

ShellDesigner™

ShellDesigner™ is an advanced software package used to transform 3D ear impressions created by a 3Shape 3D scanner into 3D models of shells for ITE, ITC or CIC hearing aids in a few simple steps. The output of the software is a shell ready to be 3D manufactured.

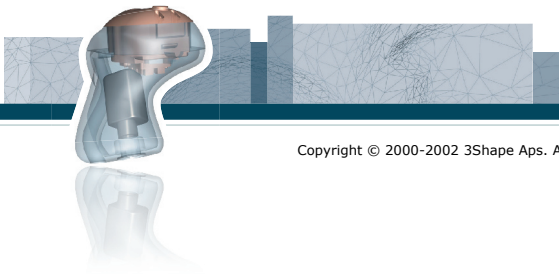
ShellDesigner™ is characterized by its ease of use, flexibility, and processing speed.

ShellDesigner™ features

- Intuitive interface - fully graphical Windows™-based interface customized for hearing aid modeling. The user is guided through all the steps of the production process
- User-friendliness - only basic computer knowledge is required to use the software
- Automation - most features are automated or assisted by the system
- Ease of use - possibility to move back and forth in the shell design process. The software modifies the 3D model accordingly in real-time
- Flexibility - ShellDesigner™ can incorporate all hearing aid components and can model any size of shells, from CIC to full concha. As the whole ear impression is modeled, the user has the possibility to adjust the size and appearance of the instrument to suit the patient's ear optimally
- Productivity - the modeling process can be completed in a few minutes. This allows for reductions in labor costs compared to current production methods
- Real-time processing - all modeling operations are performed on screen in real time. Results are assessed immediately
- Full simulation - all hearing aid components, such as transducer, receiver, volume control and battery compartment are incorporated in the modeling process to obtain the most realistic results
- Automatic on-screen placement of components - assisted by collision control tools
- Easy manipulation and visualization - using Spaceball™ motion control device
- Display options - the hearing aid can be visualized alone, with electronic components, and/or inside the patient's ear
- Simultaneous modeling - possibility to model the left and right ear simultaneously for better aesthetic assessment
- Workflow template saved with the 3D models - to ease later reference and production of new shells for the same the patient

ShellDesigner™ workflow overview (see examples overleaf)

- Step 1. Import of a 3D scanned ear impression, all configuration parameters, and CAD models of components
- Step 2. Initial 3D shaping. The ear impression's surface is smoothed and artefacts are removed
- Step 3. Placement of components. Optimal positioning of the electronic components in the shell
- Step 4. Shell creation. Rounding of the shell's top and creation of a ventilation channel and sound exit. A unique shell identifier is also placed in the shell
- Step 5. Virtual faceplate. If traditional faceplates are used, milling paths for a CNC machine are generated to ensure a perfect fit of the faceplate with the shell
- Step 6. Verification of the finalized shell's fit with the patient's ear assisted by graphical reports

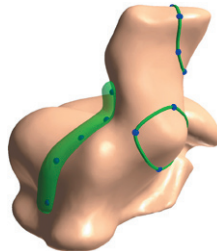


ShellDesigner™ workflow overview

Initial 3D shaping



Raw ear impression model
(3D scanner output)

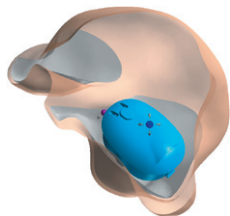


Easy removal of impression
artefacts and thread marks

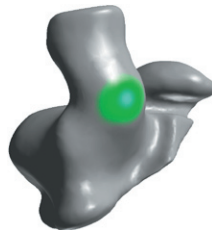


Impression ready
for modeling

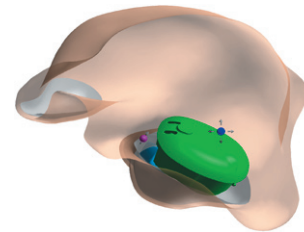
Positioning the components



Real-time shelling of the
impression

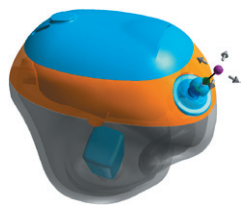


Local modification of
surface



Component placement with
real-time collision detection

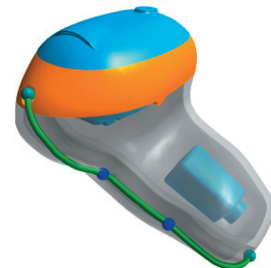
Shell creation



Optional positioning of
the volume control



Positioning the
sound exit



Creation of the
ventilation channel

Virtual faceplate and different shell sizes



Full concha shell with
faceplate and ID tag

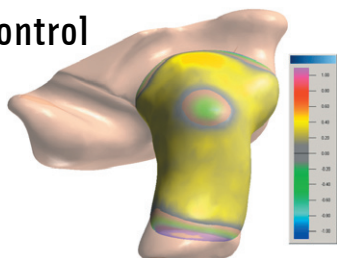


CIC shell with faceplate and
electronic components

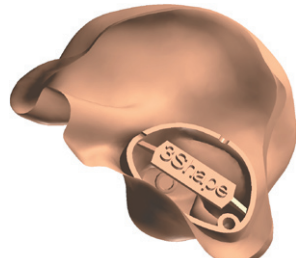


ITE shell with faceplate
and ID tag

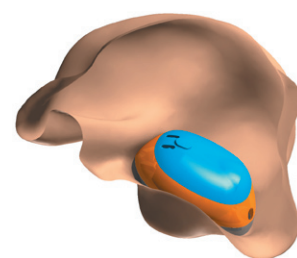
Fit control



Instant analysis of the deviations between
original impression and final shell



Preview of the shell in the
patient's ear in skin color



Finished shell in the
patient's ear