CASE STUDY
MICROSOFT

Customer Profile:
Microsoft's Advanced Prototyping Center

Situated in Redmond, Washington, Microsoft's Advanced Prototyping Center (APC) occupies a 26,000-square-foot facility dedicated to innovation and hands-on development. APC brings together a team of skilled makers who bridge the gap between initial concepts and tangible solutions for industrial designers and engineers.

By leveraging a diverse array of manufacturing and prototyping technologies, APC excels at rapidly producing prototypes to answer complex business challenges. Guided by a philosophy of "fail fast," APC plays a crucial role in building confidence in design and engineering decisions for Microsoft's teams and partners, enabling swift progress from idea to implementation.

Challenge: PolyJet™ Parts for Mechanical Prototypes

PolyJet technology has long served as the cornerstone of 3D printing within Microsoft's Advanced Prototyping Center (APC), consistently evolving alongside advancements from Stratasys. APC's commitment to rapid prototyping and solution development has been greatly enhanced by PolyJet's unique capabilities, including streamlined support removal, multi-material printing, and the integration of full-color Pantone-qualified output.

Each technological leap has further empowered Microsoft's industrial designers to realize complex models with unprecedented fidelity and efficiency. However, despite these remarkable features, a critical limitation persisted: the narrow spectrum of material strength available in PolyJet resins. This constraint significantly restricted the utility of PolyJet for engineering applications, particularly when prototypes required mechanical robustness for functional testing or iterative design validation. As a result, while PolyJet excelled in aesthetic and conceptual modeling, its adoption for practical mechanical prototypes remained limited, creating a gap between design intent and engineering feasibility.

Solution: ToughONE™ the Next Step in PolyJet Evolution

The introduction of the ToughONE material at the Stratasys booth during Formnext 2024 marked a pivotal moment in the evolution of PolyJet technology. Among the array of advanced 3D printing demonstrations, ToughONE stood out for its transformative mechanical properties. Unlike traditional PolyJet resins, which often mimicked the characteristics of acrylics, ToughONE exhibited a resilience and machinability comparable to SLA resins and cast ABS plastics.

This was dramatically illustrated by a live demonstration: a drill press easily bored holes into ToughONE-printed parts, producing spiral-shaped shavings and showcasing the material's ability to withstand mechanical stress without fracturing or deforming. Such performance signaled a breakthrough, bridging the gap between aesthetic prototyping and functional engineering.

Impact: Expanded Utility for PolyJet Parts

The arrival of the ToughONE material has fundamentally redefined the role of PolyJet technology within Microsoft's hardware development ecosystem. By offering a broader range of material properties, including enhanced toughness, durability, and machinability, ToughONE enables engineers to create prototypes that are not only visually accurate but also mechanically reliable.

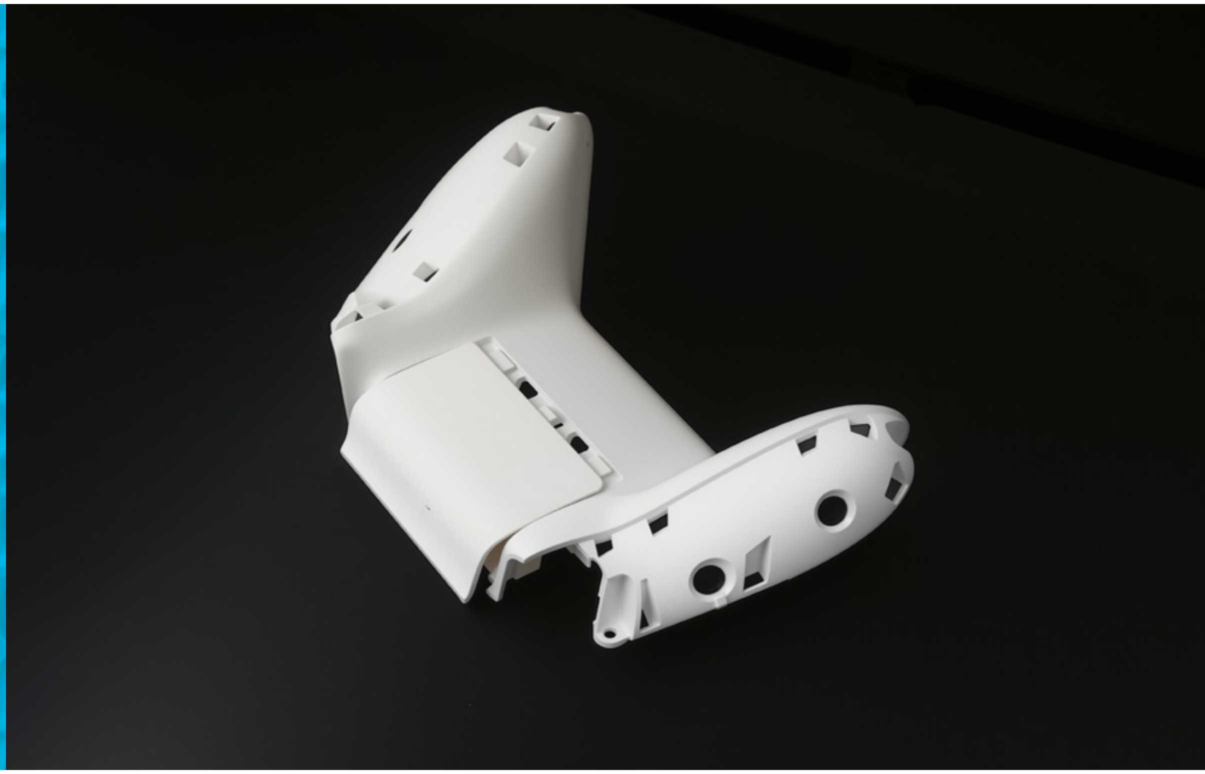
This expanded capability allows for more rigorous functional testing, iterative design improvements, and accelerated product development cycles. The difference between the standard Vero® material and ToughONE is profound: where Vero was limited to conceptual and visual models, ToughONE opens the door to prototypes that can endure real-world mechanical stresses, such as drilling, fastening, and assembly.

This advancement empowers hardware teams to validate designs earlier in the development process, reducing the risk of costly late-stage modifications and fostering greater confidence in engineering decisions.

> "PolyJet has been our preferred prototyping technology in the APC, but material strength was a limitation. With ToughONE, PolyJet can now produce robust engineering parts, expanding its role in Microsoft hardware development.

Moreover, ToughONE's versatility supports a wider array of prototyping scenarios, from consumer electronics to industrial components. Its compatibility with multi-material and full-color printing further enhances the ability to simulate final products, enabling cross-functional teams, such as designers, engineers, and manufacturing specialists, to collaborate more effectively.

The APC's adoption of ToughONE is expected to accelerate innovation, streamline workflows, and strengthen Microsoft's position at the forefront of advanced prototyping. In summary, ToughONE represents a significant leap forward, transforming PolyJet from a tool for visual ideation into a robust platform for comprehensive product development.



stratasys.com
ISO 9001:2015
Certified

CASE STUDY
MICROSOFT

stratasys