

AT A GLANCE

Company: Aran Research & Development

URL: www.aran-rd.com

Location: Caesarea, Israel

Industry: Leading Israel-based research and development house

Challenges

→ To remain competitive and enable customers to meet tight time-to-market constraints, Aran needed to reduce the time and cost needed for development.

Solution

→ The Eden350V™ 3-D Printing System from Objet.

Results

→ More frequent production of models throughout the development process
 → Earlier spotting and correction of design and engineering errors
 → Lower overall development costs
 → Faster development time

“The Eden 3-D printing system is a real breakthrough in the world of design... The quality of models we get from it is amazing

Boaz Drori
Design Studio Manager, Aran Research & Development

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Aran cuts design time by 50%, strengthens competitive advantage with its Eden™ 3-D printing system

Aran Research & Development serves the local high-tech industry and international clients in the fields of medical and security products, printing equipment electronic packaging, agricultural products and numerous other tools and machines. Aran is the largest product, design and development house in Israel with more than 70 experts in design, engineering, prototyping, mold-making and other fields. Aran offers its customers a full service from product design through to pre-production.

As Aran's typical customers' markets are fast-moving and cost-sensitive, the development house constantly needs to seek for ways to reduce design time, costs and enhance its service.

Accurate models enable early-stage design verification

“We needed technology that would allow us to check and illustrate design for our customers,” says Kobi Jakobi, Engineering Manager of the Plastic and Electronic Packaging Department at Aran. “The Eden350V allows us to evaluate the physical shape, assembly procedure, ergonomics and industrial design of the product as soon as we finish designing it on our CAD system.” This means the team can detect engineering errors in a very short time – virtually as soon as a design milestone is completed and long before the tooling stage when changes can be more costly.

Boaz Drori, Design Studio Manager adds. “The quality of models we get from the Eden system is amazing. The fine details, high accuracy and smooth surfaces all come together to create incredibly realistic models.”

Other reasons that Aran chose Objet's Eden350V include its ease of use, high reliability, and cost effectiveness. The Eden system enables Aran to build even large models quickly, to create smoothly curved edges in which the 16-micron layers are invisible to the naked eye, and to easily finish and paint the models to emulate the look and feel of the final product. The fact that the materials come in non-contact sealed containers, with easy switching between the different materials, was also attractive to Aran.

Saving time and facilitating communication

All these advantages add up to significant time savings. "Overall, we've seen a 50% reduction in our design time as a result of using the Eden system," says Drori. General time to market is now 20% less than it was before Aran installed the Eden350V. In addition to speeding the internal design process, using the Eden350V has enabled Aran to improve communications with its customers. "We can now print a few different model prototypes to present the customer, which gives us a competitive advantage," Drori adds.

This drastically reduces misunderstandings and enables the customer and the Aran team to agree more quickly on design changes. Furthermore, Aran's customers are able to insert the electronics and other parts into the Eden-produced models and use the "device" for user testing and pre-marketing activities.

Conceptual and functional evaluation of a mobile phone design

A recent project to design a completely new-look mobile phone for Emblaze is just one example of the many projects on which the Eden350V system has proved its value. After developing sketches of several design options, one concept was developed into a 3-D computer simulation and from there was designed in CAD using SolidWorks. The file was then transferred to STL format and imported into Objet Studio, the management software used with all Eden series printers.

The phone model was produced on the Eden350V using the FullCure720 Transparent material to enable immediate evaluation of fit, form and function. Several additional identical models of the phone shells were then built on a single build tray, for feasibility testing. For this more advanced evaluation, the transparent photopolymer models were painted in glossy colors to give a realistic look and feel. Aran then inserted electronic components and the models were presented to focus groups, enabling Emblaze to get valuable, early-stage market feedback on their new-look phones.

Improving the workflow and the working environment

In terms of the main advantages of using the Eden350V, Aran says the system enables them to:

- Gain an impression of the industrial design and detect errors before the molds are manufactured
- Avoid the need to make adjustments for CNC
- Reduce the costs associated with mold quotations
- Make models of any size and on a large scale, by combining smaller parts into an assembly with high-resolution precision
- Easily offer a high-quality finish and a high degree of color similarity with the target product
- Produce highly detailed parts without adding production time
- Achieve smooth surfaces on which the layer steps are barely visible
- Easily and quickly switch between materials of different flexibility levels and colors



Start from sketch.



Model printed on an Eden 3-D printing system.



Final model painted for feasibility testing.

With thanks to Aran and Emblaze, who kindly helped Objet create this case study.

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