Prof. Dr.-Ing. Jens Wulfsberg
Laboratorium Fertigungstechnik
Fakultät für Maschinenbau

Helmut Schmidt Universität
Universität der Bundeswehr Hamburg

Bachelorarbeit/Masterarbeit

Design of an Open Source Pellet Extruder for Large Format 3D Printing

Themenstellung:

3D printing has become one of the most affordable and accessible desktop manufacturing technologies in the last decade. However, due to the relatively low process speeds, it has been limited to small prints, with large prints taking days to finish. Conventional hotends on desktop machines use plastic filament as the raw material and these can be expensive for printing large objects as well as having insufficient material flow to achieve high print speeds. A more recent technology is a pellet extruder that utilizes pellets instead of filament. Along with enabling quicker prints, the expensive and energy-intensive process of producing filament is skipped altogether, making it cost effective and sustainable.

This work entails the design and development of an open-source pellet extruder. The student would start with a review of commercial and DIY pellet extruders to understand what has already been done and what can be learnt from existing designs. The design of the extruder will aim to utilize as much off the shelf components as possible, while also manufacturing components that are too expensive or difficult to source. On completion of the prototype development, tests will be carried out to characterize the effectiveness of the extruder. The entire project should be documented via Gitlab and published as open source so that others can benefit from it.

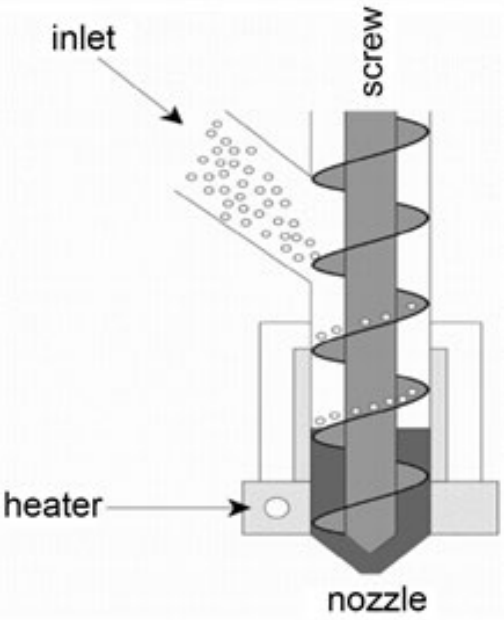

Figure 1: Pellet extruder working principle (Source: Shaik et al, 2021)

Bei Interesse wenden Sie sich bitte an:

Mohammed Omer
Raum: 1312
Tel: 040/6541-3862
Email: mohammed.omer@hsu-hh.de