



source: designer Beata Nikolajczyk-Miniak

The SMARTTECH3D med scanner helped to create an anatomical baby bottle

Description of the problem to be solved

Awarded in many prestigious competitions, the designer Beata Nikolajczyk - Miniak has started research work, the aim of which was to create an anatomic bottle for babies, which will resemble a feminine breast in a shape. The work was supported by financial resources from the Ministry of Science and Higher Education. The innovative bottle design was created to support parents in feeding the newborn and create naturalness where it is not always possible.

SMARTTECH3D
med



SMARTTECH3D
METROLOGY

CASE STUDY

The process of creating the bottle began with a survey dedicated to nursing mothers spread online on social networks and made available in various charitable institutions. The study involved 100 women whose breasts were sized based on collected documentation in two planes - in the front view and the cross-section view. Analysis of the shape of the breast in parts over and under the nipple in the front view was carried out based on the collected photographic documentation. The problem appeared at the stage of attempting a detailed analysis of breast shape in a vertical section. Photographs taken traditionally did not reflect the true shape of the breasts, their size, and characteristics.

3D scanner necessary when downloading the dimensions of the nipple



source: designer Beata Nikolajczyk-Miniak

The designer decided to use a medical 3D scanner from SMARTTECH for this purpose. Thanks to 3D scanning, the full geometric dimensions of nipple were obtained: width, length, and height. The results allowed to estimate the average statistical parameters of the examined part of 100 women's body. Also, thanks to the precision of the technique which is optical 3D scanning, it was possible to digitally model the shape and see the enlargement of the formation of the nipple surface.

SMARTTECH3D med

To reproduce the irregular shape of the female breast, the most modern 3D scanner SMARTTECH3D med was used. The scanner performs the contactless measurement in the structural white LED light technology, and the field measurement with an area of 300x200 mm takes only 0.2 seconds. Besides, it works in the safest optical measuring technology so that the scanned person feels safe and comfortable. The result of the 3D measurement allows, among other things, for quick planning of operations, accurate dimensional analysis of skin changes (calculation of volume and surface area), design of a dedicated prosthesis or creation of visualization.

The innovative technology used in SMARTTECH scanners is known and used every day in various industries but it is still undiscovered in medicine. Specialists in the field of medicine require a user-friendly device that provides reliable and accurate results. There is no time to prepare the 3D scanner for a long time before taking a patient measurement.

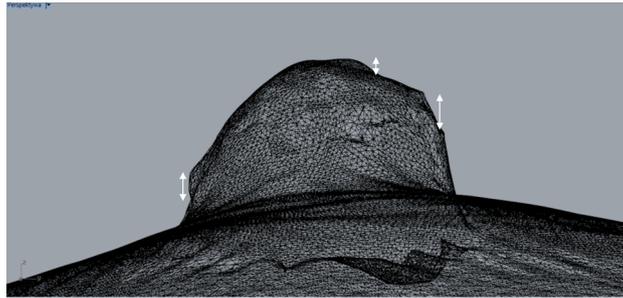


source: designer Beata Nikolajczyk-Miniak

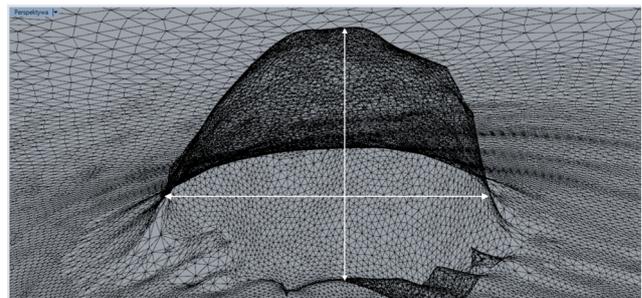
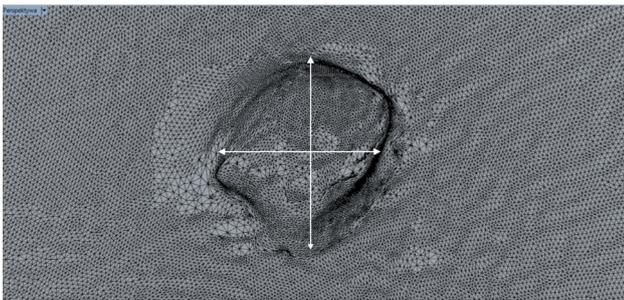
CASE STUDY

SMARTTECH technology enables fast measurement and thanks to the „plug & scan” system, the scanner does not require any calibration and is ready to work immediately after switching on.

3D scanning allows you to get information about the shape/geometry of the object in the form of a digital cloud of points where each point is described by the coordinates X, Y, Z and additionally information about the color of the RGB object. Then a triangle mesh is formed on these points. Thanks to it, the shape of the object is reflected in detail using a set of several million small triangles.



source: designer Beata Nikolajczyk-Miniak



Benefits of using 3D scanning technology

The examination of the shape of the nipple was carried out only with the participation of the SMARTTECH3D med scanner. Thanks to this technology, it was possible to dimension the female nipple in detail. Thanks to the analysis based on the calculation and measurement of the structure of the examined surface, indirect values characterizing the refractions, indentations and irregularities occurring on the nipple were generated. The numerical values of the nipple obtained as a result of the analysis were averaged and became the base to create the shape and structure of the teat part of the dispenser. Scans made were used to take breast measurements and to look for dependencies between them. This made it possible to model the dispenser in a shape that is closest to the natural breast. Observation made regarding the breast part itself has been an inspiration to design dispenser to form the shape and structure of the element responsible for the outflow of milk.

CASE STUDY



The bottle design itself has already been awarded many times at both the national and international competitions. The project, among the others, got to the final step in the international contest “make me!” organized by Łódź Design Festival- one of the most important international competitions for designers of the young generation. The bottle was also noticed by the world-class jury in the Red Dot competition and qualified for the finals.

Beata Nikolajczyk-Miniak

A graduate of the Academy of Fine Arts in Łódź. Since 2012, she has been an assistant at the Faculty of Design and Interior Architecture at her alma mater. Enthusiast of sustainable design and activities promoting science, especially research. Winner of many awards, regularly co-creates and participates in various types of open-air workshops, artistic events. In her realizations, she uses the possibilities that modern technological development offers, and also appreciates the functionality and aesthetics of the product.

SMARTTECH Ltd

SMARTTECH was established in year 2000 by the group of doctors and researcher from Warsaw University of Technology under the leadership of Prof, dr. hab. Mrs. Malgorzata Kujawska who also was the inventor of the technology. The Company from the very beginning was focused on 3D data acquisition, using optical method using fringes projection systems. Since almost 20 years we have been upgrading the measurement method by redesigning and implementing the latest optical and projection solutions, to our measurement algorithm, providing the most accurate and reliable results for the most demanding customers of total 300 number of implementations all over the world.

Read more: www.smarttech3d.com