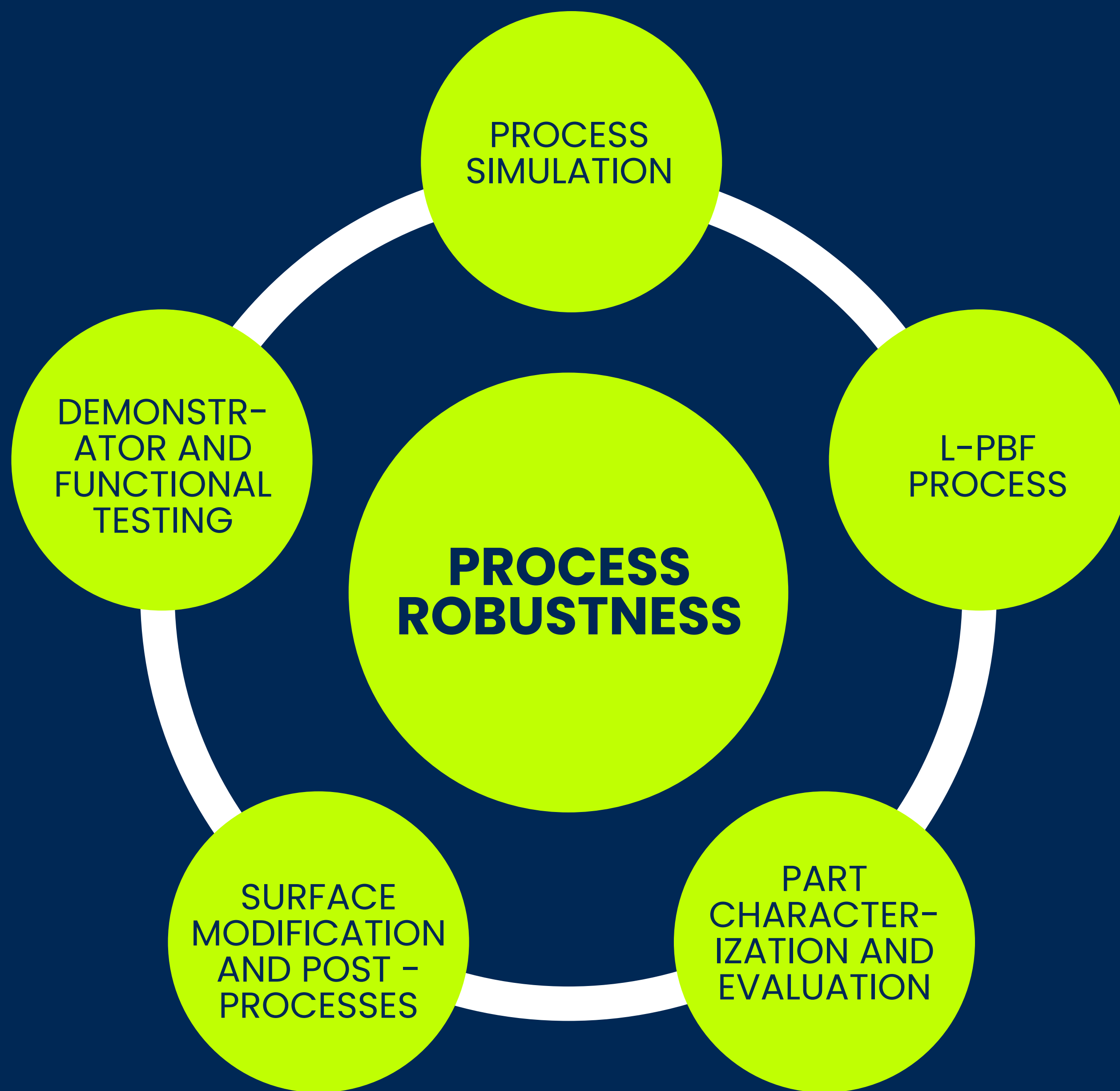


CASE STUDY

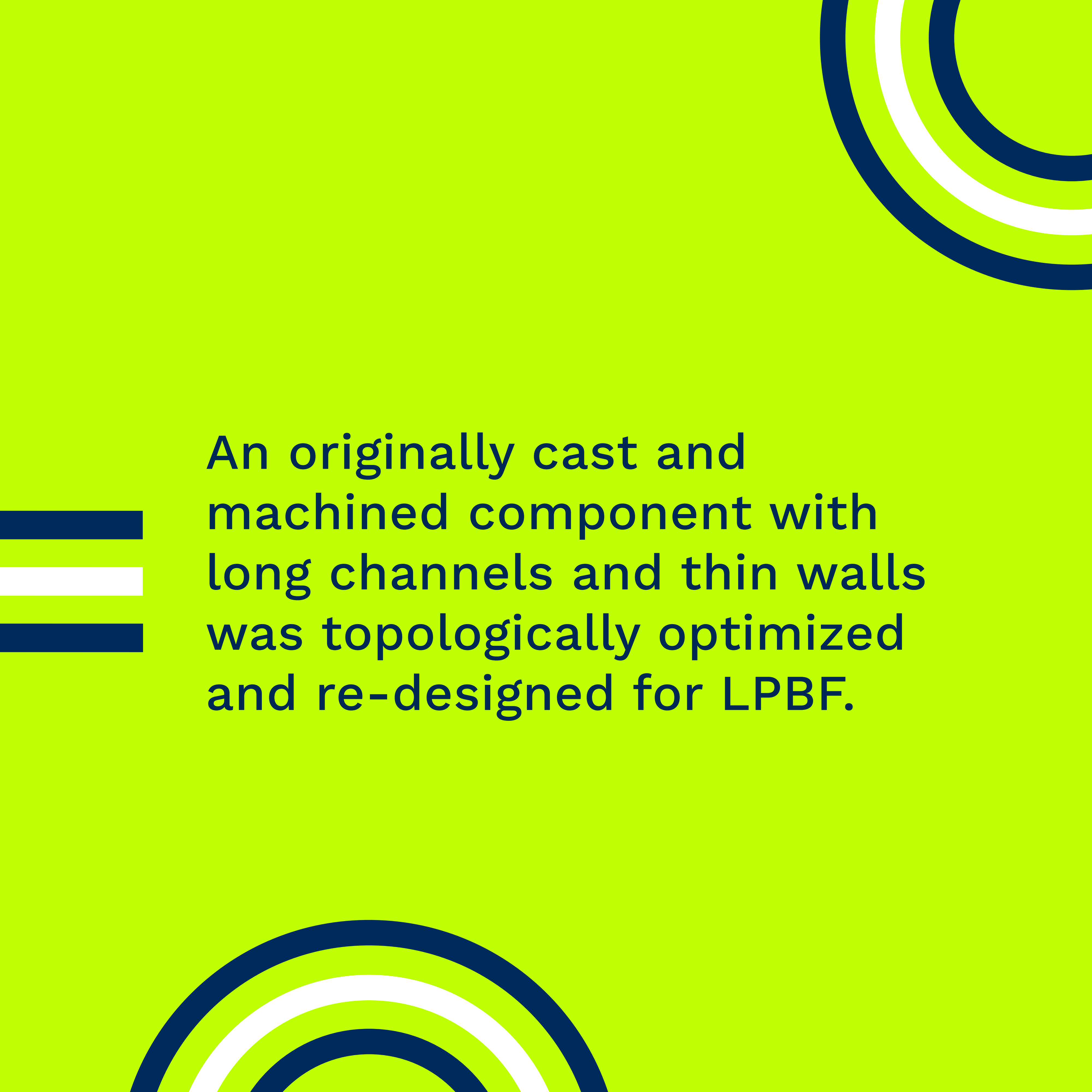
**PROTHIN – ROBUST ADDITIVE MANUFACTURING OF
COMPONENTS WITH THIN WALLS AND NARROW CHANNELS**

PROJECT UPDATE JUNE 2023

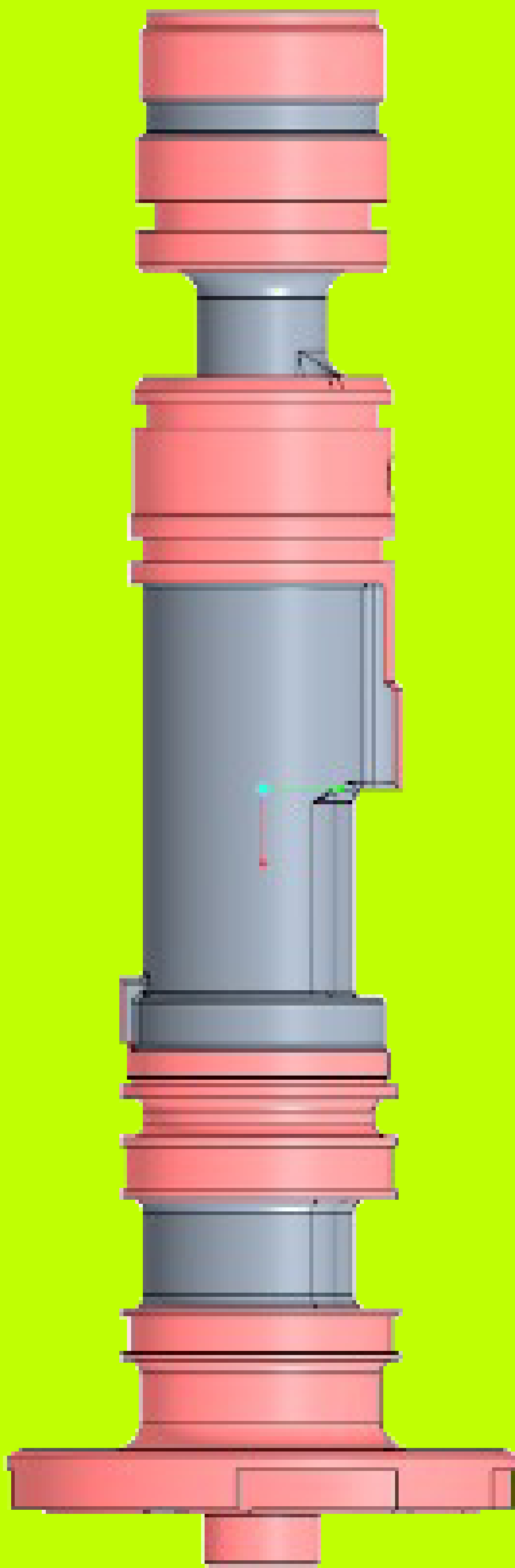




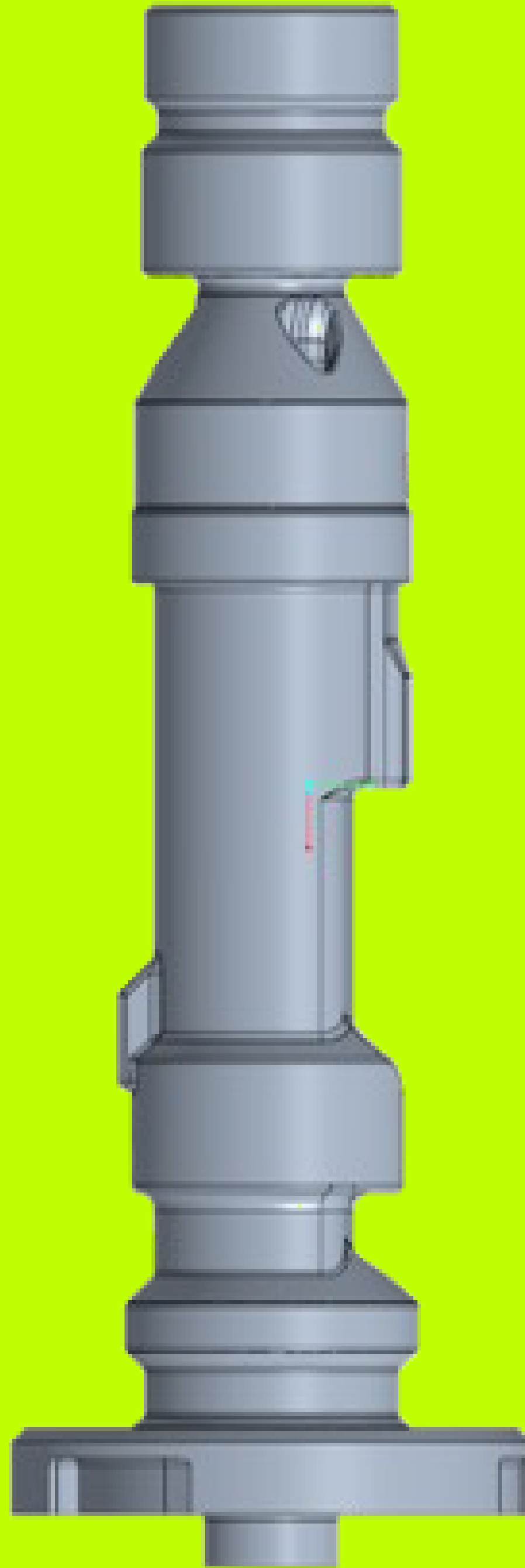
ProThin is a project focusing on robust manufacturing of components with thin walls and long channels by laser powder bed fusion (L-PBF) process. The project consortium forms the complete value chain.



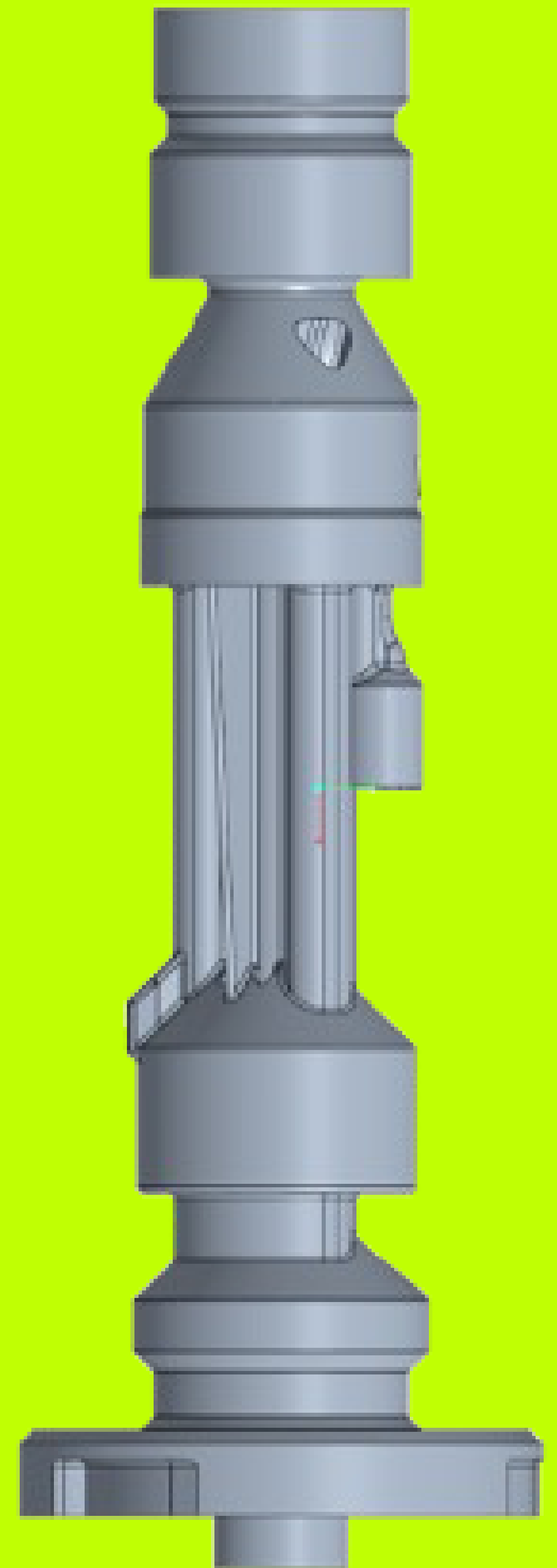
An originally cast and machined component with long channels and thin walls was topologically optimized and re-designed for LPBF.



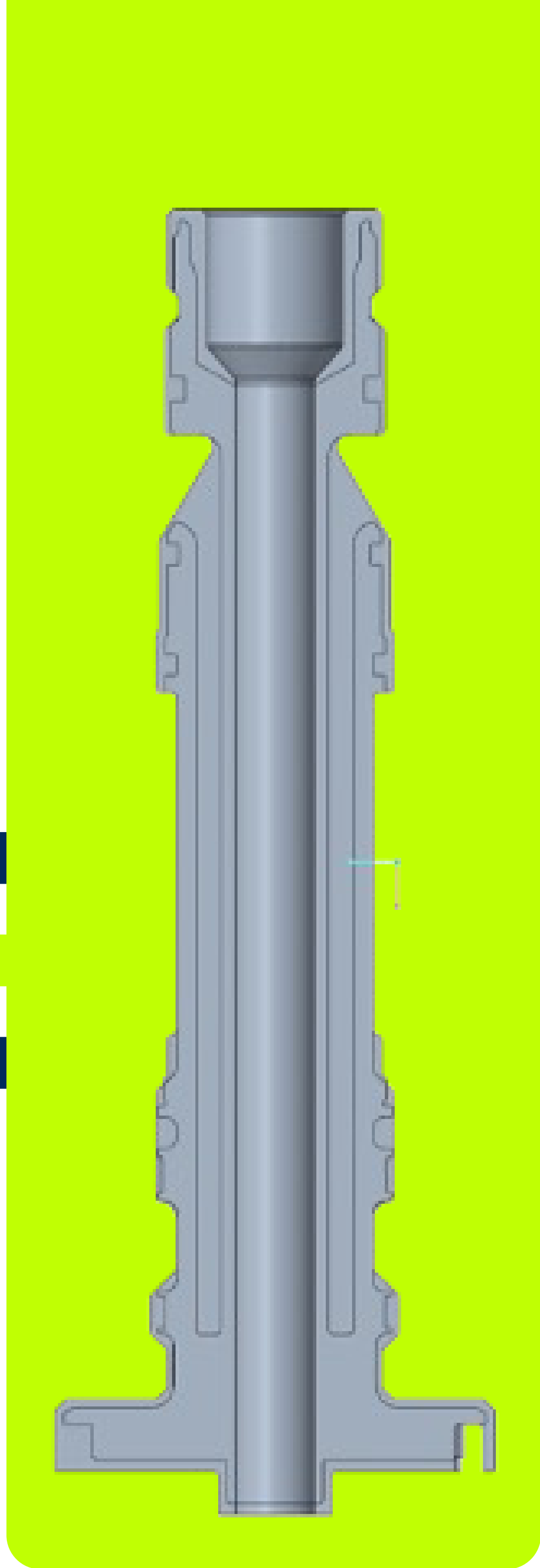
**ORIGINALLY CAST
AND MACHINED
DESIGN**



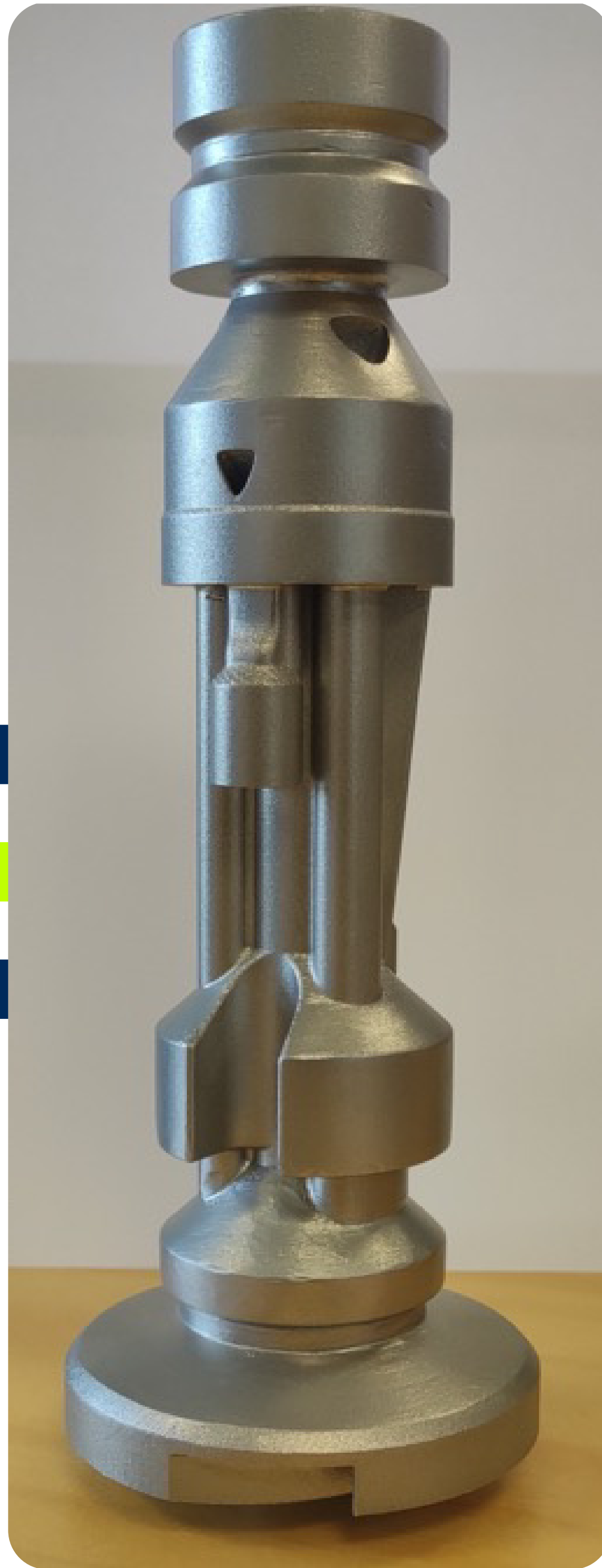
**CONFORMED TO
LPBF DESIGN**



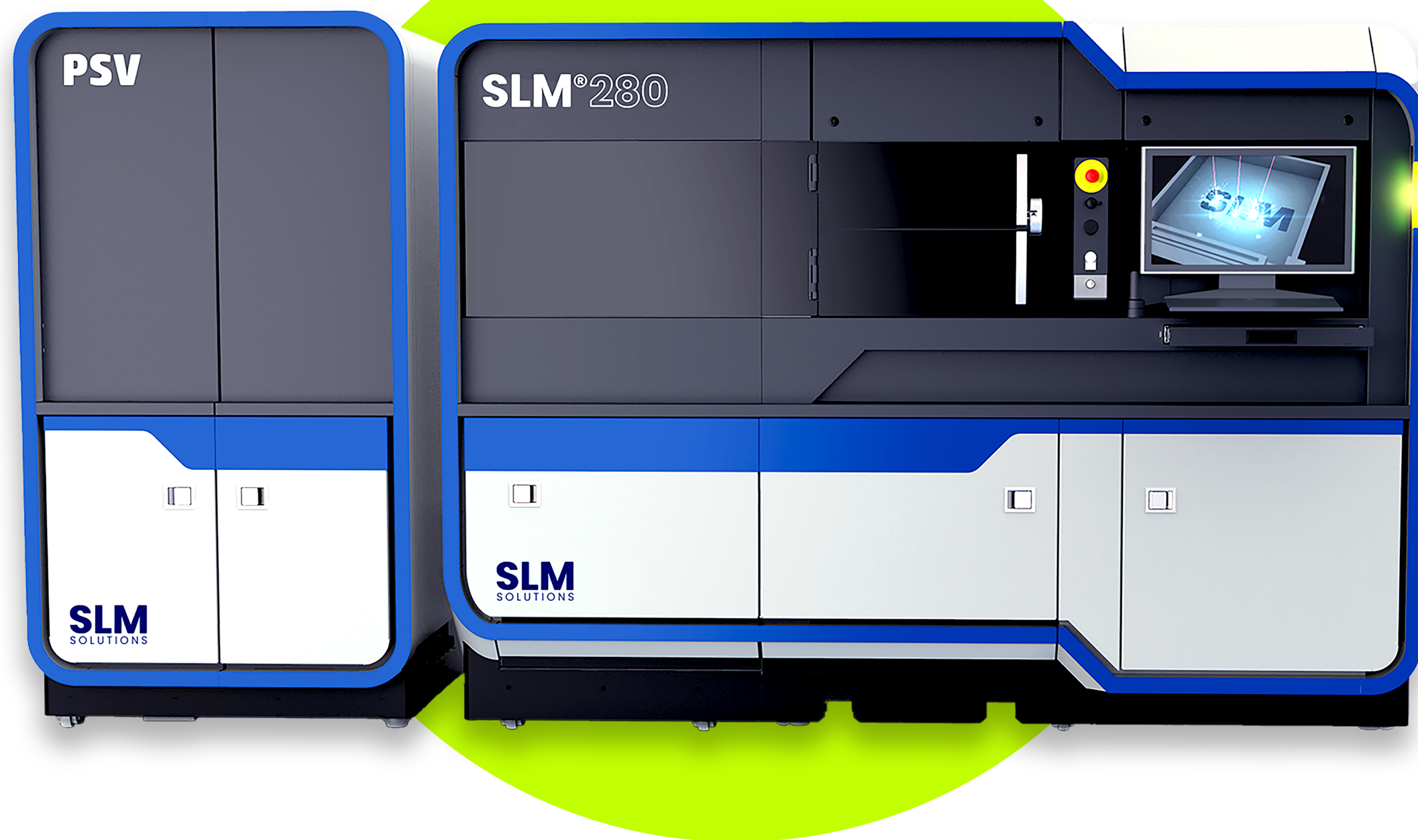
**TOPOLOGICALLY
OPTIMIZED DESIGN**



**INTERNAL
STRUCTURE**



PRINTED IN
**STAINLESS
STEEL**



The demonstrator was printed in a SLM®280 with the Free Float function. An overhang lower to 20 ° was built successfully without any support.

22 % weight reduction was achieved by the optimized design and L-PBF process.

The strength and functionality testing is on-going. Meanwhile, the consortium is pushing the border to slim the wall and lessen the weight further.



FREE FLOAT

ABOUT FREEFLOAT

Free Float's breakthrough technology empowers the creation of previously impossible designs and fewer costs by eliminating support structures and allowing more complex designs. It brings together the best of the best, culminating in a fully proven and validated functional part.





SLM
SOLUTIONS



RISE



Etteplan



HEXAGON



SIEMENS
ENERGY



R | E | N | A | .



Höganäs



The consortium acknowledges the finance support by Sweden's strategic innovation program Produktion 2030 and innovation authority VINNOVA - 2021-01273.



PRODUKTION2030

The consortium acknowledges the finance support by Sweden's strategic innovation program Produktion 2030 and innovation authority VINNOVA - 2021-01273.

COORDINATOR



Teknikföretagen

FOUNDERS

RI
SE



CHALMERS



SWEDISH
PRODUCTION
ACADEMY

WITH SUPPORT FROM

VINNOVA
Sweden's Innovation Agency



FORMAS

STRATEGIC INNOVATION
PROGRAMMES

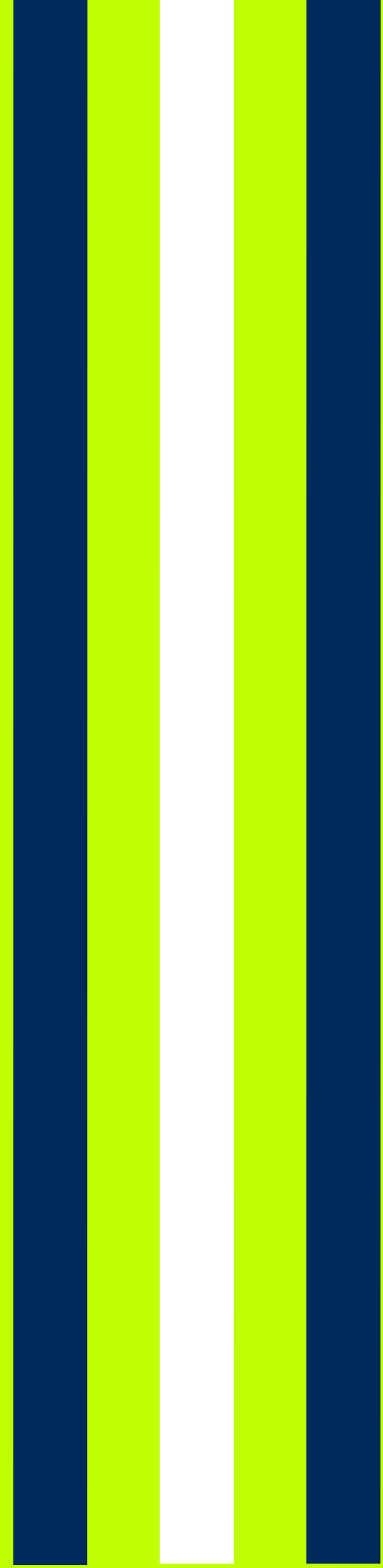


ABOUT SLM SOLUTIONS

SLM Solutions is a global provider of integrated metal additive manufacturing solutions. Leading the industry since its inception, it continues to drive the future of metal AM in every major industry with its customers' long-term success at its core. SLM Solutions is home to the world's fastest metal additive manufacturing machines boasting up to 12 lasers and enabling build rates of up to 1000ccm/h. With a portfolio of systems to suit every customer's needs, along with its team of experts closely collaborating at every stage of the process, SLM Solutions leads the way on return on investment with maximum efficiency, productivity, and profitability. SLM Solutions believes that additive manufacturing is the future of manufacturing and has the desire and capability to take its customers there – right now.

SLM Solutions is a publicly-traded Company headquartered in Germany, with offices in Canada, China, France, India, Italy, Japan, Singapore, South Korea, and the United States.





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