



9T LABS

The go-to platform for industrial-grade continuous carbon fibre 3D-printed composites

Founded **2018**

ETH zürich Spin-off



9T LABS

CHF **5M** Funding - 2020

26 Employees



9T Labs helps manufacturing companies of high performance parts to become more competitive.

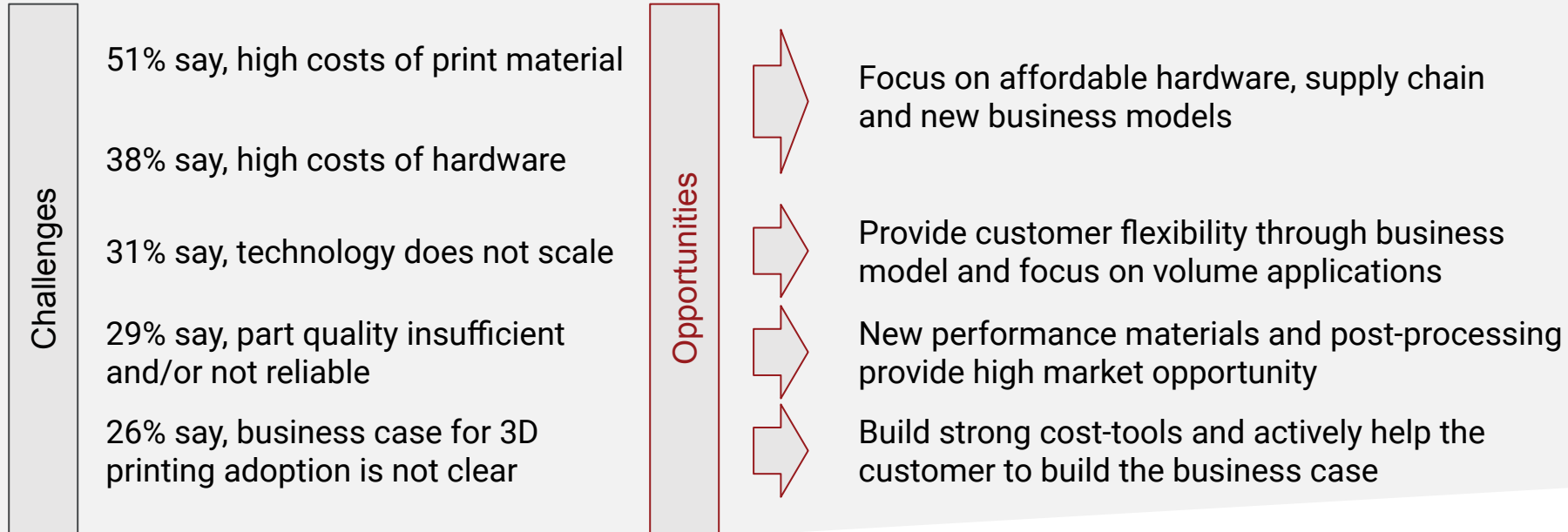


Composites & 3D printing - Challenges & opportunities

3D Printing Market

Opportunities to drive market adoption

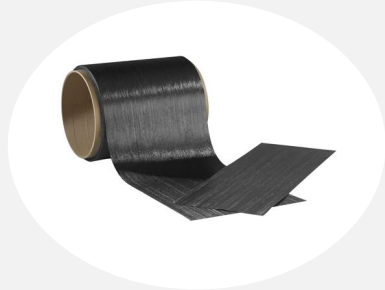
What companies say limits a fast adoption of 3D printing inside their organization...¹



¹TRENDS IN 3D PRINTING AT SCALE, Dimensional Research 2020

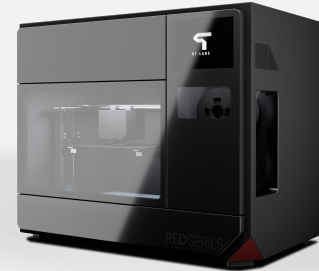
3D printing of fiber composites combines two worlds to get the best out of both

Carbon Composite



3D printing of carbon composites

- ❑ High performance
 - ❑ 20x stronger material
 - ❑ 4x lighter than steel
- ❑ Thermoplastic matrix
 - ❑ performance
 - ❑ welding/remouldability
 - ❑ recycling



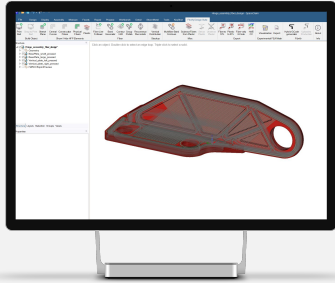
3D printing



- ❑ Software enables
 - ❑ higher performance parts
 - ❑ more complex part designs
- ❑ Hardware automation enables
 - ❑ significantly lower production cost
 - ❑ small and thicker part manufacturing
 - ❑ significantly reduced waste

9T Labs' approach is different, enabling serial production quality and cost competitive cost structure

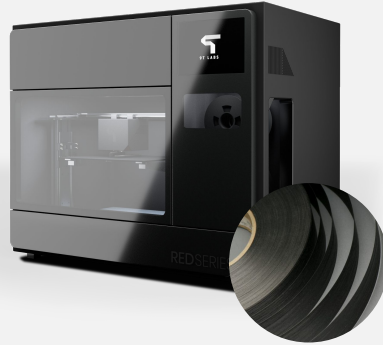
advanced software



optimized part design
digital validation

+

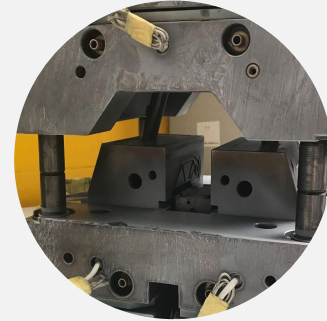
3D printing of continuous fiber



performance
automation

+

moulding



high reproducibility
low porosity
surface finish
precision & tolerances

Digital Prototyping

**Functional Prototyping
Jigs & Fixtures**

Industrial Scaling

Additive Fusion (AFT)

9T Labs as the go-to platform for composite 3D printing by offering the Red Series[®], a manufacturing solution combining intelligent software, additive manufacturing, metal molding and industry-grade materials.

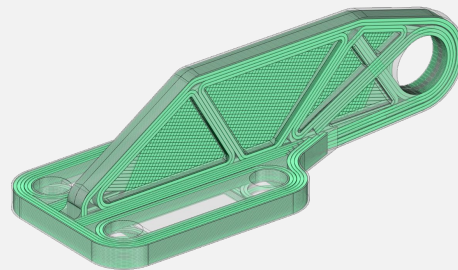
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Isotropic Topology optimization



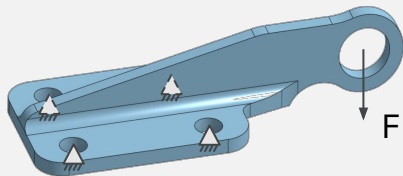
3

Fiber Layup Design



1

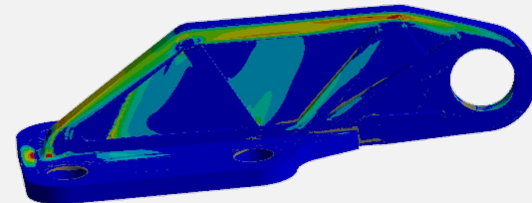
Original Design



Digital Prototyping Loop

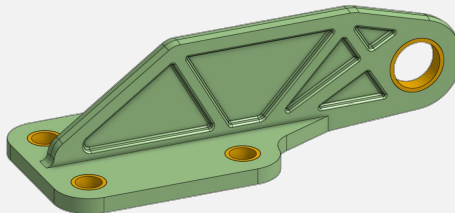
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Structural Simulation

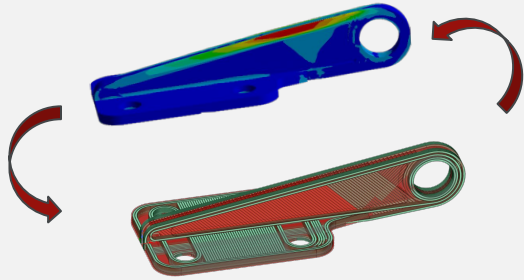


5

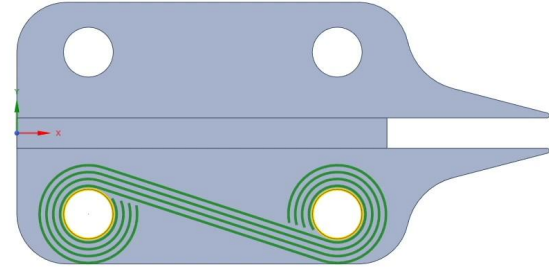
Final Design



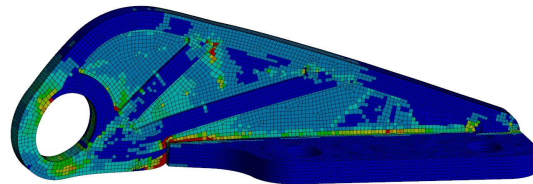
Fibrify Design Suite for optimal fiber design



Placement of continuous fibers



Export to commercial, structural simulation



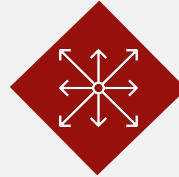
Customer Experience *Red Series*TM



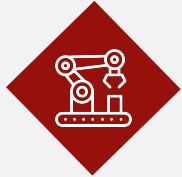
What are your benefits?



Production cost saving
Up to 60% savings on part
production cost



New lightweight opportunities
More complex parts
Metal substitution

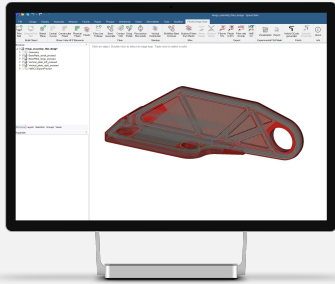


Reduced time to market
Certified CF/PEEK and CF/PEKK
Aerospace grade material
Digital process



Reduced CO2 emissions
Clean manufacturing
Recyclable materials

We provide an end-to-end solution for serial production of small and complex fiber composite parts



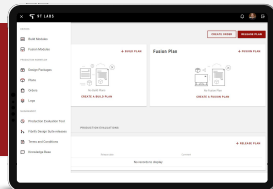
The optimal part is created inside our design & simulation environment.



Additive manufacturing is used to produce complex parts cost competitively.



Welding of printed parts is the game-changer for high value applications and serial production.

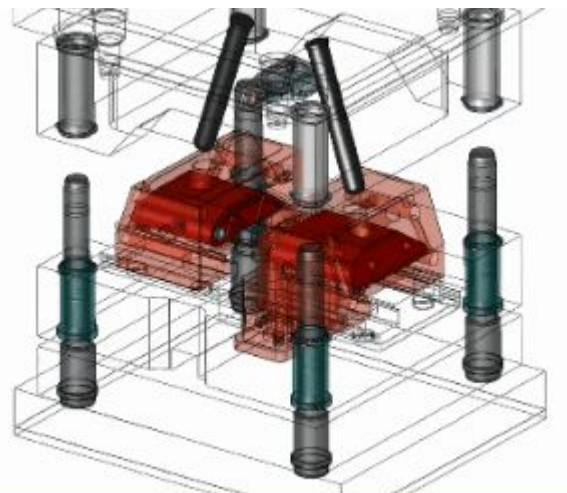


Our cloud-based platform **controls the workflow** and manages production data.

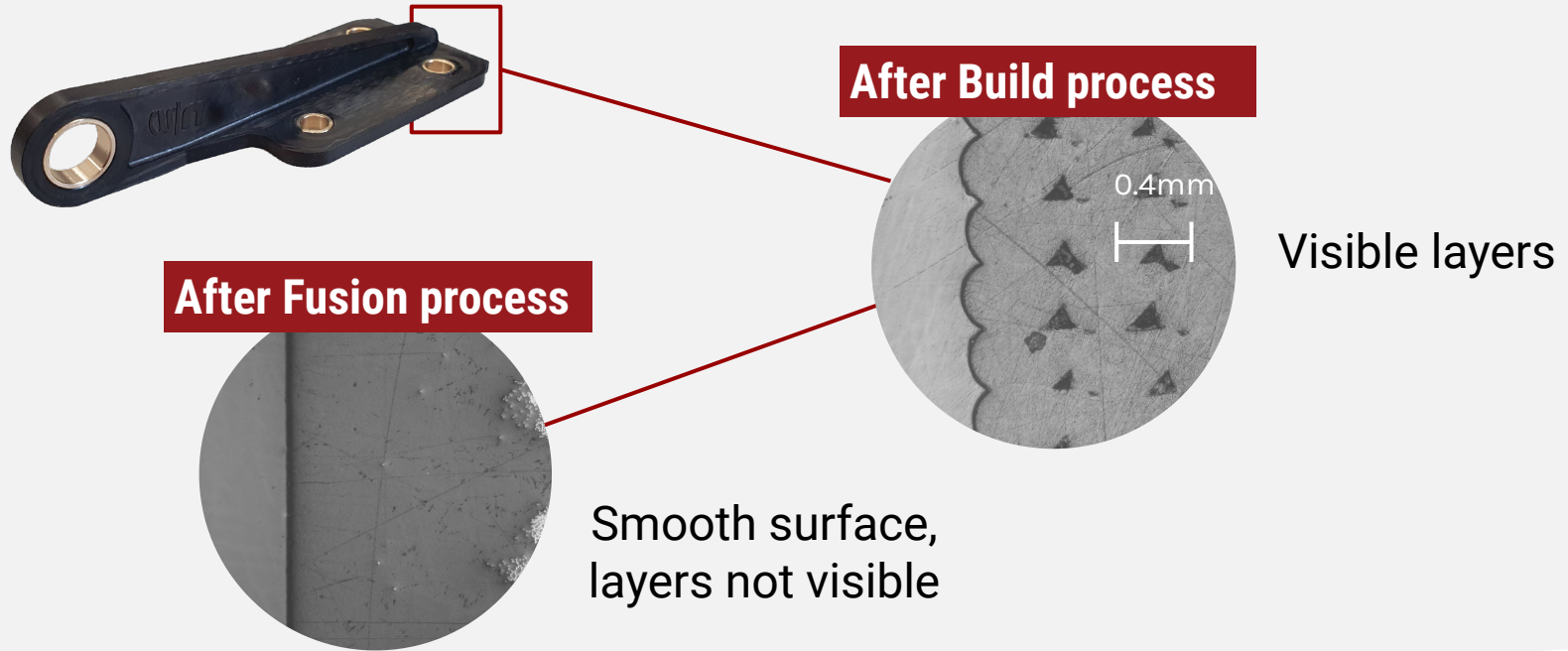
Why molding and additive manufacturing?

Fusion module for industrial consolidation

Metal mold consolidation



High surface quality



Part tolerances. After fusion process



outside
dimensions: ± 0.1 mm

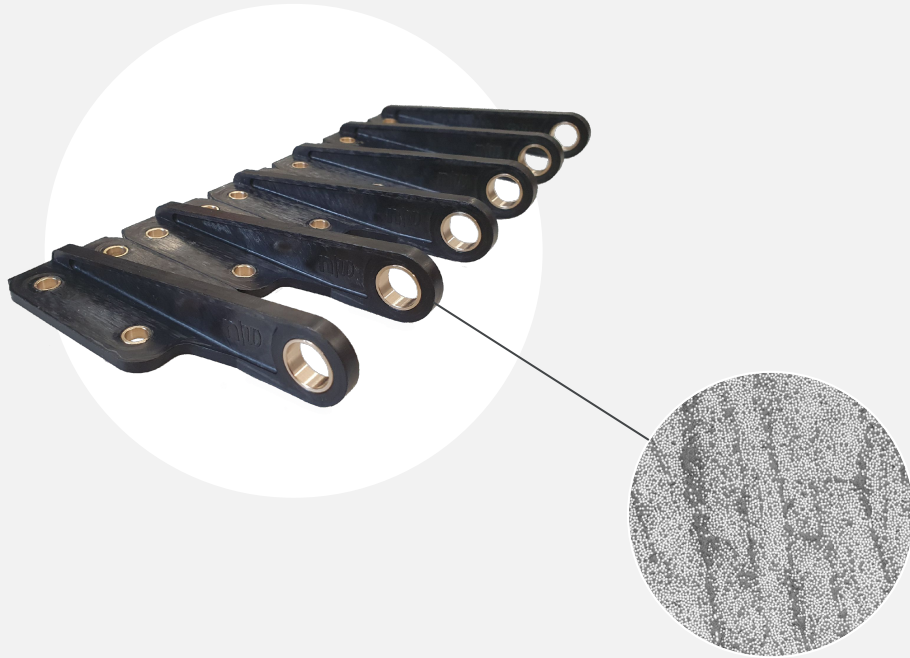


fit size ± 0.02 mm



position
tolerance
 ± 0.05 mm

Series production quality

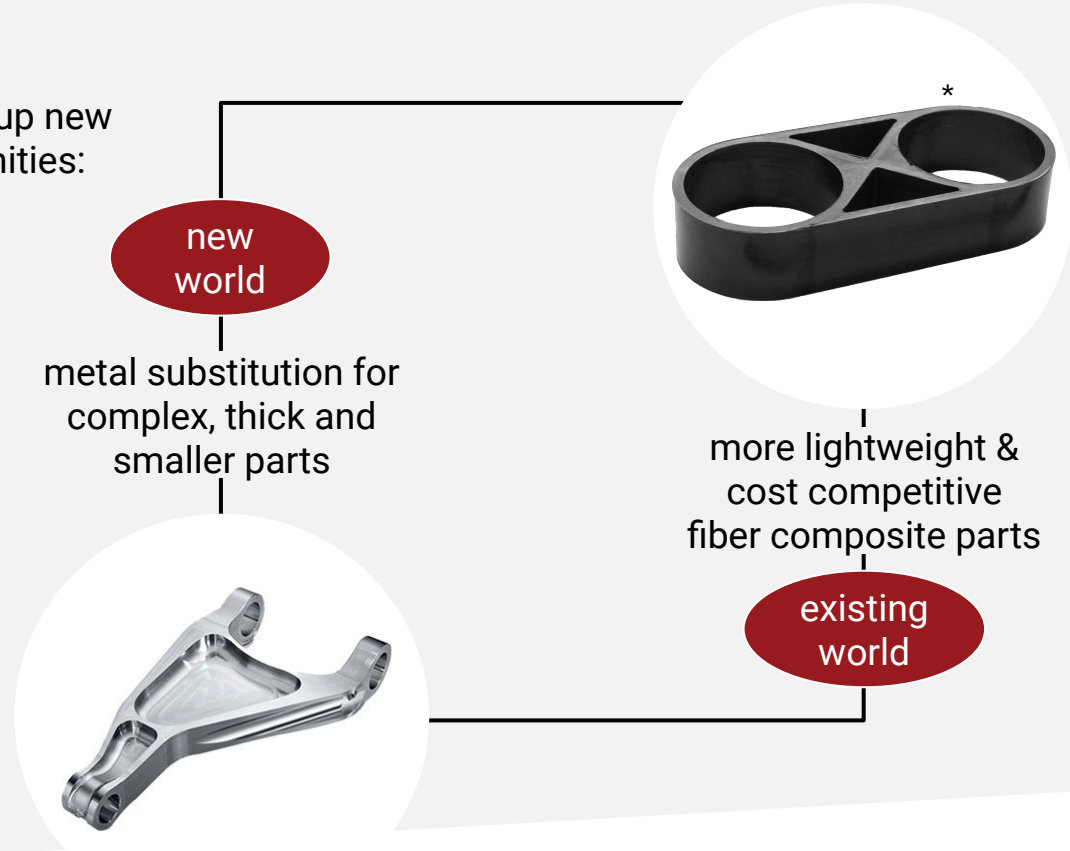


- ✓ < 1% voids
- ✓ High reproducibility

... enabling various industrial applications

Much more than 3D printing, enter a new range of applications.

RED SERIES™ opens up new composites opportunities:



** This part was manufactured in collaboration with Setforge Engineering, Arts et Métiers Institute of Technologies, using the patented AFT and EPITHER processes.*

Red Series[®] - Applications

Aerospace door hinge



Medical aiming arm



Automotive bracket

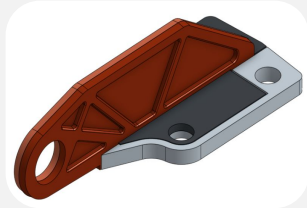
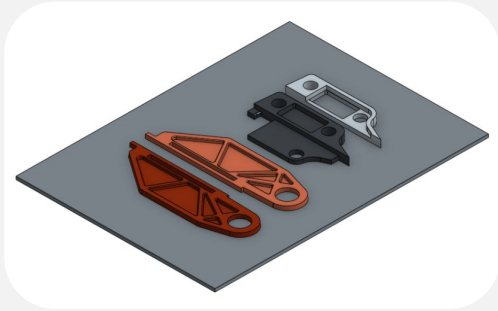


Watch case

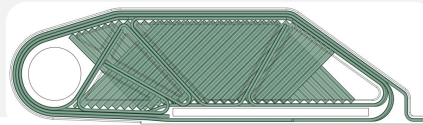
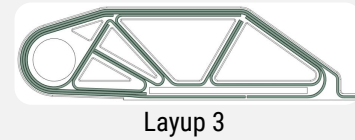
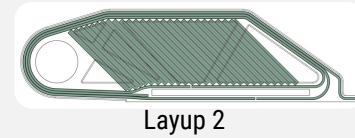
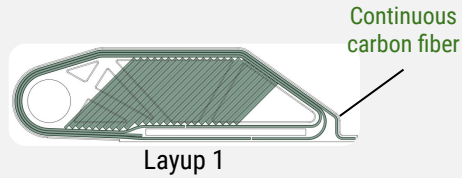


Red Series[®] - Aerospace door hinge

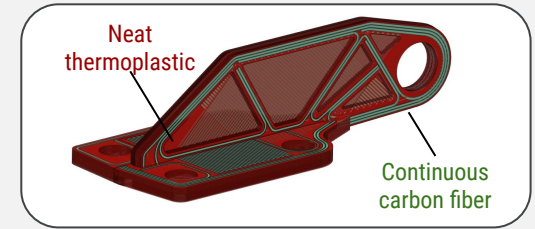
Multi-body strategy



Layup strategy

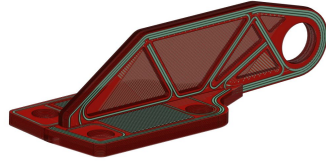


Final part



Aerospace door hinge 9T Labs CF/PEKK vs. aerospace-grade steel

1000 parts / annum



** Part produced in collaboration with the University of Applied Sciences Northwestern Switzerland.*



50% reduced production cost



71% reduced CO₂ emissions over lifetime



78% weight reduction

Questions? Collaboration?

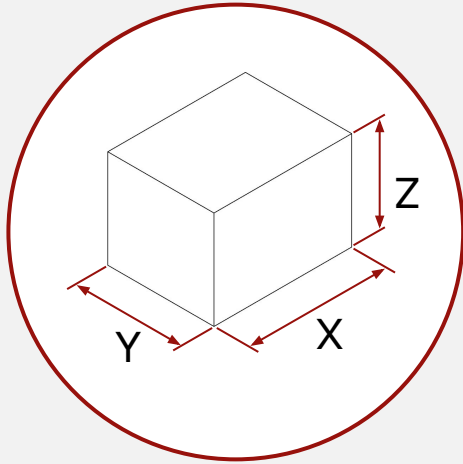
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w. 9tlabs.com

Build volume



X: 350 mm
Y: 270 mm
Z: 250 mm

