



## Industrial Design and Development Company Chooses EnvisionTEC for the Production of Accurate Prototypes

P5 Designers (P5) is a traditional, project based design and development business based in Milford, NJ. The company boasts dozens of patents in product, packaging and manufacturing design.

P5 has built up an enviable reputation in the industry and supports businesses in the production of a wide range of products, from toys to medical equipment.

The elite team at P5 is composed of cross-trained researchers, industrial designers and engineers providing an end-to-end service including: project management, product preparation, product design, prototyping and packaging design.

### Why look at 3D printing?

Within the research and development process there is a need for multiple prototypes and iterations of those prototypes. With traditional manufacturing methods those prototypes are often hand crafted, made from molds or milled.



Prototype parts produced with the in-house EnvisionTEC Perfactory 3D printer.

### P5 Designers

#### Industry:

Design and Development

#### Machines:

Perfactory

#### Materials:

ABS Flex White, E-Clear

These processes are both time consuming and expensive, requiring specific skills and tooling to achieve. They also result in a vast amount of wasted material.

Additive manufacturing is becoming a vital part of prototyping for many companies. Multiple iterations and design tweaks can be achieved quickly and without the need to re-produce or modify molds. Additionally, unlike milling techniques there is no specialist tooling required.

P5 has been using 3D printing for a number of years, recognizing that its implementation has not only removed many of the costs associated with the R&D process but also improved the speed at which concepts can be turned into real-world objects.

***"The quicker we can start putting things into our hands, the quicker we can start developing the fit and feel that is so vital to any good product design part."***

- Mr. Paul Carse - Owner, P5 Designers

## Why EnvisionTEC?

Since the beginning, members of the team at P5 have been involved with 3D printing. Though 3D printing had improved productivity and reduced costs, these technologies were not providing the accurate results they needed. They recognized that to stay ahead of the competition and ensure the best results for their customers they would need to invest in the best machines in the market.

For manufacturing, P5 needed a machine that could closely mimic the final injection molded part and give the customer a true reflection of what the final product will both look and feel like.

After testing a number of brands and technologies, P5 were sold on the EnvisionTEC Perfactory. The printer allows the production of everything from a tiny medical part to large packaging models, quickly, painlessly and accurately.

Additionally the range of resins available for the EnvisionTEC Perfactory provides a huge number of options. This includes hard and soft materials, flexible materials, tough materials and even temperature resistant materials.

***"When we are in the heat of a project, especially in the very early stages where we are doing a lot of design development, we will use this machine for maybe 2-3 weeks straight with non-stop building. Reliability has never been an issue."***

- Ms. Kelly Duncan - Industrial Designer, P5 Designers



Multiple iterations of a prototype can be printed simultaneously. Speeding up the decision making process.

***"3D printing is vitally important to the product design process. It helps us bring into the 3D dimensional realm some of the concepts that we have."***

- Mr. Paul Carse - Owner, P5 Designers



P5 supports businesses in the production of a range of products, from toys to medical equipment.

***"The ease of use, the amount of detail we get and the vast materials selections available was something that was missing in most every other manufacturer that I saw out there."***

- Mr. Paul Carse - Owner, P5 Designers



## The Outcome

Since the purchase of the EnvisionTEC Perfactory, the team at P5 have embraced its flexibility and speed. The accuracy of the machine has allowed them to produce prototypes to very high tolerances and accurately to their digital designs.

Accurate prototypes, that reflect the production items can be produced and handled by the customer very quickly. This allows clients to see and feel their vision and adjust designs to achieve the look and feel they desire.

The dimensions of the build plate and Z height on the Perfactory allow for multiple iterations of a design to be printed at the same time, so options can be presented to the client. This capacity also allows for larger objects to be produced with equally fine detail. When adjustments are required, these can be quickly achieved with re-prints in a matter of minutes or hours.

The patented technology employed by the printer results in exceptional surface quality with very little visible stepping. This increases the speed of prototype production further by reducing the finishing time required.

The range of EnvisionTEC materials, and the ability to painlessly switch these for different jobs makes the machine very flexible, allowing them to fulfil the needs of more customers. For example, the ability to print medical devices on one print, then switch to clear bottles on the next.

After using the Perfactory for hundreds, if not thousands of jobs it has proved reliable, and provides consistent results time after time. The team at P5 can rely on the machine, knowing that even when leaving it overnight to complete prints, they will return to a completed job, and a printer ready to accept the next.

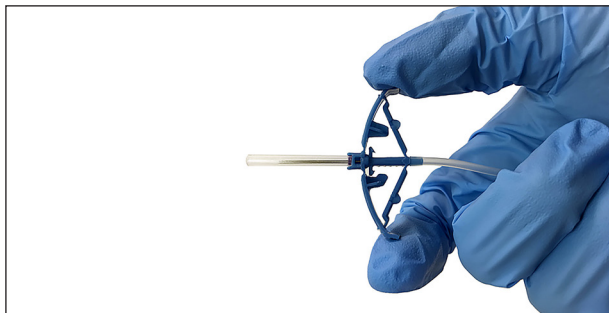
## The Future

Since EnvisionTEC machines are STL agnostic the team at P5 are not locked to a single CAD provider. Moving is simple.

Additionally as all EnvisionTEC Perfactory machines are based on the same principles and are compatible with the same resins, expanding the printing capacity is simple. Machines can be added without the vast cost of retraining their team or implementing new software.

***"We want to make our concept models as close to injection moulding as possible. So we'll make sure that everything has a uniform 1-1.5mm wall thickness which a Perfactory has no problem doing. It makes really clean crisp parts, which is great."***

- Ms. Kelly Duncan - Industrial Designer, P5 Designers



Even small medical devices can be produced to extremely high tolerances.



***"The ease of use, the detailed print quality and the vast selection of materials was a combination that was missing in most every other manufacturer that I saw out there."***

- Mr. Paul Carse - Owner, P5 Designers



The large Z height on the Perfactory allows for the production of even large models. Additionally models can be printed horizontally or vertically to maximize yield per print.

## EnvisionTEC materials and 3D Printers for Manufacturing

EnvisionTEC offers a full range of desktop, full-production and high-speed continuous 3D printers for the production of highly detailed prototypes for design verification and testing or for real mass production of custom products.

EnvisionTEC 3D printers and materials are already being used by the world's leading manufacturers, and some of the smallest ones for a full range of production needs.

### Just some of the EnvisionTEC materials for Manufacturing

- **ABS Flex White** - An ideal solution for a wide variety of manufacturing, including snap-fit and assembly applications requiring some elasticity.
- **E-Model** - A tough material, suitable for high quality prototypes and production-quality end use parts.
- **E-Glass 2.0** - A transparent material with excellent surface finish and feature resolution, E-Glass 2.0 is an ideal solution for simulating clear plastics.
- **HTM 140 V2** - High temperature molding material for non-metal masters.
- **R5/R11** - R series produces robust, accurate, and functional parts with a good balance of rigidity to functionality. Ideal for master patterns in rubber molding applications.
- **RC SERIES** - Resins containing ceramic particles, capable of building tough, temperature resistant and stiff parts at very high resolutions. Ideal for silicone molding. RC series can also be finished in a variety of ways including painting or plating.
- **Q-View** - A material capable of impressive print speeds for the full build envelope. Put custom design pieces into the hands of your customers in record time. Q-View is also ideal for silicone molding applications.
- **LS600** - An extremely durable photopolymer with high impact resistance. For use in the production of very accurate parts with high feature detail.
- **PIC Series** - Castable materials. Ideal for printing jewelry, dental and other parts requiring exceptional detail and surface finish.

***"We have a lot of versatility with the Perfactory. We can simply change materials by switching out the bath. We can easily produce models that are made of multiple materials quickly."***

- Ms. Kelly Duncan - Industrial Designer, P5 Designers

### With Thanks

Huge thanks to the team at P5 Designers for their feedback, and their support in the production of this case study.

### About EnvisionTEC

EnvisionTEC is a leading global provider of professional-grade 3D printing solutions. Founded in 2002 with its pioneering commercial DLP printing technology, EnvisionTEC now sells a range of printer configurations based on six distinct technologies that build objects from digital design files. The company's premium 3D printers serve a variety of medical, professional and industrial markets, and are valued for precision, surface quality, functionality and speed.

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