



ETH zürich

RAPTURE

Sponsoring Brochure

ETH Zurich Focus Project

rapture.ethz.ch

SPARKS MUST FLY

©Aurora Labs



©Roscosmos

BEFORE ROCKETS CAN!

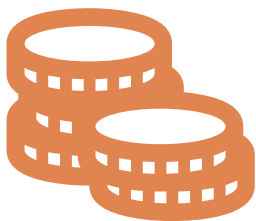
Ambition



Multi-material metal printing



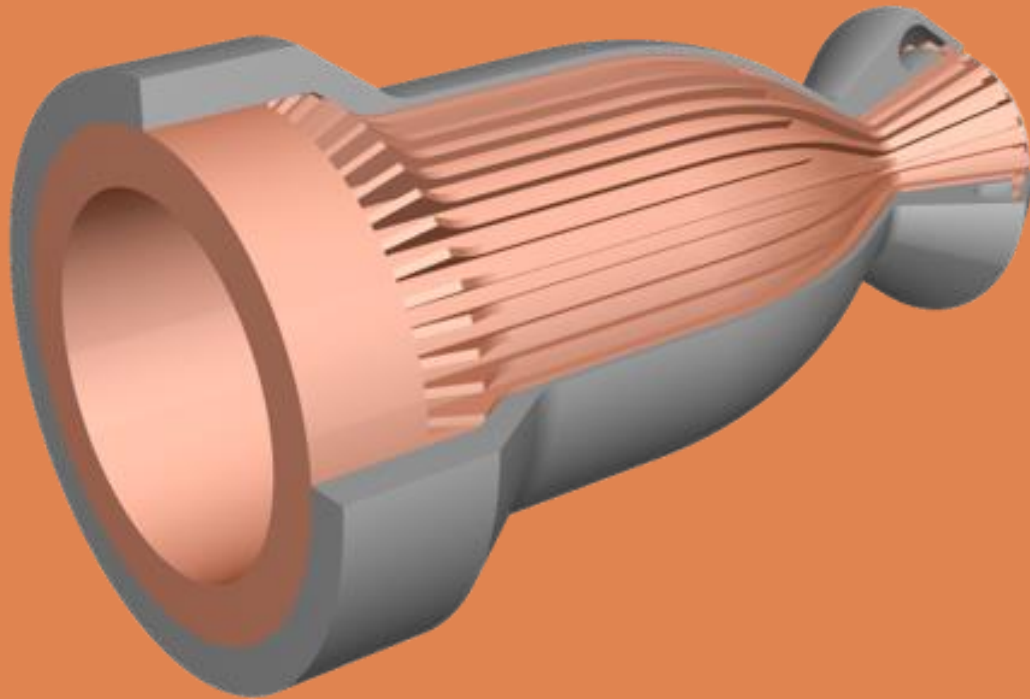
Achieving high printing speeds



Designing a cost-friendly process



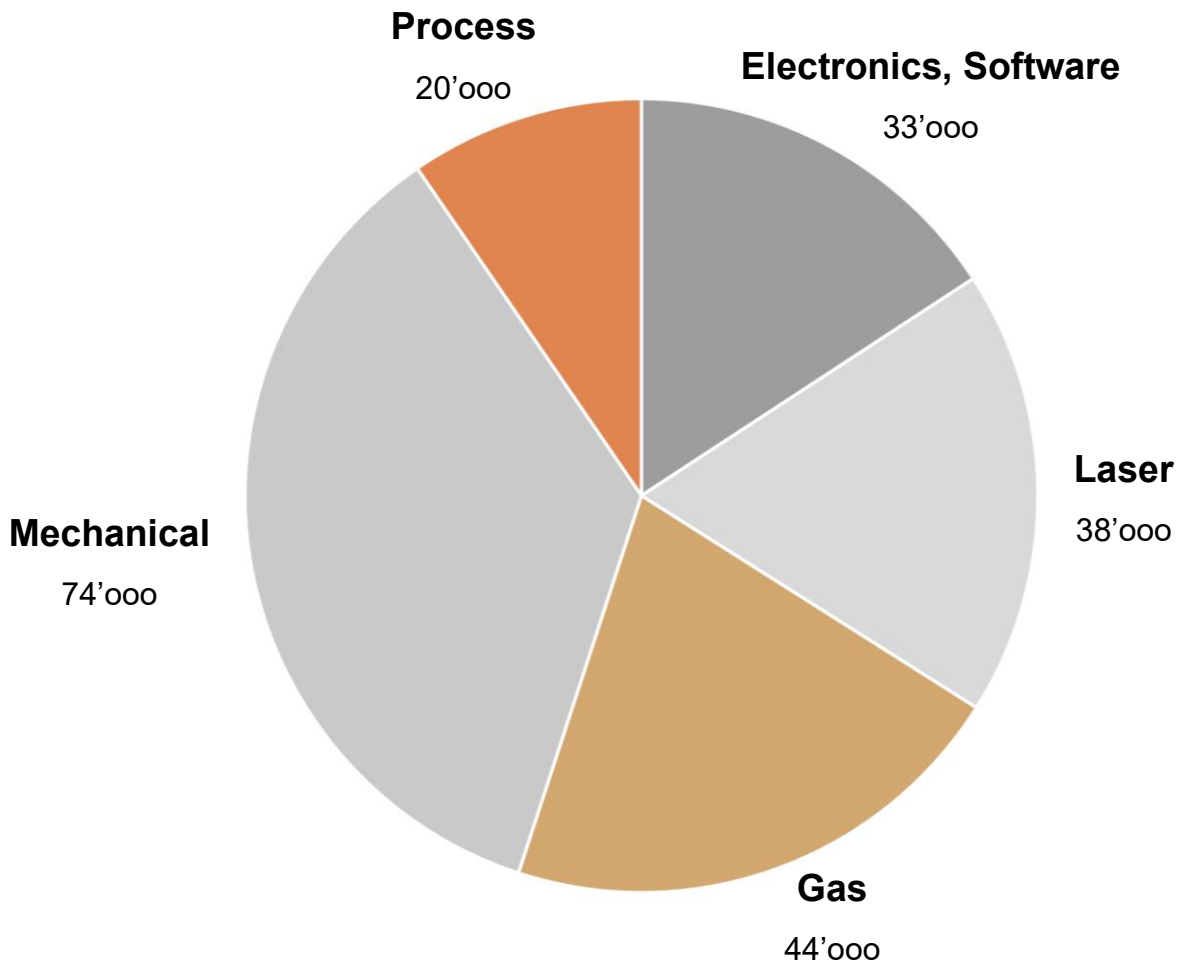
Manufacturing a sample nozzle



The RAPTURE Project aims to advance **Laser Powder Bed Fusion (LPBF)** in Additive Manufacturing, introducing **multi-material** functionality for enhanced component design. RAPTURE's novel method aims to establish the **fastest and most powder-conserving system** to date. This breakthrough in multi-material LPBF holds promise for rocket applications, streamlining the design of lightweight, high-strength components for improved aerospace efficiency.

RAPTURE is a **Focus Project at ETH Zurich** within the Department of Mechanical and Process Engineering (MAVT), which provides hands-on experience for Bachelor students during their final academic year. It is furthermore affiliated with the **Academic Space Initiative Switzerland (ARIS)**, encouraging students across Swiss universities to pursue space exploration.

Budget



Electronics, Software: Including power supply and part slicing.

Laser: The laser must be powerful enough to process copper.

Gas: The ventilation and filtration unit provides a stable and safe shielding gas environment.

Mechanical: This includes machined parts, actuators and structures.

Process: Metal powder is used during LPBF printing.

Total estimated cost: CHF 209'000.-

Sponsoring Opportunities

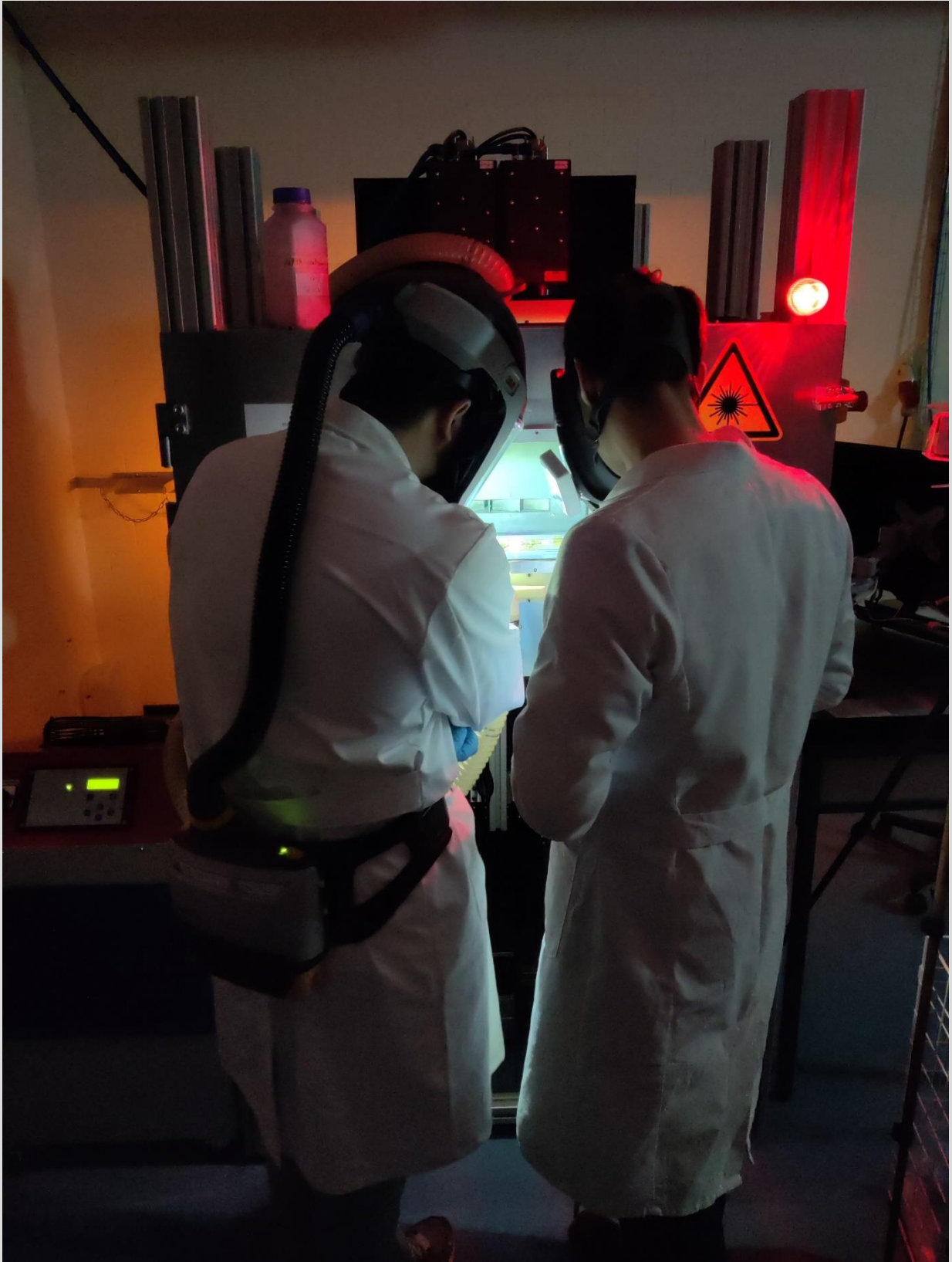
	GOLD FROM 10'000 CHF	INCONEL FROM 5'000 CHF	COPPER FROM 1'000 CHF	PATRON UP TO 1'000 CHF
LOGO ON PROJECT WEBSITE	XL	L	M	S
LOGO ON MACHINE	XL	L	M	S
LOGO PRESENT AT ETH ROLLOUT	L	M	S	S
INSTAGRAM	Post+Story*	Post+Story	Story	Story
LOGO ON MERCH	L	M	S	
INVITATION TO ETH ROLLOUT	✓	✓	✓	
LINKEDIN	✓	✓	✓	
LOGO ON ARIS WEBSITE	L	S		
INVITATION TO MACHINE PRESENTATION**	✓	✓		
LPBF-PRINTED LOGO	✓			

*monthly story

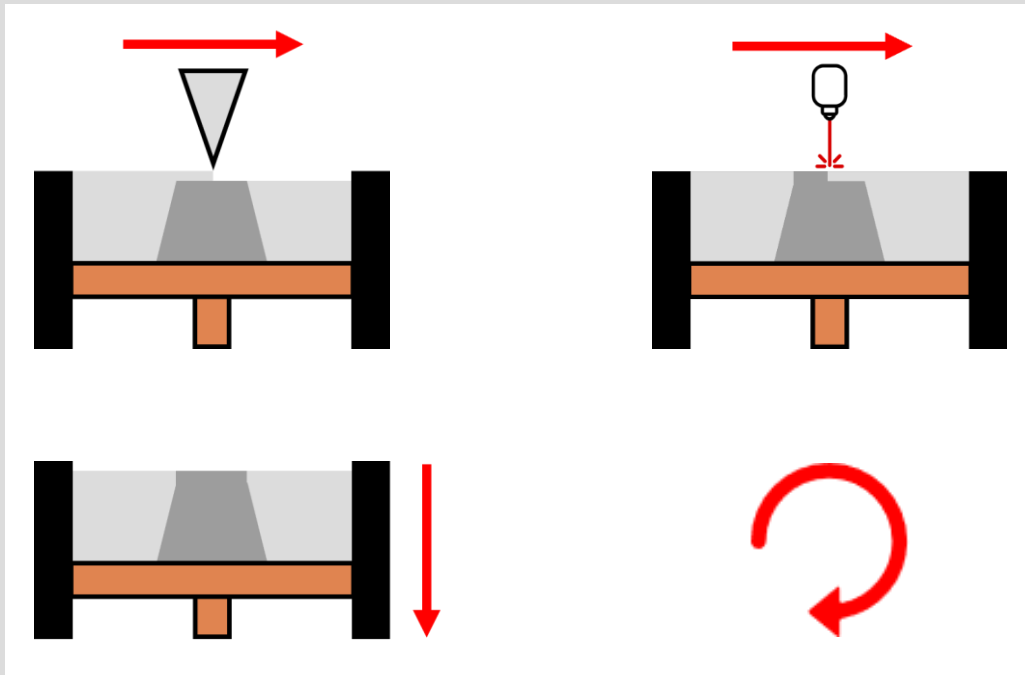
**Subject to safety regulations

These are our general sponsoring categories, however we are keen to work out individual solutions for which you can contact our project manager Patrick Moser at patmoser@ethz.ch.

One should emphasize that the category-defining values encompass not only financial contributions but also in-kind sponsorship as well as dedicated consulting time.



Discovering LPBF



Laser Powder Bed Fusion (LPBF), also called Selective Laser Melting (SLM), is an additive manufacturing process used to create three-dimensional objects layer by layer.

The process begins by spreading a thin powder layer across a build platform. Then, a laser scans over the powder bed according to the design specifications, meaning it selectively melts the metal powder in a precise pattern, which then solidifies. Once a layer is complete, the build platform is lowered, and a new layer of powder is spread over the previous one. This process is repeated layer by layer until the entire object is formed.

This technique is particularly useful in industries like aerospace and healthcare for producing complex, customized, and high-performance metal components.

Engineering Team



Patrick Moser

Process
Project Management



Kalle Laitinen

Software
Safety Officer



Otto Laitinen

Electronics
Controls



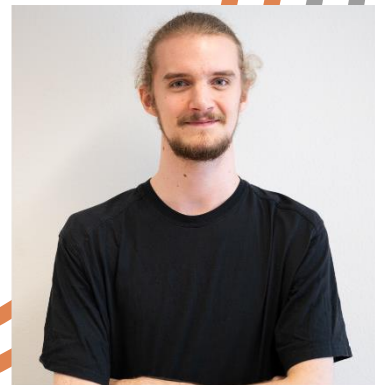
Sebastian Nobs

Laser
System Engineer



Dion Pirchl

Structures
Powder Deposition



Lennart Schmid

Structures
Gas Flow

Experts Team



**Prof Dr Markus
Bambach**

Professor of Advanced
Manufacturing



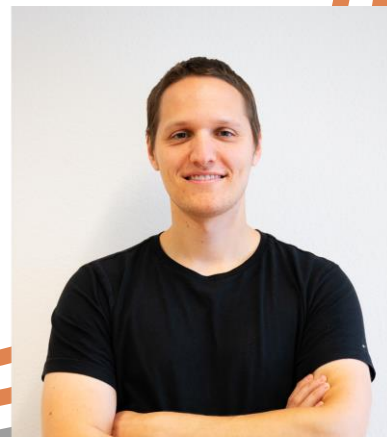
**Dr Michael
Tucker**

Head Supervisor



Fiona Konnerth

Coach



Raphael Steffen

Coach



RAPTURE 

ETH zürich

am|z
advanced manufacturing
laboratory | ETH zürich

aris
space to grow

Focus Project RAPTURE

ETH Zürich

PFA F 43

Technoparkstrasse 1

8005 Zürich

mavt-amlz-rapture@ethz.ch

+41 44 633 94 99

rapture.ethz.ch