Integrated hearing aid production system

In order to achieve optimal efficiency and automation of its hearing aid production system, 3Shape offers software to integrate all system modules. The software package is essential to handle the computer-aided manufacturing process and the large amount of data generated.

The integration software ensures seamless data exchange between all system modules. It provides tools to organize and monitor the hearing aid production flow. Full interface with third-party equipment such as 3D printers and milling machines is also provided.

Our system integration software takes the hearing aid or earmold manufacturers' existing process and infrastructure into account to provide a solution that can be most rapidly and effectively implemented.

The main features of 3Shape's system integration software are presented overleaf.

Overview of the hearing aid production system supplied by 3Shape

At the beginning of the process, an operator types in all the details of the order into the system or imports these data from the ERP system. All data will be automatically available at any step of the production process. The operator creates an accurate 3D copy of the patient's ear impression by inserting it into 3Shape's 3D scanner and simply pressing one button in the 3D scanning software.

After a few minutes, an accurate 3D digital replica of the ear impression is available on screen. With 3Shape's modeling software, ShellDesigner™, the operator transforms the 3D ear impression into a finished 3D shell which includes all the hearing aid's features, such as ventilation channel, sound in- and output.
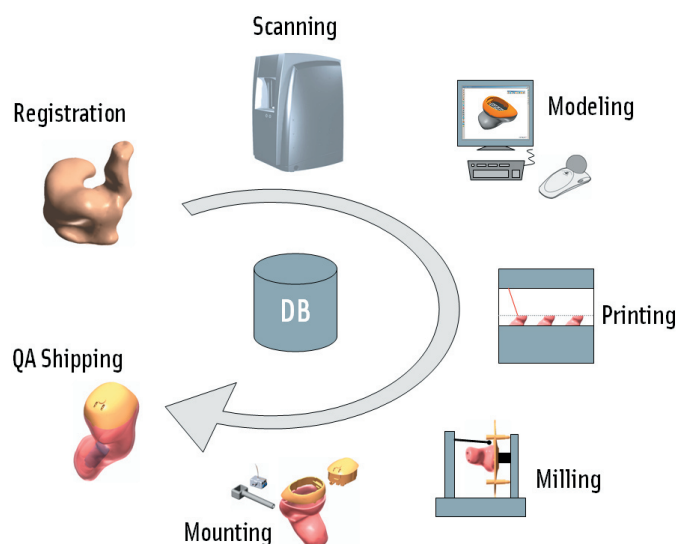
The 3D shells are automatically produced by a 3D printer (not supplied by 3Shape) with which the system fully interfaces. Existing faceplates can be integrated into the process. A milling path is automatically generated by ShellDesigner™ and sent to a CNC machine (not supplied by 3Shape) that mills the faceplate so it accurately fits the modeled shell. Alternatively, module holders can directly be 3D printed as an integrated part of the shell. Detailed instructions for mounting the components into the shell are provided by the system.

The main benefits of implementing the system compared to current production methods are:

- Improved comfort
- Fewer returns and remakes
- Easy replacement
- Consistent quality
- Smaller hearing aids
- Reduced production costs

Main features of the system integration software

3Shape's system integration software ensures a smooth handling and monitoring of the following tasks in the hearing aid production system:

- Registration of orders and product configuration in an order form adapted to the manufacturer's ordering system. Alternatively, it is possible to import the order data directly from the manufacturer's ERP system

- Creation of unique production identification number for each hearing aid shell to ensure easy access, retrieval, identification, and flow control

- Organization and monitoring of the production flow and status of all hearing aids in production

- 3D scanning of the ear impressions and automatic export of completed 3D scanning files to database

- Retrieval of correct 3D scanning files and configuration parameters (ventilation channel and shell thickness, electronics, faceplate and components references) for modeling and automatic import of the necessary 3D files into the modeling software

- 3D modeling of the hearing aid shell and correct database handling of product configuration parameters if components are changed during the modeling

- Retrieval and arrangement of 3D hearing aid models from database to perform 3D printing of one or more shells at the same time

- Automatic retrieval of 3D milling files from database to perform faceplate milling

- Automatic retrieval of correct electronics and components references for hearing aid mounting and registration of components' serial number

- Automatic XML file creation and export of production information to back-end systems

- Call center module to retrieve status on individual hearing aids in the production process. The operator can instantly retrieve the status of any hearing aid in the system based on customers' requests