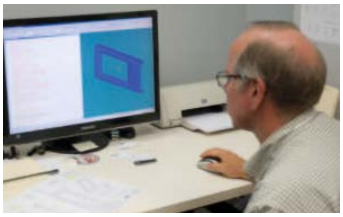
The Profile Process for High Volume

Profile has developed a facility, an organizational structure, and a manufacturing process that allows them to consistently produce tens of thousands of each part per year. The process is as follows:

Sales Engineering.

Preparing for high volume starts with Profile's direct sales people. Each project is unique, and the sales engineer's job is to help the customer understand the right process for each application. Profile works to make sure that the customer understands what is possible and what is not possible with thermoforming. Many great sales opportunities are handed off to alternative processes that are a better "fit."

Engineering.



Much of the cost of pressure formed parts comes from the CNC router trimming time and the manual labor needed to bond on blocks, hand trim out special areas, paint and so forth. Profile has always used molded-in color, which they believe provides a better end result and reduces production cycle time. To reduce the other post production expenses, Profile spends a little more time during the engineering phase to prepare not only for the usage of the product, but also for the production process. In many cases, they are able to mold in features or eliminate blocks. By molding in these features, they reduce the time to make the part, lower the cost, and provide consistent quality.

Tooling/Process Development.

Profile engineers work to create accurate, robust, detailed production tooling, resulting in part cosmetics that are in many cases superior to injection molding. For higher volume projects, spending a little more on the mold tooling can have a dramatic effect on the consistence of production and the per-part cost. In order to take the skill of any particular operator out of the equation, Profile engineers also spend time upfront to create process check fixtures that allow the operator to regularly and precisely make sure they are making good parts. In this way, most problems are caught before more than a handful of parts are made.

High Volume Production.

Once the tools are designed properly, the burden passes to production. As pressure forming has grown over the past 25 years, many of the manufacturing machines and processes were invented or modified by plant engineers as needed. This meant that each machine was a little bit different than the others. Most parts were tooled and set up to run on one particular machine. If that machine was down or busy, the part was delayed.

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To get away from that restriction, Profile took advantage of a plant move and expansion to install multiple computer-controlled machines that allow for effective redundancy. If one machine is down or busy, production can be set up on an identical machine without any major problems. In addition, with more sophisticated process controls, the equipment can automatically alert the operator if something has changed. Profile runs multiple shifts on their state-of-the-art equipment, and they have developed their own quality control procedures that provide more consistent results, regardless of the operator. In fact, over the past ten years, Profile has reduced its reject rate by more than 75%. This reduces the high overhead of inspectors and rework artists, all of which result in lower costs.

Just in Time.

Traditionally, a thermoformer gets an order, makes the order, ships the order, and then waits. This approach means that there is a built-in delay in fulfilling each new order, and there can be a lot of uncertainty and downtime for the plant. Profile has implemented a different sort of "Just in Time" system.

Instead of waiting for an order, they work with each customer to understand his/her needs over time. They will then schedule production before they get an order, so that when the rush order comes in, they can meet the customer's initial needs immediately, while they both ramp up for repeat production.

Profile also sizes the production runs to be the most efficient. They base the production run size on the customer demand, the degree of difficulty of the setup, and the physical size of the part, rather than arbitrarily stopping when the customer's current requirements have been met. Of course, it is possible for Profile to get burned if they have parts on hand without an order and the parts are then discontinued or modified.

But Profile reports that by getting close to the customer and understanding the customer's usage patterns, Profile can create production schedules that provide the parts right when the customers need them. This keeps the plant running more consistently and often lets Profile "be the hero" when a customer needs parts in a hurry. Over the past ten years, very few parts have been scrapped due to unauthorized overruns.

Customer Service.

While Profile has worked hard to develop a facility and a process that makes high volume production possible, company president Steve Murrill says that these actions alone are not enough. "For us, the key to transforming pressure forming into a consistent, high-volume process is an unswerving focus to customer needs. We have found that a close working relationship isn't just a nice way to keep clients happy. It is what makes us successful. It is not enough to react to customer needs. We have to anticipate them. We combine knowledge of our process with knowledge of their needs in order to think on their behalf."

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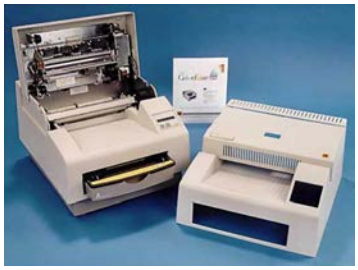
By creating a state-of-the-art facility, by helping clients design not only the part usage, but also to the production process, and by working to anticipate client needs, Profile has been able to break the volume ceiling for pressure forming. They routinely produce many parts in excess of 10,000 pieces per year. the panels for the Life Fitness Exercise Bike illustrates just this. Over 70,000 were produced using Profile's "Just in Time" strategy.

And over 5,000 multiple-part Electronic Printer Housings were produced in a matter of months to satisfy a rapidly developing market. Profile prides itself on complex part designs that have been recognized for excellence year after year at the annual Thermoforming Conference. Their motto, "Parts Under Pressure" is really a rallying cry to their employees to never let down and take anything for granted. The pressure is always on their parts and on their operations to maintain a high level of customer satisfaction.



Pressure forming is a production process that bridges the gap between the need for a few parts and many thousands of parts. Because of this, it is exceptionally well suited for prototyping requirements as well as production requirements. Pressure forming is a new product manager's dream come true! By taking full advantage of the process early in the product development cycle, high quality, functional prototypes can be available for customer trials and trade shows at costs not too different than "models", and when production quantities are required, the tooling and trimming fixtures will be complete. If changes are required, they can generally be done quickly and at relatively low cost. This will allow the new product to get to market faster and at a lower total cost. Then, in a few years when an innovation is required to extend the product lifecycle, newly designed pressure formed parts can be retrofitted to highlight the product change to the marketplace.

Contact Profile Plastics today to learn more and see if pressure forming is a good option for your next project.

Click here or scan to get our Design Guide.

Click here or scan to schedule a call with our expert.

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