

AM Accelerates Innovation Cost effective alternatives to vacuum casting

Source: ZELTA3D



On-demand, small-batch production of equipment enclosures with no hard-tooling costs.

Challenge

In today's rapid globalization, there is an increasing need to shorten the time to market of devices produced in the gaming, medical, robotics and general consumer industries. Customers demand cost-effective alternatives to vacuum casting & injection molding for the high-mix, low-volume production of complex plastic parts.

Solution

ZELTA3D has adopted EOS SLS technology to enable toolless manufacturing of highly complex plastic parts.

Results

Standard order lead-time reduced from four months to two weeks, even for complex parts.

Reduced total cost of ownership, with no tooling or setup costs and with zero inventory waste.

Improved product functionality and reliability, optimized topology optimization, parts integration.

ZELTA3D successfully replaces traditional production of highly complex vacuum-cast plastic parts with EOS SLS technology

Advancements in technology are disrupting manufacturing supply chains, global logistics and customer purchasing models. New technologies and competitors are forcing many companies to speed up their product development, the result of which is often a shorter product life cycle. Not only do shorter product life cycles speed up the pace, they also raise the pressure on firms to introduce new products and accessories with a short time to market. To facilitate rapid design iterations and support the functional testing necessary to enable a quick product launch, there is an increasing demand for low-volume batch production runs of between one and 2000 units, especially in the consumer, gaming, robotics, medical and general manufacturing industries. Traditional manufacturing methods such as vacuum casting, injection molding and machining are costly when employed for low volume production, due to the expense of the hard tooling and setup processes involved. Moreover, they are inflexible and not sufficiently reliable in supporting rapid design iterations.

Challenge

Pressure to launch new products on the market before they become obsolete is forcing many companies to adopt an agile product development strategy. This requires multiple design iterations of functional prototypes. In addition, low-volume engineering trials of on-demand, low-volume product launches are becoming the norm in many industries. This increasing demand for a reliable low-volume

direct parts supply has become a necessity for many companies. Normally, companies have turned to vacuum casting for batch production runs of quantities below 500 units. However, vacuum casting presents them with the following challenges:

- The turnaround time is approximately 3-4 months,
- It lacks the accuracy required for directly functional prototypes and production parts,

Short profile

ZELTA3D provides industrial 3D printing services in Singapore, utilizing highly advanced 3D printing technologies and driven by our proprietary PLM and CRM software and hardware automation. Our services include cloud manufacturing, rapid prototyping, contract manufacturing, design optimization for AM, and post-production using the latest additive manufacturing technology.

Further information
<https://www.zelta3d.com>



PCB enclosures with highly customizable mounting holes and cutouts for electronic connectors and interfaces (Source: ZELTA3D)



Source: ZELTA3D

- Total cost of ownership can be high due to the MOQ and setup costs involved,
- It is inflexible to design changes once the mold has been created.

Solution

ZELTA3D's goal is to promote the adoption of reliable industrial Additive Manufacturing (AM) for use beyond rapid prototyping. We aim to produce high quality, cost effective and reliable parts that are suitable for functional testing and direct end-use applications. We believe that with the production

speed, print quality and part properties that can be achieved with EOS SLS systems, we can change the way that plastic parts for end use are manufactured, while maintaining the flexibility that is necessary for agile product development and production. The key factors that we consider integral to an EOS industrial AM production system are:

- Reliability and cost,
- Consistency of parts produced even when pushed to high production cycles,
- Responsiveness and technical support by the EOS team.

"We are a new startup, and the majority of the customers we serve operate in the medical, gaming, manufacturing, robotics and R&D sectors. They frequently require reliable rapid prototypes and the ability to produce complex plastic parts in low volumes. We currently produce around 200,000 plastic parts per year using SLS, MJF, SLA/FDM. EOS SLS is a major contributor to our company's growth, with a 70-100% YoY increase in production volume."

*Wong Ming Wei,
Co-founder, ZELTA3D PTE. LTD.*



Results

With other AM systems, consistency and repeatability are common problems, which makes it difficult to scale up to high volumes. But users of EOS P110 benefit from batch productions of up to 1000 or even 2000 units, with good repeatability and reliable output. This leads to:

- Financial success: Successful promotion of AM solutions and better economies of scale,
- Technical success: Stronger value delivery for our customers, with enhanced part quality, consistency, and production speed,
- Higher customer satisfaction: With EOS SLS, our customers can benefit from cost effective AM solutions, with quick delivery lead times, helping them reduce the speed to market of their products.



Source: ZELTA3D

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