

# CASE STUDY

Streamlining Plastic & Elastomeric Resin Post-Processing: How Prototek Enhanced Efficiency with PostProcess Technologies

**POSTPROCESS**

## OVERVIEW

**Prototek** is a full-service additive manufacturer that provides a one-stop shop for 3D printing services. Since 2007, they have been a pioneer in the industry, offering cutting-edge solutions in the field of 3D technology. They design, prototype and produce parts for multiple industries, such as electronics, jewelry, mechanical, art, and design.

With a footprint in Italy, they became one of the first companies to offer additive manufacturing services in the region. Today, Prototek continues to provide efficient alternatives to traditional production methods, providing high-quality products at an unmatched speed.

Prototek faced significant challenges in their resin-based printing process due to the inefficiencies and inconsistencies of using isopropyl alcohol (IPA) dunks for resin removal. Producing nearly 20,000 parts monthly, Prototek needed a more reliable and cost-effective solution to maintain quality and speed. By integrating PostProcess Technologies' DEMI 910™ automated resin removal system with their Carbon® L1 platform, Prototek streamlined their workflow, reduced washing times, minimized broken parts, and increased overall productivity. This successful implementation not only enhanced their operational efficiency but also paved the way for future advancements in their post-printing processes.

## ADDRESSING KEY CHALLENGES IN HIGH-VOLUME RESIN REMOVAL

Prototek produces nearly 20,000 resin parts each month. This high level of volume requires them to deliver products quickly without sacrificing quality. The company's resin-based printing process, a critical component of their manufacturing workflow, encountered significant challenges that jeopardized their ability to maintain this balance.

Prototek initially used a traditional post-processing method for resin removal. However, this method presented them with a few challenges:

**Inconsistent Resin Removal:** Prototek previously relied on dunking parts in IPA for resin removal. This method was highly unstable due to the volatility of IPA. Variability in the IPA concentration, temperature fluctuations, and differences in dunk durations led to inconsistent results. Some parts emerged clean and undamaged, while others suffered from incomplete resin removal or surface degradation.

**High Solvent Costs:** The frequent need to replace IPA due to solvent saturation and evaporation significantly increased operational costs. Maintaining large volumes of IPA for consistent resin removal became hazardous. Additionally, the handling and disposal of large quantities of IPA raised environmental and safety concerns.

**Quality Control Issues:** The instability of the IPA dunk method made it difficult to produce mass quantities of parts consistently. Variability in the quality of resin removal affected the final product's integrity, leading to increased rejection rates and rework. This not only led to delays in delivery times but also impacted customer trust in Prototek's ability to consistently deliver high-quality parts.

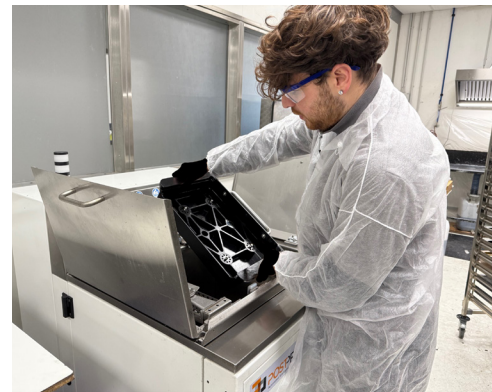
**Operational Inefficiencies:** The manual nature of the IPA dunk process introduced variability and inefficiencies. Operators needed to monitor and adjust the process continually, which increased labor costs and reduced overall productivity. The manual process also created the potential for human error, further compromising quality and consistency.

To address these issues, Prototek aimed to reduce solvent costs and achieve more reliable results for their customers.



Prototek Additive Manufacturing Facility

## PROTOTEK'S SHIFT TOWARDS AUTOMATION



Andrea Barchi, Prototek 3D Manufacturing Director, using the PostProcess DEMI 910™ Resin Removal Solution

After being approached by PostProcess Technologies to be a beta tester for their Elastomeric Detergent for their DEMI 900™ series resin removal solution, Prototek saw an opportunity to enhance their post-printing process with an automated system. PostProcess' DEMI 910 automated resin removal submersion system has been developed for the Carbon® ecosystem to dramatically improve efficiencies for the Carbon L1 and M2 3D printers. This, combined with the new PostProcess PLM-501-SUB detergent, is specifically designed for cleaning elastomeric resins. This full-stack solution promised to address Prototek's challenges in the industrial sector and deliver consistent, high-quality results.

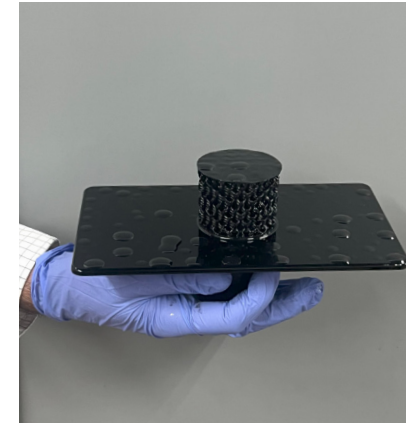
By integrating Carbon® L1 system with the PostProcess elastomeric resin removal solution, featuring the DEMI 910™, AUTOMAT3D® software, and PLM-501-SUB chemistry, Prototek was able to improve their workflow and put a renewed focus on production parts in their prototyping services.



CARBON L1 3D Printers in Prototek Facility

## PROTOTEK'S ENHANCED WORKFLOW WITH POSTPROCESS TECHNOLOGIES

Since implementation and beta testing, the PostProcess full-stack elastomeric solution has reduced Prototek's washing times and helped them streamline their efficiency. By replacing IPA with this automated solution, Prototek has not only cut down on workflow times but also reduced the number of broken or unfinished parts.



Excess resin on elastomeric printed part before processed in PostProcess PLM-501-SUB Elastomeric Detergent

The integration of the DEMI 910 has allowed the Prototek team to manage three jobs simultaneously, versus a single job in one hour. This elimination of manual labor through automation has made a tremendous impact on Prototek's overall productivity and throughput.

Currently, Prototek is testing the DEMI 910 solution with new products on the market, potentially paving the way for adding more PostProcess solutions to their workflow in the future.



- Andrea Barchi, Prototek 3D Manufacturing Director.

### About Prototek

Prototek offers cutting-edge solutions in the field of 3D technology, supporting the needs of the main production sectors: from the mechanical and electronics industry to jewelry, through art and design. They have developed twenty years of experience in the fields of Rapid Prototyping and CAD Design. In Italy, they are among the first companies to offer Additive Manufacturing services which, today, are an increasingly valid and efficient alternative to traditional production methods. Prototek expertise helps reinvent the way one thinks about manufacturing, using 3D printing services, 3D scanning and advanced know-how on 3D design, and can address customers' needs in all phases, from model design to post-production finishing. They use a wide range of industrial materials, capable of satisfying the mechanical and functional requirements of the different production sectors: MJF, SLS, FFF, SLA, MJP, DLS & DLP. Learn more at <https://prototek.it>.

### About PostProcess

PostProcess is the leader in automated and intelligent post-printing solutions for 3D printed and additive manufactured parts. Founded in 2014 and headquartered in Buffalo, NY, USA, with international operations in Mougins, France, PostProcess removes the bottleneck in the final stage of the 3D printing workflow, post-processing, through a combination of patent-pending software, hardware, and chemistry technologies. The company's solutions automate industrial 3D printing's most common post-printing processes including support, resin, and powder removal, as well as surface finishing, enabling customer-ready 3D printed parts at scale and complete digitization of additive manufacturing through the workflow for the Industry 4.0 factory floor. The PostProcess portfolio has been proven across all major industrial 3D printing technologies and is in use daily in every imaginable manufacturing sector. Learn more at [postprocess.com](https://postprocess.com).