

## High-Tech Manufacturing helps People to hear better

The Danish company Oticon designs and manufactures hearing solutions for adults and specialized paediatric instruments. Founded in the year 1904 by the Danish entrepreneur Hans Demant, the company experienced a constant growth over a whole century and meanwhile employs more than 3,000 people. With an annual turnover of over 700 Million Euro, Oticon belongs to the 3 largest providers for hearing aids worldwide. People in more than 100 countries around the world are enjoying better hearing with Oticon solutions, in line with the company's slogan: "PEOPLE FIRST". Oticon's hearing solutions, like the new wireless Oticon Agil™ product line, are complex High-Tech products featuring groundbreaking audiological concepts. As these products need to fit comfortably and effectively in a human ear, they need to be assembled of extremely small and particularly detailed parts.



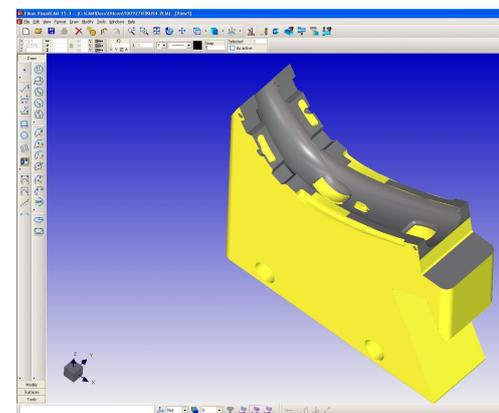
The manufacturing of these high-precision microparts parts requires the implementation of state-of-the-art manufacturing technologies, like Micromilling and WireEDM. The WireEDM technology is used to cut mould components made from hardened steel, where parts are particularly difficult to mill. As WireEDM is not affected by constant wear like traditional milling tools, WireEDM results are always exact, no matter how complex the job is. The main field for Oticon's EDM application is the manufacturing of mould inserts for micro injection moulding tools. Here, the highest fitting accuracy in the  $\mu\text{m}$  range with reliable repeatability is required.

Oticon applies the WireEDM technology in two Danish sites, in their R&D department in Copenhagen and in the production facility in Thisted. Copenhagen is using Agie Vertex and AgieVision Challenge EDM machines, whereas Thisted is using Charmilles Robofil

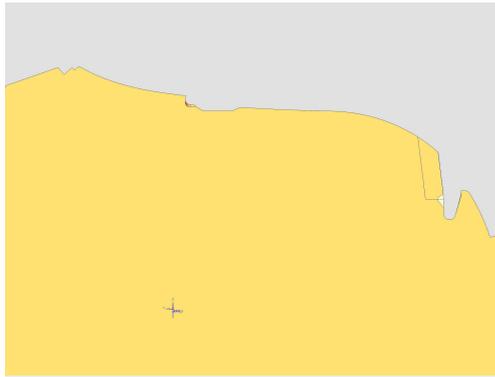
290 Twin wire and Sodick EDM machines. For the CNC Programming of the various EDM machines, Oticon decided in 2003 for Fikus Visualcam, an easy-to-use shop floor programming software from the Spanish supplier Metalcam S.L.. Using a range of innovative tools, the Fikus WireEDM module produces 2- to 4-axis toolpaths quickly and accurately for all types and ages of WireEDM machines. Fikus Visualcam is a native Windows native application, with dynamic OpenGL rendered graphics and a user interface with clear and concise icons and toolboxes, making the learning process easy. Meanwhile Oticon is using 4 seats of Fikus Visualcam, two in Copenhagen and two in the Thisted facility.

The parts to be CNC programmed with the Fikus WireEDM module are created by CimatronE, Oticon's system for Mould design and Milling. After the part file has been imported from Cimatron E, the Fikus WirePath

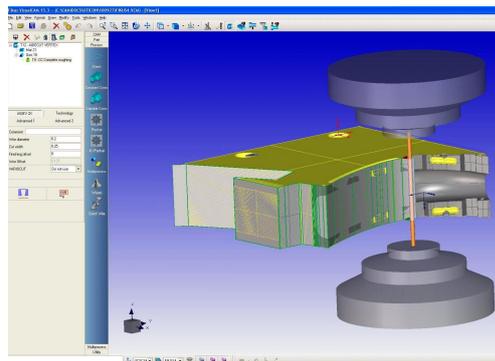
Manager enables an easy generation of wire procedures. These procedures are a combination of geometric and technological data presented in a logical tree, easy to create and edit at any stage in the process. The set of procedures may be saved as a template and applied to other geometries at a later stage. Due to its ease of use, the WireCut programming with Fikus Visualcam normally takes no longer than 10 minutes.



*Micromould part imported in Fikus Visualcam for WireEDM Programming*



Contour of the mould insert to be WireCut with Fikus Visualcam



Simulation of the WireEDM process with Fikus Visualcam

Sometimes, the part geometry needs to be modified "in the middle" of the process. This can be done easily within the Fikus environment: The Fikus CAD module enables users to create and modify geometry efficiently by using arcs and lines rather than nurbs.

Due to its powerful template technology, Fikus Visualcam can support the whole variety of Oticon's WireEDM machines efficiently, including the older ones. Customized tables for each machine help to obtain accurate G-codes and allow the user to work in a familiar environment. The user can select roughing or skimming passes, while the application sets the required parameters and automatically creates the appropriate toolpaths.

The Fikus support includes the Agiecut Vertex machine, that works with two wire spools for different types of wire. Without performing the troublesome task of changing wire spools, Oticon can e.g. carry out the full cut with 0,2 mm wire and 3 trim cuts with 0,1 mm wire.

Henry Frederiksen, Oticon's CAM Administrator comments: "We need a WireEDM programming system that easily integrates in our existing CAD/CAM process chain and produces efficient G-Code for all our different WireEDM machines. Fikus Visualcam quickly imports the CAD files of CimatronE and generates precise and reliable toolpaths for our microparts. In addition, it provides us with powerful postprocessors that enable our facilities in Copenhagen and Thisted to CNC program the whole variety of EDM machines on the same software platform."



Henry Frederiksen, Oticon's CAM Administrator, is not only fast in CNC Programming, but also in running...

Fikus Visualcam has been supplied to Oticon by NTI CADcenter, one of the leading Manufacturing solution providers in Scandinavia. NTICAD center has a long term relationship with Oticon, supplying them also CimatronE, a CAD/CAM system for moldmakers. Overall, Fikus Visualcam reduces Oticon's programming time and finally improves the machining capabilities of the WireEDM machines. This helps Oticon's tool and mould making department to supply moulds just-in-time and thus ultimately contributes to Oticon's target, to supply the best hearing aid solutions worldwide.

#### About NTI CADcenter

With more than 120 employees, NTI CADcenter sells and supports manufacturing solutions all over Scandinavia. Headquartered in Copenhagen (Denmark), the company offers "Best in class" solutions for moldmakers, including customized postprocessors for all purposes. NTI CADcenter provides opportunities to do real digital prototyping and efficient manufacturing.

#### About Metalcam

Metalcam, the Spanish developer of Fikus Visualcam, is constantly investing in the research and development of innovative products. The result are software solutions, that are easy-to-use and maximize the productivity in manufacturing. Metalcam's success is based on its long term experience in manufacturing applications and the close technological partnership with customers and machine tool suppliers like AgieCharmilles.