

Welcome to the second issue of the Custom-Fit newsletter.

After the promising welcome of the first issue, we would like to continue informing you about the contributions of Custom-Fit to society, the economy and research.

In this edition of the Newsletter we are going to present a case study about customisation of Mandibular Implants and to look at the latest investigations in Plastic Powder Printing process. After that, there is an extract from an interesting interview with Mr. Joseph Pine, which you can read in full at the mass-customization blog. It will be complemented with the coming events related to the project that we are involved in.

We hope you enjoy reading this new publication.

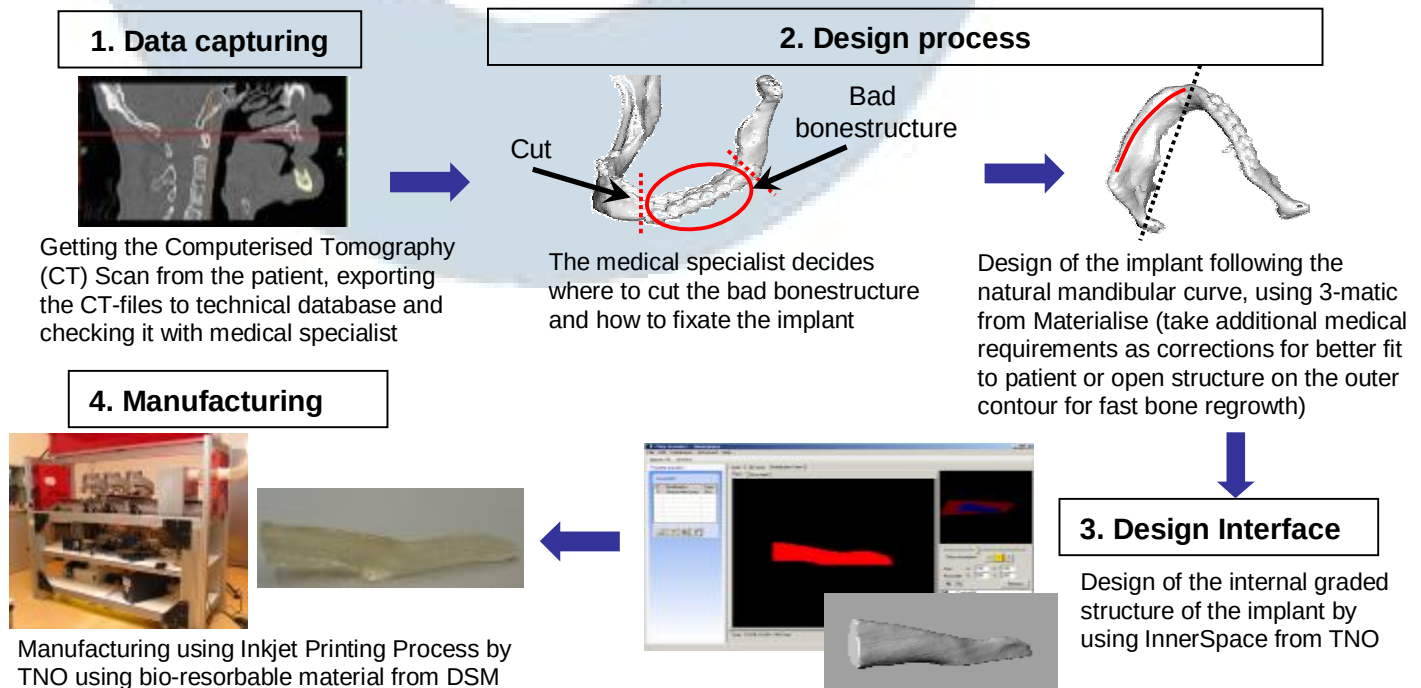
The Editorial Team

Customisation of Mandibular Implants

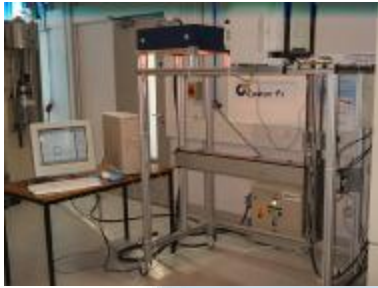
Custom-Fit is aiming to manufacture customised mandibular jaw bone implants using bio-resorbable materials. Currently mandibular jaw implants are made of titanium and it takes several days to manufacture them which results in delay in patient treatment. The main advantages of manufacturing and using bio-resorbable implants are that there is no rejection of foreign material; they are not temperature sensitive and do not react with sensitive skin; new bone can grow over time (in the case of children); they stimulate bone growth and/or densification and could integrate blood vessel formation, etc. The reconstruction of a jaw (with muscle and skin transplant of a patient with cancer of mouth) were successfully carried out by Dr. Joules Poukens from CTCM.



The part to be customised is a part of the lower jaw: a bioresorbable scaffold. And the procedure is the following:



Plastic Powder Printing (PPP)



Plastic Powder Printing Process

One of objectives of the Custom-Fit project is to develop new production systems based on additive manufacturing technology for the manufacturing of customised products. De Montfort University (DMU) in UK has contributed to the project by developing a new additive manufacturing processes, the Plastic Powder Printing (PPP). PPP aims to develop the equivalent of a high speed laser printer that produces 3D objects from plastic powder where powder is first deposited by means of laser printing / electrophotography technique and subsequently fused under infrared heating units to make solid layers.

Various thermoplastic toners from standard polymers like polyethylene, polypropylene, and polystyrene have already been deposited and fused with this technique. PPP can be used for printing multi material and products with functional grading. It is able to vary the material density and also capable of printing up to speeds of 2000 pages per minute in principle, with resolutions up to 2400 dots per inches. Such high printing speeds will help to reduce the cost per part.

Typical products that can be manufactured with PPP are foam inserts for helmets, seats, backpacks, chairs, etc. DMU has already filed a patent for the new powder deposition technology. Several machine developing companies have shown interests to bring PPP to the market.



Sample printed using PPP

Joseph Pine Interview

Joseph Pine defined in 1993 mass-customization as a *“variety and customization through flexibility and quick responsiveness”*. After years of experience, he changes the definition as *“the low-cost, high-volume, efficient production of individually customized offerings”* or using words of Steve Goldstein *“efficiently serving customers uniquely”*. This releases us how the conception in customization is being developed.

In an interview hold in January, 2004 he explains how the upcoming mass customization trends are based on *“the principle that anything that can be digitalized can be customized”*. Moreover, he showed *“that there are two offerings beyond commodities (which, by definition, can't be customized), goods, and services: experiences, memorable events that engage each person in an inherently personal way, and transformations, effectual outcomes that change each individual to achieve his aspirations. There's precious little that has been done to mass customize either experiences or transformations, and a world of opportunity for firms that wish to start”*. He deals on the other phenomenon new technologies contributes to provide *“Now the opportunity exists to mass customize virtual offerings to the avatars of real people!”*

He thinks the new challenges for companies doing mass customization today are to uncover the gaps customer sacrifice. He and his colleague are finishing up a new book which main contribution establish that *“Authenticity is therefore becoming the new consumer sensibility”* and express their believing *“that offerings mass customized to individuals tend to be perceived as more authentic than mass produced, standard, off-the-shelf offerings done for anybody in general and nobody in particular!”*

(Summary from the interview in <http://mass-customization.blogs.com>)

Upcoming Events

- 18th International Conference on Oral and Maxillofacial Surgery (ICOMS), Bangalore – India, November, 14- 18th.
- European Bioplastics Conference, Paris (FR), Nov 21-22th
- Conference “The Future of Nanoplastics”, London (UK), Nov 28-29th
- More: <http://www.custom-fit.org/index.php/events/>

