

CAD/CAM TECHNOLOGIES: 3D PRINTING, CAD MODELLING AND REVERSE ENGINEERING IN BIOMEDICINE

Innovations and benefits - The ENEA Protolab Laboratory provides support to SMEs in the biomedical sector to assess the efficient use of new generation CAD/CAM technologies, 3D printing, CAD modelling and reverse engineering during the product development and production optimization phases.

In such a framework, the CAD/CAM technologies Protolab Laboratory deals with allow to:

- reduce the time-to-market in the production of both endoprostheses and aesthetic prostheses
- favour “mass customization” from an industrial perspective to better meet the patient’s customization needs
- integrate CAD/CAM production techniques with traditional ones, where the manual component is still prevalent
- reduce production costs and increase the quality of products.

Uses - 3D CAD design, rapid prototyping and reverse engineering for creating high-design collections. Creation of physical, thermoplastic and infiltrated-plaster prototypes both for study and for production purposes. High-resolution 3D scanning of real models for creating the relevant virtual prototype for the project planning and its inclusion in the product development cycle. Development of CAD software for customized applications through surface and mesh modelling. Maggiori informazioni in <http://www.protolab.enea.it/progetti/biomedicale/>

Past and present activities - Participation in European (GEM – Computational Evolving Manifolds and MADE 3D under Horizon 2020) and national research projects, including projects such as INDES – Innovazione per l’industrial design, MAKE3D Modellazione 3D e Fabbricazione Digitale per le PMI– and HOREMHEB, a project of virtual engineering and reproduction of artifacts from the Egyptian necropolis of Saqqara, developed with the Archaeological Museum of Bologna. Training activities in collaboration with trade associations and development of “best practices” calibrated according to the business needs.

Collaboration is underway with the ENEA Laboratory of Industrial Research CROSS-TEC (Interoperability and process virtualization for enterprise networks) – Accredited at the High Technology Network of Emilia-Romagna Region.



CUSTOM Thanks to its flexibility, the support service to CAD/CAM technologies users can be adjusted to different needs and contexts