

A person wearing a white cleanroom suit and a face mask is working on a large industrial machine. The machine has a large open door, and the person is standing on a small metal platform. The background shows a clean, industrial environment with various pieces of equipment and a blue tool cart. The date "11th October 2023" is overlaid on the image.

11th October 2023

AMotion Center

Storie di tecnologia e passione – Wi3DP c/o TEC Eurolab



Valentina Zangheri

Process Engineer
GF Casting Solutions AG

valentina.zangheri@georgfischer.com

www.gfcs.com/additive-manufacturing



Follow:
GF Casting Solutions

My Background:

Bachelor's degree in Chemical and Biochemical engineering @ UNIBO

Master's degree in Material engineering @UNIMORE

Erasmus scholarship @ Oxford Brookes University

Internship & Master's thesis @ Beamt spa

Process and Product engineer @ Beamt spa

6 years experience in LPBF process development and part production

GF: Worldwide for our customers

GF Piping Systems
CHF 1971 million

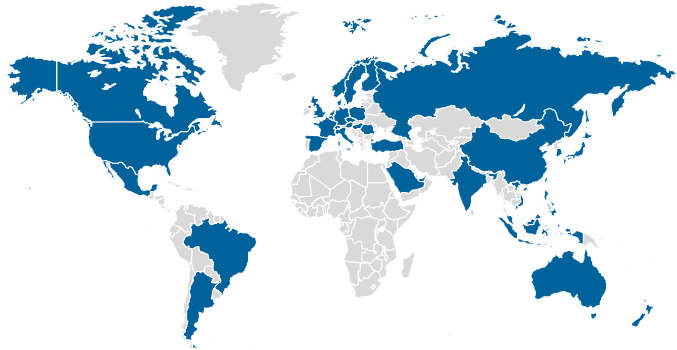
53%

GF Casting Solutions
CHF 880 million

24%

GF Machining Solutions
CHF 873 million

23%



GF Piping Systems



GF Casting Solutions



GF Machining Solutions

Why AMotion Center?

AMotion Center

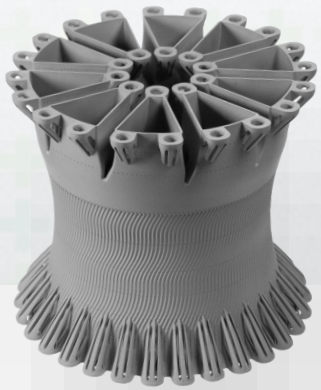
Additive Manufacturing in Motion

GF Casting Solutions combined Additive Manufacturing (AM) technology of LPBF with long-standing experience in the development and serial production of metal components of high added value.



Find the right technology: when AM is the choice

New designed parts



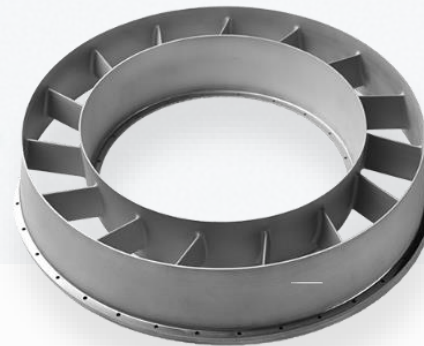
IGT Demonstrator

Spare parts on demand



Turbine Vane Segment

Critical parts for traditional technologies



Turbine Rear Vane

Small (urgent) series



Turbine Housing

When A.M. is the choice: new designed parts

SUSTAINABILITY



Additive design thinking



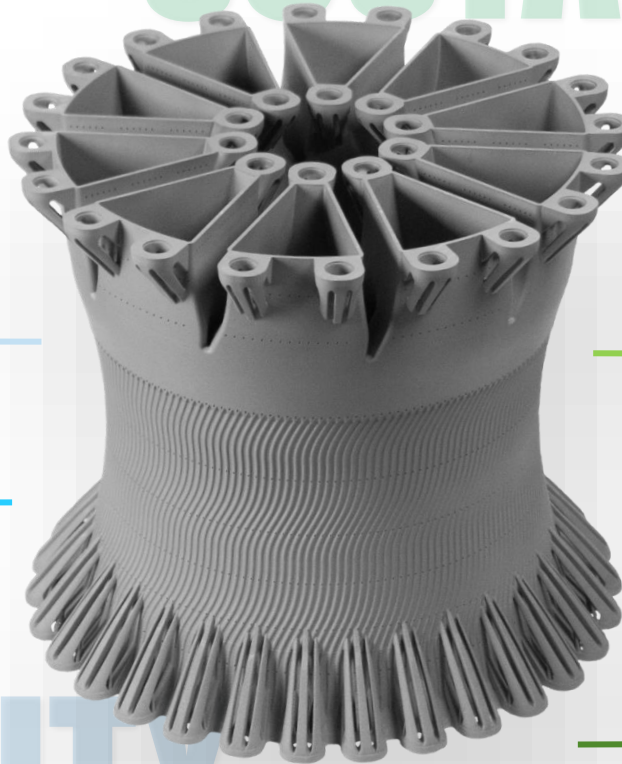
Special features included
not realizable with conventional technologies



Hollow structures with very thin walls
(including conformal cooling channels)



Complex shapes:
Tick to thin and/or customized surface textures



Material only where needed:
machining op. **reduction**



Functional integration:
process steps reduction



Performance improvement:
product **lifetime enhanced**

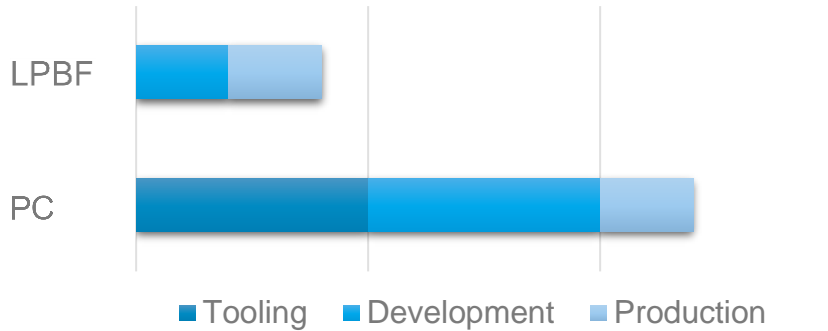


Light structures:
reduced environmental impact



FUNCTIONALITY

When A.M. is the choice: spare parts on demand

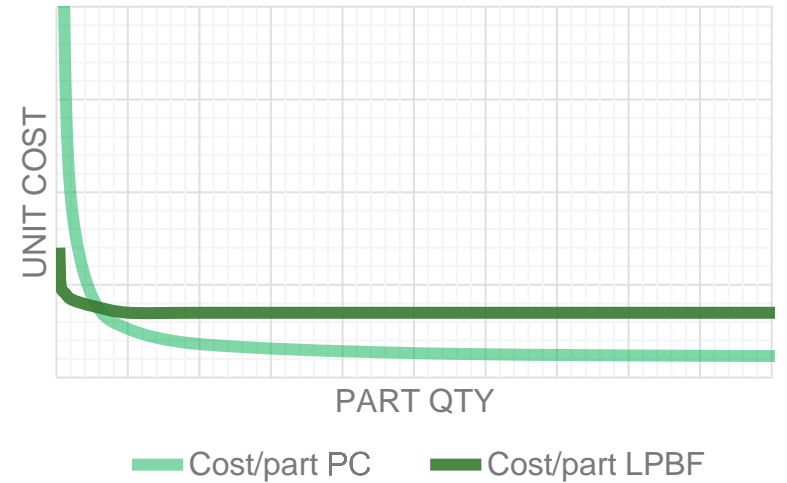


COSTS

Wax Injection **tooling no longer available:**
Reverse engineering – Impact on **NRC to "0"**



Long **Production Interruption** or **missing tooling:**
parts delivery **in few weeks**



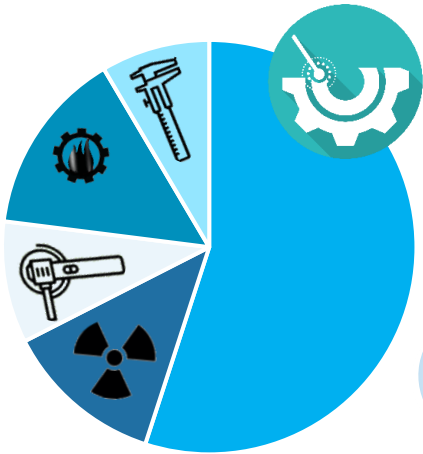
LEAD TIME

When AM is the choice: critical parts for traditional technologies

PRECISION CASTING



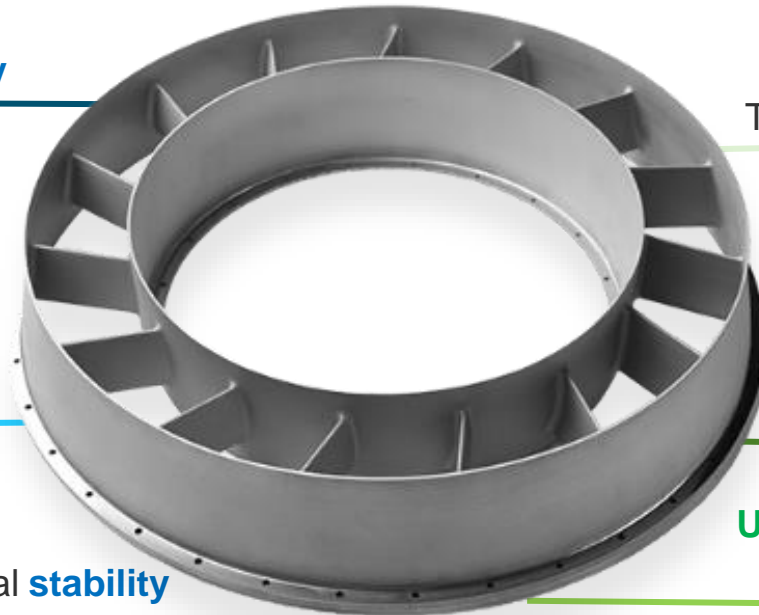
At the edge of PC **process capability**



NO re-work



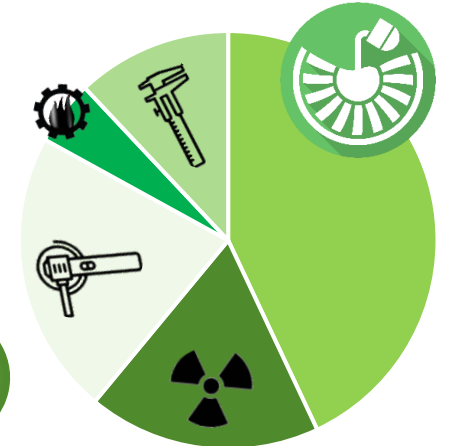
High dimensional **stability**



Thin walls



Tight **tolerances**



Unstable serial production programs turn into highly critical process



ADDITIVE MANUFACTURING

When A.M. is the choice: small (urgent) series

OPPORTUNITIES



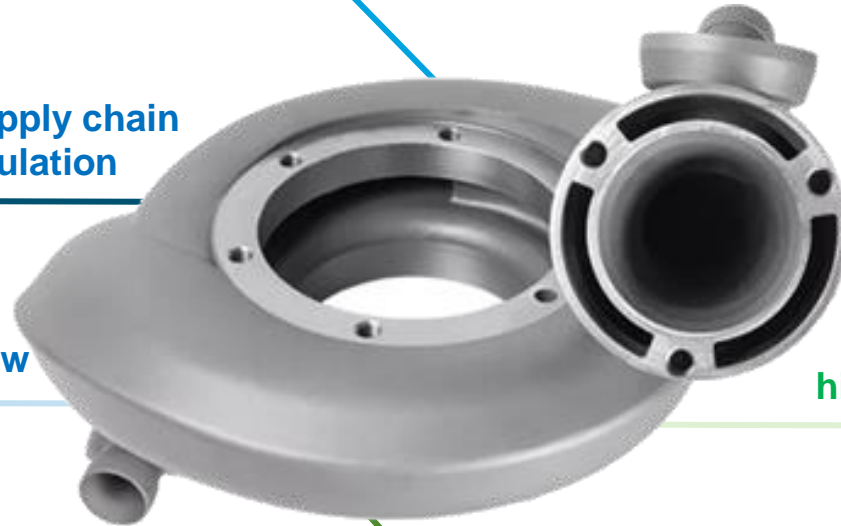
A **full dedicated production system**, out of the standard one, to manage **the market needs**



Complete management of the full **supply chain** including **machining** and **thermal Insulation**



SPEED and **FLEXIBILITY** to provide a **1st series** in **3ww**



Without tooling any **modification** is possible **during production**



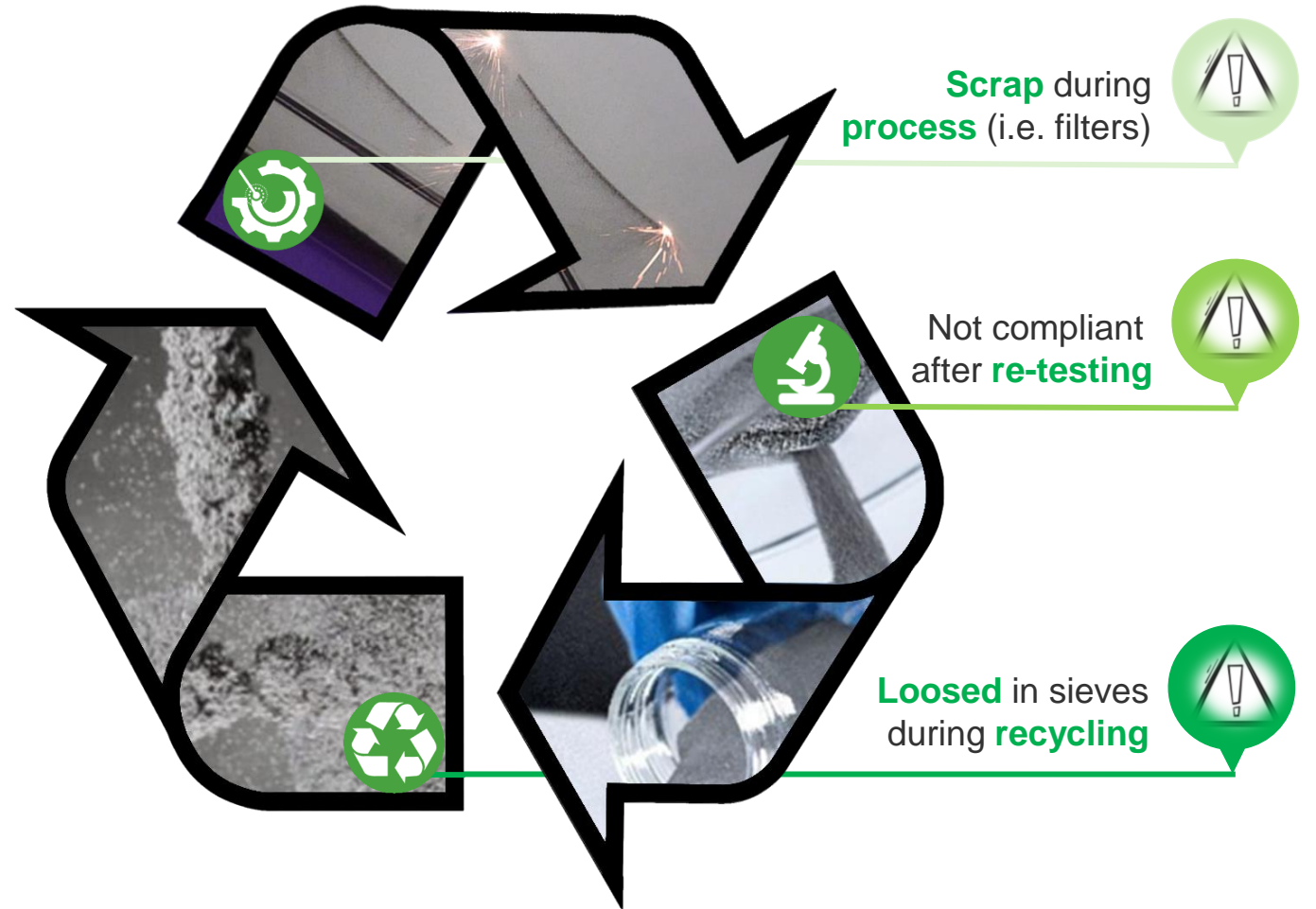
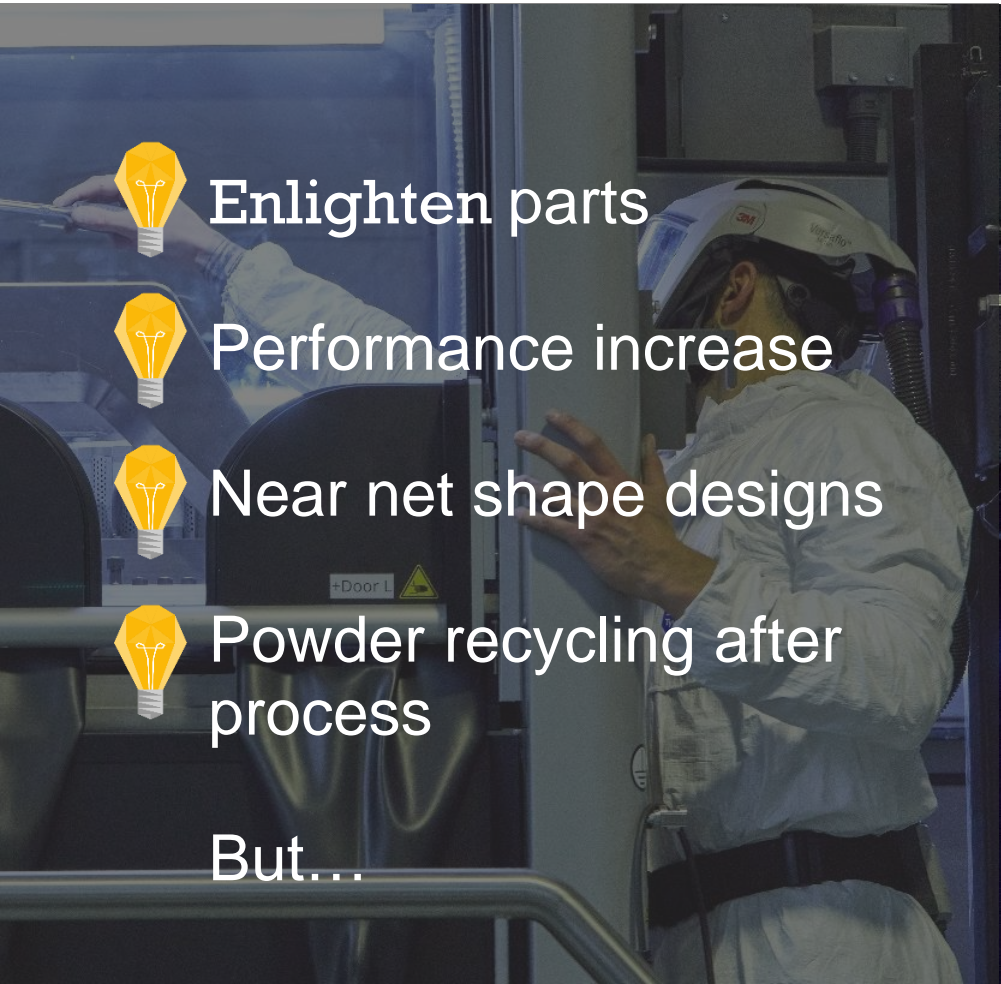
Shorten production lead times: **high number** of tests **iterations**



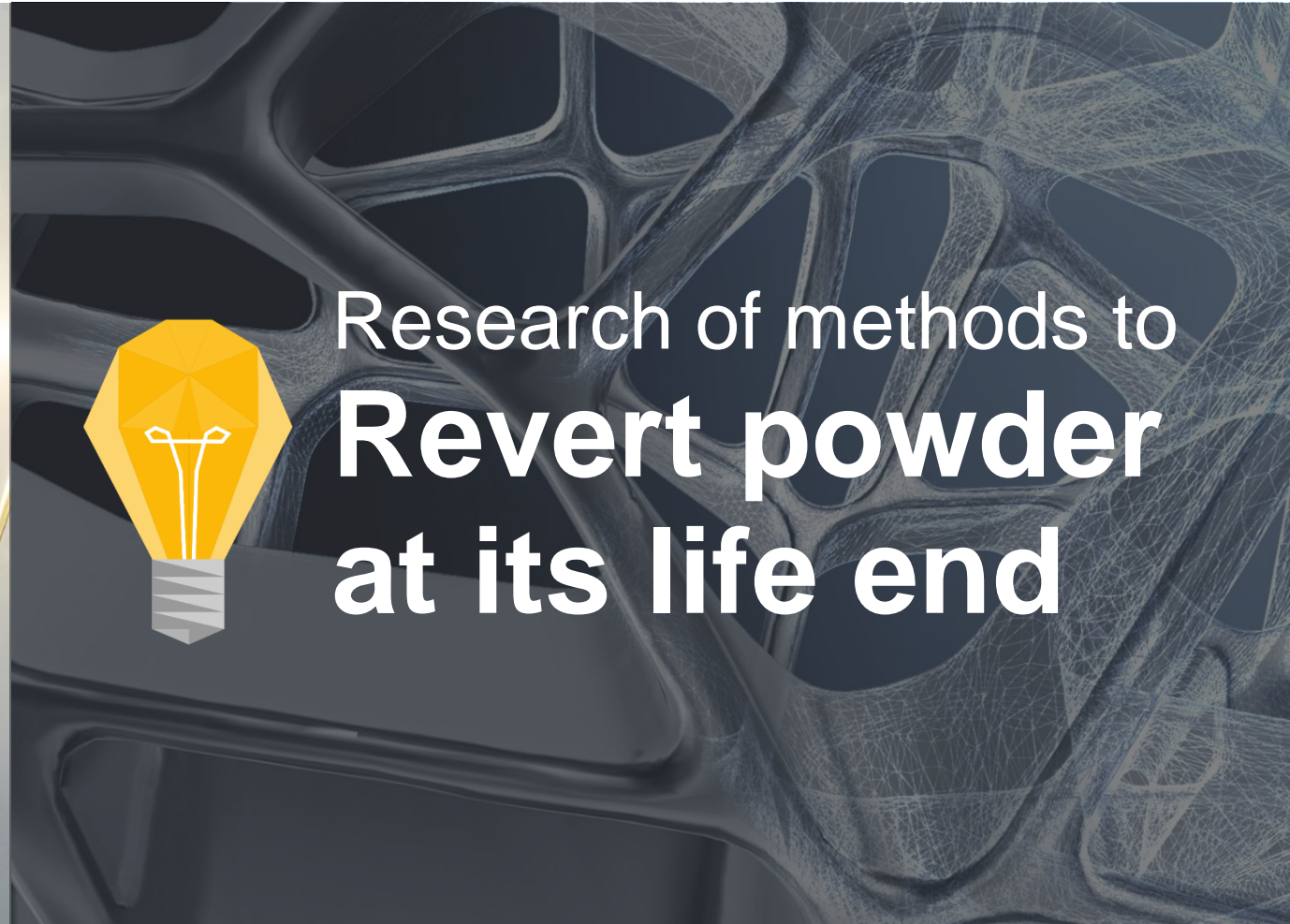
Possibility to **integrate different features** in **one** singular **component**

MARKET NEEDS

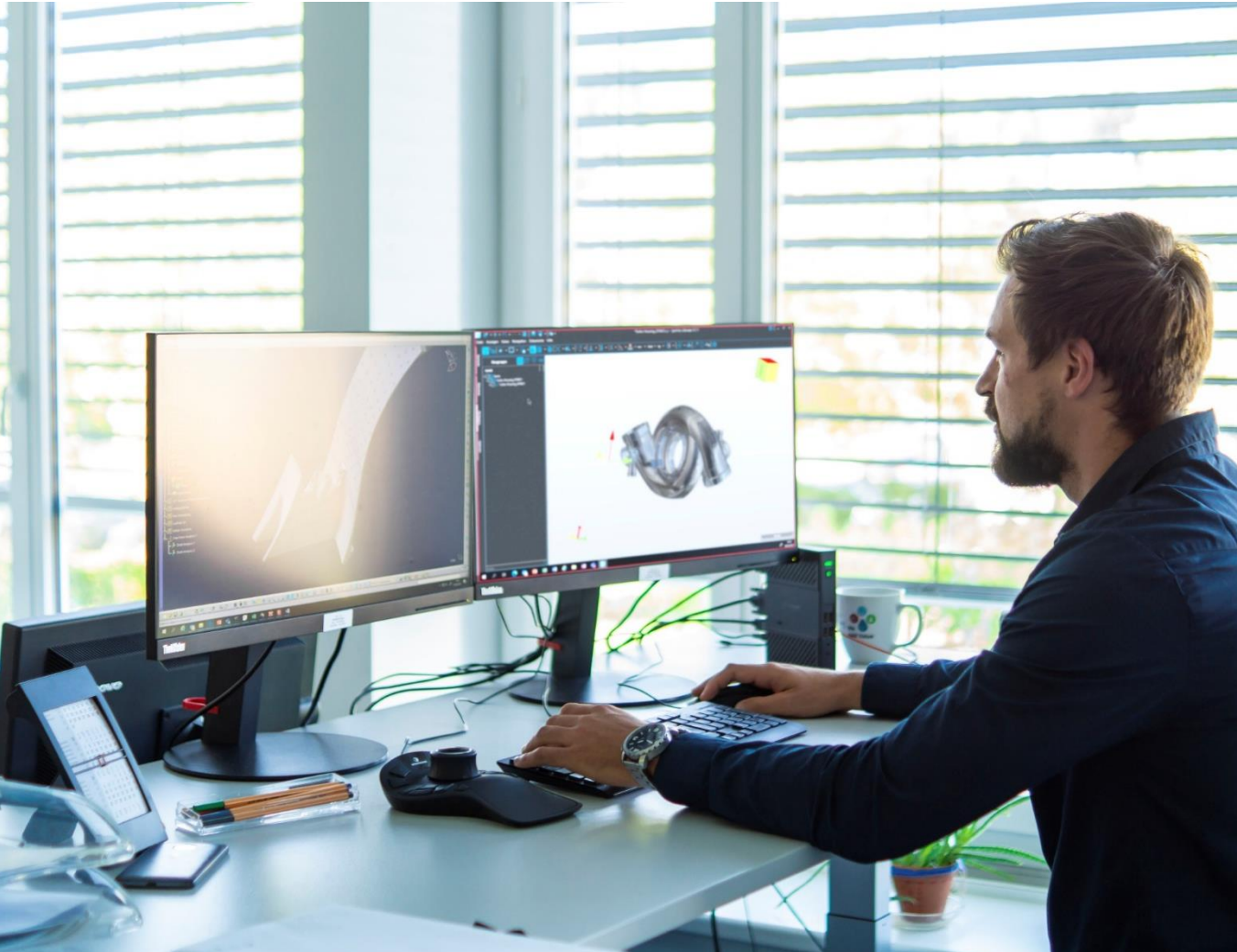
Sustainable opportunities



Sustainable opportunities



The benefits of Additive Manufacturing



Design freedom



No tooling costs



High process repeatability



Lead time reduction



Powder recycle and revert



**Thank you for
your attention**