



Indonesia Based Custom Audiology Business Chooses EnvisionTEC

Avara Custom (Avara) is a Custom In Ear Monitor (CIEM) manufacturer based in Surabaya, Indonesia. Avara Custom was founded in 2017 with the vision of providing the best quality CIEMs within the Indonesian market at the most compelling price.

Since its inception Avara has manufactured thousands of pairs of CIEMs for the Indonesian market and has 7 different lines which vary in price from 99 USD to 680 USD. Its products are used by a large number of music artists, musicians and sound engineers from around the world.

Why look at 3D printing?

The production of custom in ear monitors is normally a time consuming and costly activity. Each item is produced in multiple pieces, each being complex to manufacture. Every component needs to be molded, finished and assembled. So using traditional hand casting methods results in longer production times, more issues, less reliability and less precise end results.

The biggest drivers of the move to 3D printing have been the reduction in production time, materials and ultimately the costs in the manufacturing process. Additionally 3D printing provides increased efficiency and superior precision over manual methods.



Alvon, founder of Avara with a completed set of CIEMs.

Avara Custom

Industry:
Hearing

Machines:
Perfactory Micro Advantage

Materials:
E-Shell Series

Why EnvisionTEC?

The team at Avara understood that to stay competitive and give customers the high quality of device they needed, they had to move to 3D printing. The search for the right solution began almost immediately after the formation of the business. After looking at a number of competitors and lower priced competition including 3D Systems ProJet and Formlabs they met with EnvisionTEC distributor Chemtron Pte Ltd who introduced them to the range of printers and materials available.

EnvisionTEC has a history of operating within the audiology market and has a range of machines and materials developed specifically for the hearing industry. This includes an extensive range of materials that are CE and FDA approved bio-compatible for hearing use. This gave Avara the assurance that they were already looking at the right manufacturer.

EnvisionTEC has its technologies in use world-wide by many big players in both hearing aid and custom CIEM manufacture. Some of these manufacturers are using the EnvisionTEC printers almost constantly and have been for a many years. From this evidence, they knew that they could rely on the EnvisionTEC machines, knowing that costly downtime would be reduced to a minimum.

The team was already using 3Shape's audiology focused modelling software, so they required a solution that would understand the output from this software. The STL agnostic nature of the EnvisionTEC range ensures that not only is the whole range compatible but any software they move to in the future should also be compatible.

After discussion, and looking at production levels required, combined with the space available within their production facilities, they settled on an EnvisionTEC Micro Advantage 3D printer together with the E-Shell series of materials. The printer allows for the accurate production of multiple shells per print with exceptional surface finish.

Results

Since the implementation of the new EnvisionTEC printer and materials within its production process, Avara has been able to increase efficiency, improve production times, improve the fit quality of the product and reduce operational costs. This has resulted in lower costs for the end consumer and more competitive positioning within the market.

The first 3D printer was so effective that Avara has already implemented a second Micro Advantage. As the business and production grows Avara knows that the EnvisionTEC range will grow with them and that partner Chemtron Pte Ltd will be there to resolve any issues quickly.



Each pair of CIEMs can be made to the exact specifications of the wearer. Not just in the fit and feel, but also in the individual casing designs with an almost infinite selection of colours and designs available to the customer.



"Chemtron Pte Ltd is the best provider we've worked with. The team provides extraordinary support, after sales service and good pricing. We see ourselves being partners long into the future."

- Alvon, Founder, Avara

EnvisionTEC, the perfect choice for audiology.

From the beginning EnvisionTEC has been the 3D printer of choice for audiologists and hearing aid manufacturers. A number of key players in the industry rely on EnvisionTEC printers and materials to produce thousands of custom devices annually.

In all EnvisionTEC offers more than 16 biomedically approved materials with various skin-tone colors, along with red, blue, pink, tan, mocca, beige, cocoa, brown, black, white, rose clear and crystal clear. Below are EnvisionTEC's core audiology focused materials:

- **E-Clear series** - A liquid photopolymer that produces strong, tough, water-resistant parts especially for applications in the custom hearing device market.
- **E-Shell 200** - A low viscosity liquid photopolymer that produces strong, tough, water-resistant ABS like parts with high detail that are Class IIa biocompatible according to ISO 10993/Medical Product Law and are CE certified for use as hearing aid products, otoplastics, and medical devices.
- **E-Shell 300** - A Material series designed especially for applications in the hearing aid industries and is distinguished for rigidity and durability. It is CE certified and Class-IIa biocompatible according to ISO 10993 (Medical Product Law) for hearing aid shells and otoplastics.
- **E-Shell 500** - Designed especially for applications in the Hearing Aid industries and is distinguished for soft durability.
- **E-Shell 600** - For use on Perfactory UV machines only. EnvisionTEC E-Shell 600 is a liquid, photo-reactive acrylate for building functional parts. It is CE certified and Class-IIa biocompatible according to ISO 10993 (Medical Product Law) for soft ear shells and tips.
- **E-Silicone** - A solution to produce soft silicone otoplastics by the additive manufacture of cocoon molds. The custom fit E-Silicone molds may be injected with medical grade silicone materials. The eggshell-like mold may then be easily broken away, leaving a soft, flexible shell. These shells can provide patients with increased comfort, better retention, better acoustic seal, more gain before feedback and improved sound quality.
- **E-Shell 3000** - Distinguished for rigidity and durability. It is CE certified and Class-IIa biocompatible according to ISO 10993 (Medical Product Law) for hearing aid shells and otoplastics.

Partners

Thanks go to the teams at both Avara and Chemtron Pte Ltd for 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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