

Metal 3D Printing at the AAU Energy Workshop

– A technical solution to support innovation and development of energy technologies

In the AAU Energy workshop, we have expanded our toolbox, and now offer onsite Metal 3D printing for students, researchers and external partners.

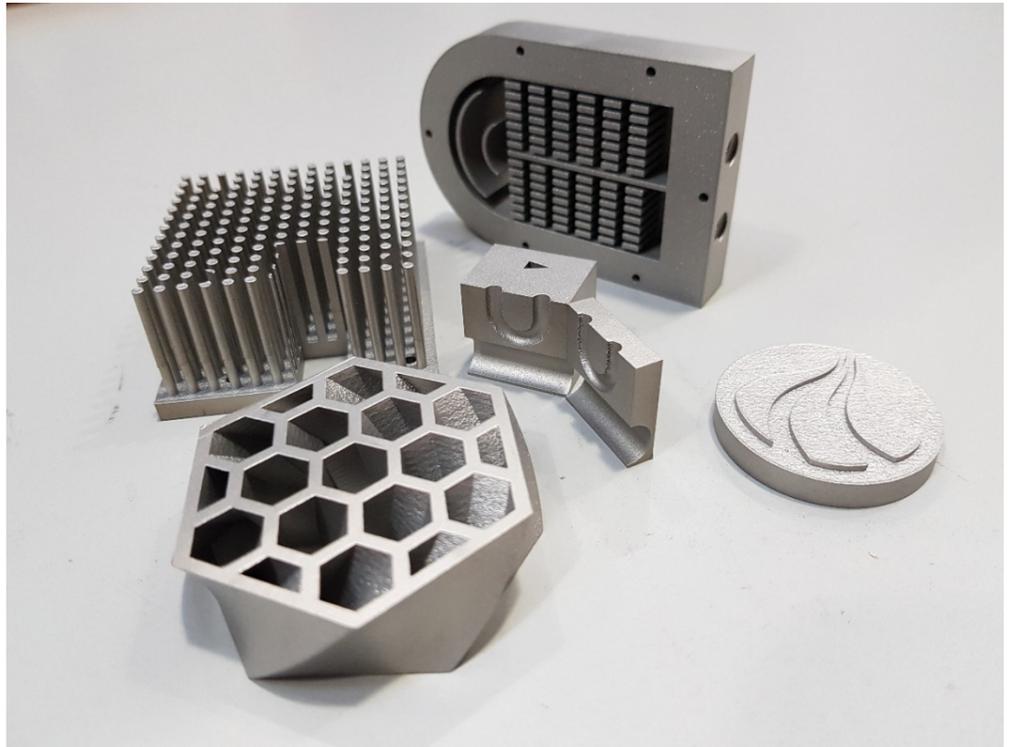
We offer this service to keep AAU on the cutting edge of innovation, by providing the best possible foundation for developing energy technologies and expanding possibilities of innovative technical solutions in research projects.

Use cases for Metal 3D Printing

Whereas milling normally is about removing material to obtain a required part, 3D printing (also known as Additive Manufacturing) is about adding material. This allows for complex part features, which is not possible to produce using traditional manufacturing methods.

The technology is highly suited for:

- Parts with internal features such as cooling pathways, lubrication pathways or static media mixers.
- Complex cooling/heating elements, as well as specialized heat exchangers.
- Weight optimized parts, which can be created hollow or with internal honeycomb or lattice structure.
- Complex iteration projects, where several part with small differences in geometry is required for testing and optimizing a design.



Complex geometry and internal structures are some of the benefits from Metal 3D printing. Material used for these parts is 316L stainless steel.

Technical details

Our machine is based on the selective laser melting (SLM) concept, where a powerful laser melts metal powder one layer at a time. The laser only melts the designated areas and once the job is completed, the non-melted powder is removed to reveal the desired part.

We can build single parts of sizes up to 125mm x 125mm x 200mm – If parts are bigger, we can join several pieces together.

The printing process offers an accuracy of at least 0.05mm, however if more precise features are required for your parts, these features can be milled after printing.

We are currently able to print in 316L (1.4404) stainless steel and A03600 aluminum (3.2381).

Designing for Additive Manufacturing

To get the most out of Additive Manufacturing, you have to design your parts within its constraints.

In the workshop team, we can offer guidelines and advice for you to optimize your parts, or we can design parts for you based on you descriptions and requirements.

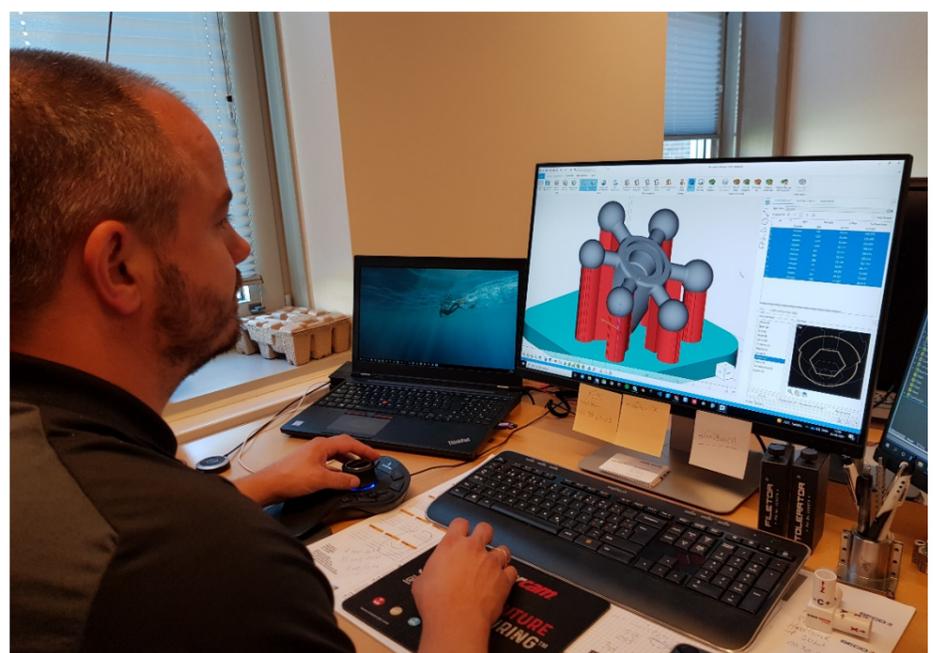
One of many tools in the toolbox

In the AAU Energy workshop, Metal 3D printing is only one part of the large toolbox. We also offer milling on our 5-axis milling machines, lathe work, laser cutting, and polymer 3D printing, etc. Please visit our homepage for full overview:

<https://www.energy.aau.dk/laboratories/general-laboratories-students-facilities/department-workshops/>

If you have questions or want parts for your project, please contact the AAU Energy workshop directly:

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The workshop team can support you by designing parts, optimizing your parts or provide you guidelines to design parts for 3D metal printing.