# Master Thesis/Semester Project: Investigation of processing parameters for a new metal Additive Manufacturing machine prototype

Selective Laser Melting (SLM) is a fast evolving Additive Manufacturing (AM) process used in industries such as aerospace, automotive, biomedical and energy. A layer of metallic powder is deposited on a substrate, and is selectively fused using a high-power laser and following a 2D slice of a 3D CAD object. This is repeated until completion of the part. One of the biggest advantages of the SLM process is the ability to build parts with very complex geometries (lattice structures, conformal cooling channels, small features, etc). However, in order to produce parts with desired mechanical properties, precise set of processing parameters need to be obtained. These include laser power, scanning speed and hatching distance. Only their optimal combination can ensure the required print quality as well as the repeatability of results.
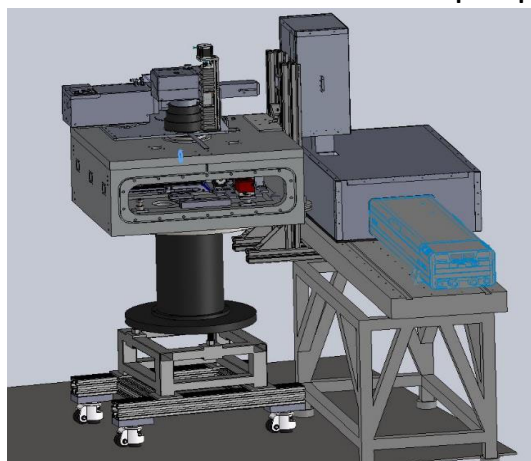
This semester project aims to develop processing parameters for 316L stainless steel which will assist researchers in the optimization of LMTM's novel in-house SLM machine.
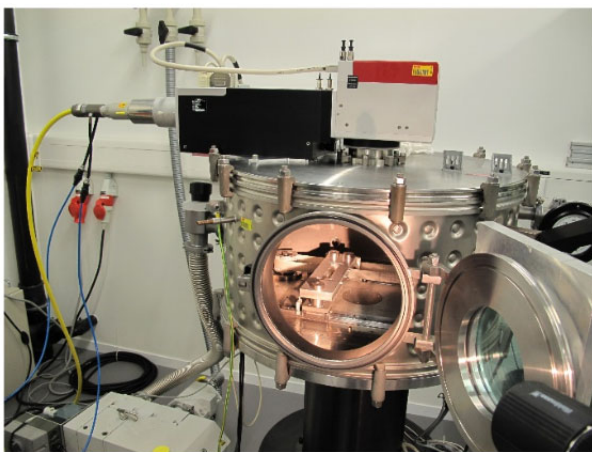
Current SLM build chamber
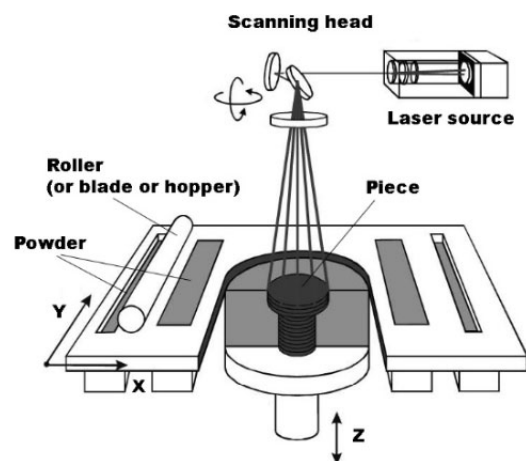
The principle of SLM manufacturing

New SLM build chamber

Both materials (IMX) and mechanical engineering (IGM-GE) students are encouraged to apply.

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