

# Taking the lead...with digital custom products for mass-production



## About Jiholabo

Jiholabo Laboratories was established in Brussels in the year 1993 to form an ear mould laboratory for supplying audiology departments nationwide. Jiholabo Laboratories continually offer use cutting-edge technologies to produce ear moulds and noise protection of the highest quality.

**Jiholabo** Laboratories became pioneers of digital technology in Belgium's ear mould and noise protection industry when they integrated their 3Shape and Objet joint CAD/CAM solution.

That single forward-looking decision to employ cutting edge technologies has enabled Jiholabo to move into lead position in their market and fulfill customer orders of any size or complexity without compromising the high quality of their products.

## ROI Benefits for Jiholabo Laboratories

- Reduction of production times up to 60-70%
- Significant reduction of time-consuming administration tasks
- Significant increase of daily production output per technician
- New profitable business enabled through new design possibilities

Business surged full-speed ahead when Jiholabo Laboratories implemented a full digital workflow for their ear mould production process. By coupling 3Shape's CAD/CAM solutions with 3D printing system from Objet, Jiholabo immediately gained new key benefits, such as consistent quality, perfect fit, reduced production time and minimal production costs.

## The Challenge

The recent year's growing numbers of customers seeking customized hearing instruments was naturally positive news for Jiholabo. But keeping pace in this rapidly swelling market was a losing battle using traditional manual production methods. As large orders continued to pour in, Jiholabo realized it must move from single-object to batch-production processes.

Traditional methods, involving plaster and gel forms, were error-prone and required extra inspection and adjustment after manufacturing. Additionally, products were too often returned for remake because customers felt the fitting was uncomfortable.

Although ear mould duplication was an essential part of Jiholabo's business, it was unacceptably time-consuming. The process required that impressions and moulds were labeled and stored, with the accuracy of replicas meticulously controlled.

Other factors led Jiholabo to feel they were lagging behind. For example, many orders included requests for customized power vents incorporated into the ear moulds – a service which Jiholabo could not provide with accuracy in an efficient timeframe.

## The Solution

Jiholabo's management knew that the answer to their key concerns and workflow issues lay in a CAD/CAM solution. However, when they found a system that offered even more benefits than they'd dreamed of, they decided to go for full digital in-house production.

Jiholabo chose 3Shape's Hearing System™ for 3D scanning of ear impressions, CAD-design of models and CAM preparation. 3Shape is the market's most complete system and initial trials demonstrated highly intuitive batch workflows that Jiholabo's technicians could complete at high speed.

3Shape's solution included the 3Shape Legato2™ 3D scanner, the EarMould-Designer™ and ShellDesigner™ CAD design software, and 3Shape's Shell-Manager™ / CAMbridge™ manufacturing preparation CAM software.

For the manufacturing stage, Jiholabo selected Objet's Eden350™ 3D printing system. This printer's high speed, fine-detail, accuracy, layer thickness and smooth surface output make it perfect for the high volume manufacture of hearing instruments.

To top it all, the steps for preparation and starting of the manufacture pro-

### Key selection criteria

- Enable mass customization and batch production
- High quality 3D printing
- 3D scanning of ear impressions – dual and single impressions
- Seamless workflow from scan, CAD-design to manufacturing
- Compatibility between system components

### About 3Shape A/S

3Shape creates 3D scanning and CAD/CAM software solutions. Award-winning technology that enables dental and hearing professionals to treat more people, more effectively and with improved care. A privately-owned company, 3Shape has over 780 employees with a product-development force of more than 275 professionals. Offices and service centers located in the Americas, Asia and Europe serve customers in more than 100 countries. Company headquarters are in Copenhagen, Denmark.

[www.3shape.com](http://www.3shape.com)

### About Objet Geometries, Ltd.

Objet Geometries Ltd. develops, manufactures and globally markets ultra-thin-layer, high-resolution 3-Dimensional printing systems and materials. The market-proven Eden™ line of 3D Printing Systems is based on Objet's patented office-friendly Poly-Jet Technology. Objet systems are in use by world leaders of many industries including Medical/Medi-cal Devices, Dental, Orthodontics, Consumer goods, etc.

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cess on Objet's Eden350™ 3D printing system were already fully integrated within 3Shape's system, so the full solution's two components could communicate seamlessly without additional steps or overhead.

## The Results

With in-house ear impression scanning and user-friendly CAD tools, Jiholabo technicians could turn a traditional ear impression labor production into a digital manufacture-ready model in just 2 minutes. They could then prepare and trigger batch-manufacturing of 100 orders on their Objet Eden350™ 3D printing system while moving on to the next case-orders. The technicians felt their job had become much easier, yet their daily production yield skyrocketed.

Going digital enabled Jiholabo to increase the quality and precision of their products, greatly reducing the number of redo orders. Armed with intuitive tools in 3Shape's software, they could effortlessly detect and remove defects from the digital model, thereby ensuring a perfect fit for the end-customer.

The new technology also allowed them to become modern solution providers. Their designs could now include customized sound bores, vents and smart placement of electronics. With

3Shape's digital storage and order management, remake orders became a simple matter of loading the saved design on the system and sending it to the Objet 350™ 3D printing system for fast, high quality manufacturing.

“The moulds produced using our 3Shape and Objet combined solution offer significantly better fit in the user's ear resulting in a better hearing performance than traditionally hand manufactured hearing aids. The system moreover guarantees consistent levels of quality and has jump-started our business growth.”

*José Jiménez, Managing Director*

Jiholabo's CAD/CAM investment has been returned rapidly through increased business, batch processing, rationalized production and reduced operation costs. The system capabilities continue to create new business opportunities and power growth to outstrip their competitors.

## 3Shape and Objet Solution at Jiholabo

### 3D ear impression scanning

3Shape Hearing System / Legato2™ 3D Scanner

### CAD Design

3Shape Hearing System / EarMouldDesigner™ and ShellDesigner™

### Manufacturing Preparation

3Shape Hearing System / ShellManager™ and CAMbridge™

### Manufacturing 3D Printing

Objet Eden 260V™ 3D printing system