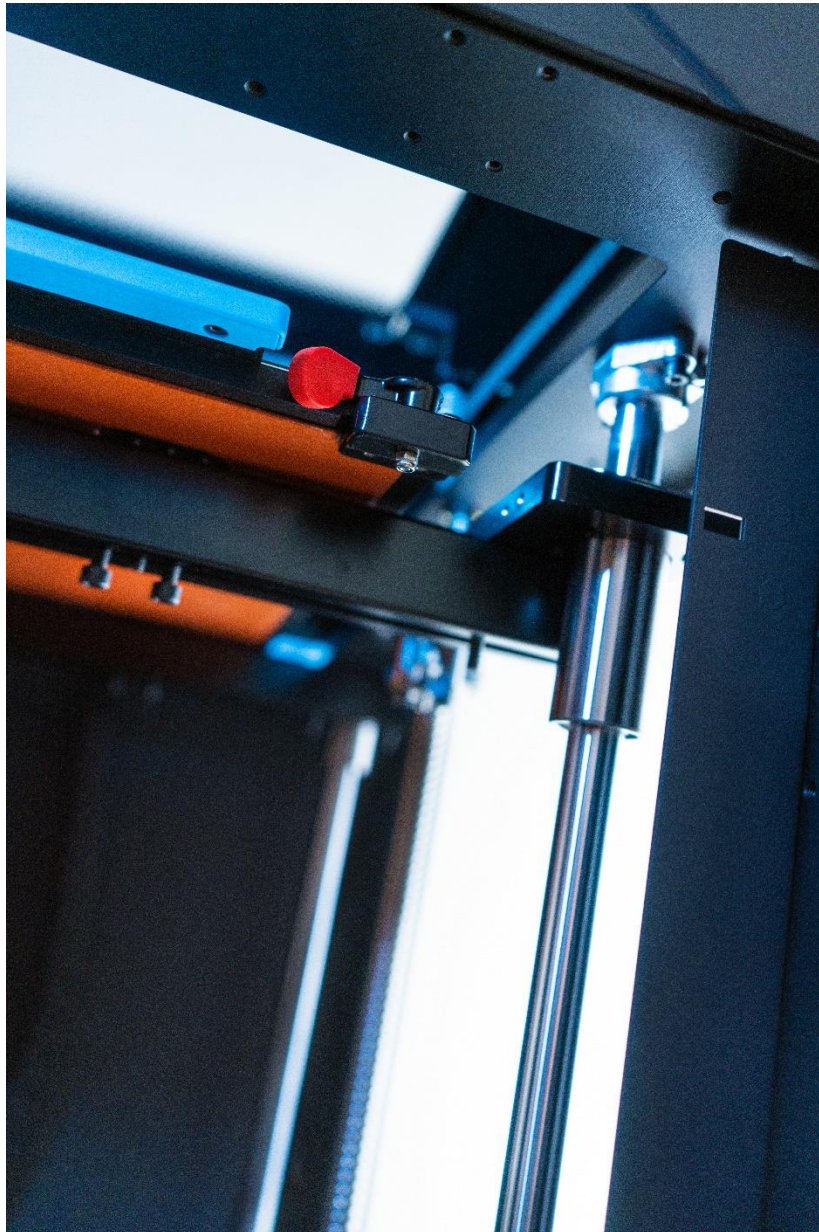


Custom Medical Products With Creator 4 and Guider 3 Plus

Production of prototype and final models



Introduction

[DECAP R&D](#) is a Canadian medical company that is deeply passionate about protecting healthcare, research veterinary, and other frontline workers with protective equipment. In partnership with the UBC AMS and UBC Green Labs, DECAP R&D is currently conducting a first-in-the-world pilot project to recycle needle caps safely, saving up to 10% of the single-use plastic from needles. With 16 billion needles



Figure 1. Guider 3 Plus with special DECAP parts



Figure 2. DECAP Set with needle

used every year, this project has the potential to recycle up to 100 blue whales' worth of plastic every year! DECAP is a set of 5 items that work to exponentially reduce needle-stick injuries. Needle-stick injuries can result in the spread of infectious diseases, such as HIV. These medical components require durability, and excellent tolerances. PLA, though a basic material, has relatively high tensile strength, and low shrinkage, especially when printed in an enclosed environment. Having an enclosure, like the Guider 3 Plus, and Creator 4 FDM 3D printers that [3BA](#) uses to make these components, allows for lower shrinkage rates, allowing for DECAPS threaded, and sliding designs to function

properly. Furthermore, the top functional component, which is responsible for the safe uncapping, and

recapping of needles, requires two SLA 3D printed inserts. These inserts require extreme dimensional accuracy in order to properly fit inside the FDM model

Traditional VS Additive Manufacturing Methods and Lead Times



Figure 3. DECAP set being used to recap a needle

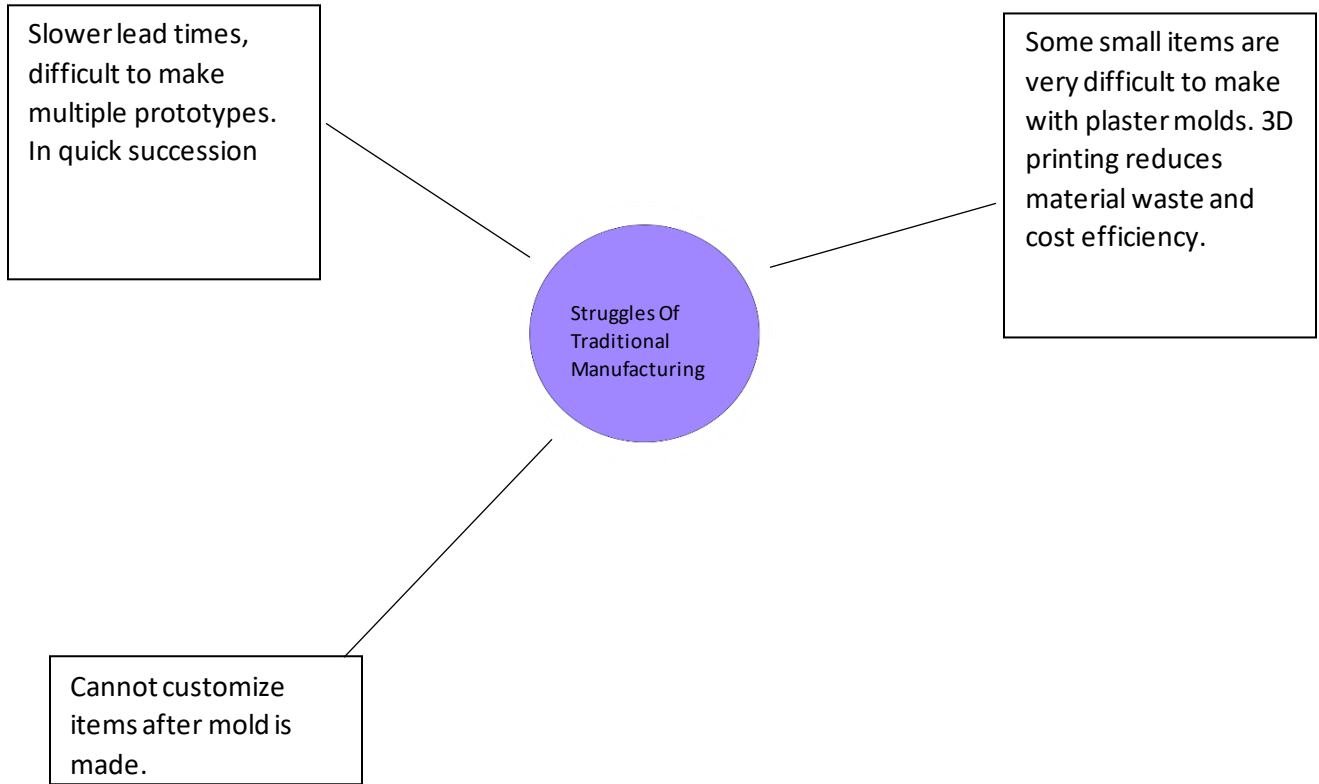
Traditional manufacturing methods such as injection molding would require DECAP to spend tens of thousands of dollars on costly molds. Furthermore, DECAP is a research and development firm, and therefore, injection molding, which requires one set design, is not suitable for their constantly evolving design. Furthermore, injection molding often has long lead times, unlike the Flashforge Creator 4 and Guider 3 Plus 3D printers, which both possess the ability to print at high speeds.

Furthermore, it allows for changing materials, and colors at a moment's notice for evolving



needs. For example, going green is important to the Canadian research community. That's why DECAP created the DECAP recycler - an all-green safe uncapping, recapping and disposal device to collect needle caps for recycling. The prints are pictured in various shades of green on the Guider 3 Plus and Creator 4. The Guider 3 Plus allows for rapid prototyping due to its fast single head print speeds, with normal mode clocking out at 100 mm/s. The Creator 4 Pro is used for mass production, due to the heated chamber, and IDEX systems. The heated chamber allows for ultra-consistent tolerances, while the IDEX system allows for two of the same part to be created simultaneously.

Figure 4. DECAP functional piece prior to SLA inserts, printed on Creator 4 Pro



Creator 4

High Performance Application

Guider 3
Small Batch
Production

Guider 3 Plus
Rapid Prototyping



*3D Printing Application in the field of
Automotive design*