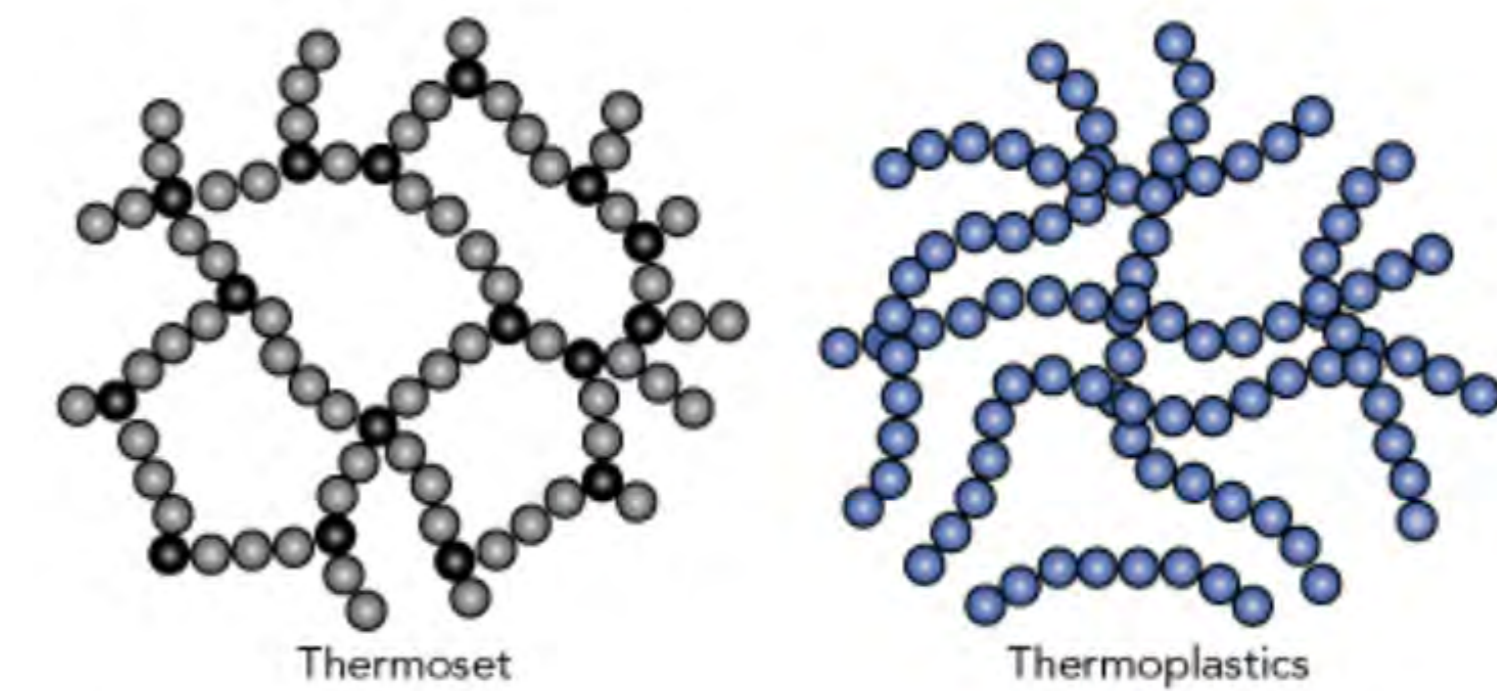


THERMOPLASTIC CARBON FIBER COMPOSITE IN SUPERSTRATA


Carbon fiber composites are seen by most as the ideal material for bikes because of their high stiffness and low weight.




Carbon fiber composites are made up of reinforcing carbon fibers and a polymer that encompasses them. There are two types of polymers: thermoplastic and thermoset. Due to the springiness of the polymer chains, thermoplastic-based composites have higher inherent impact resistance.



Traditional bike manufacturing processes for thermosets, for example bladder molding, cannot be applied to thermoplastics. Therefore, completely new processes needed to be established. In Superstrata, we use a proprietary process called Direct Energy Deposition (DED).


61x
Strength/weight Ratio
of Steel


15x
Strength/weight Ratio
of Titanium

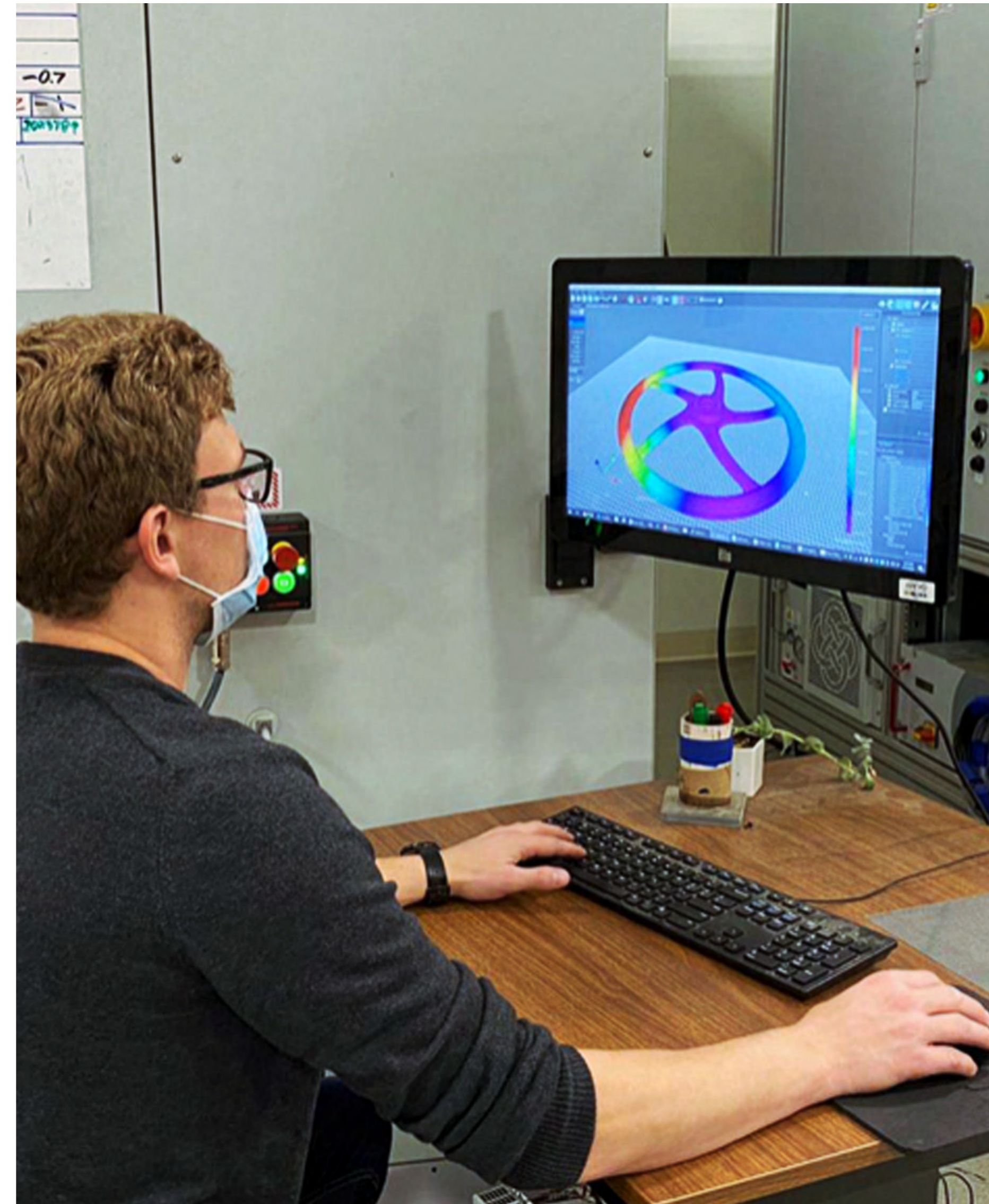

40%
Lighter than
Aluminum

DIRECT ENERGY DEPOSITION (DED) PROCESS

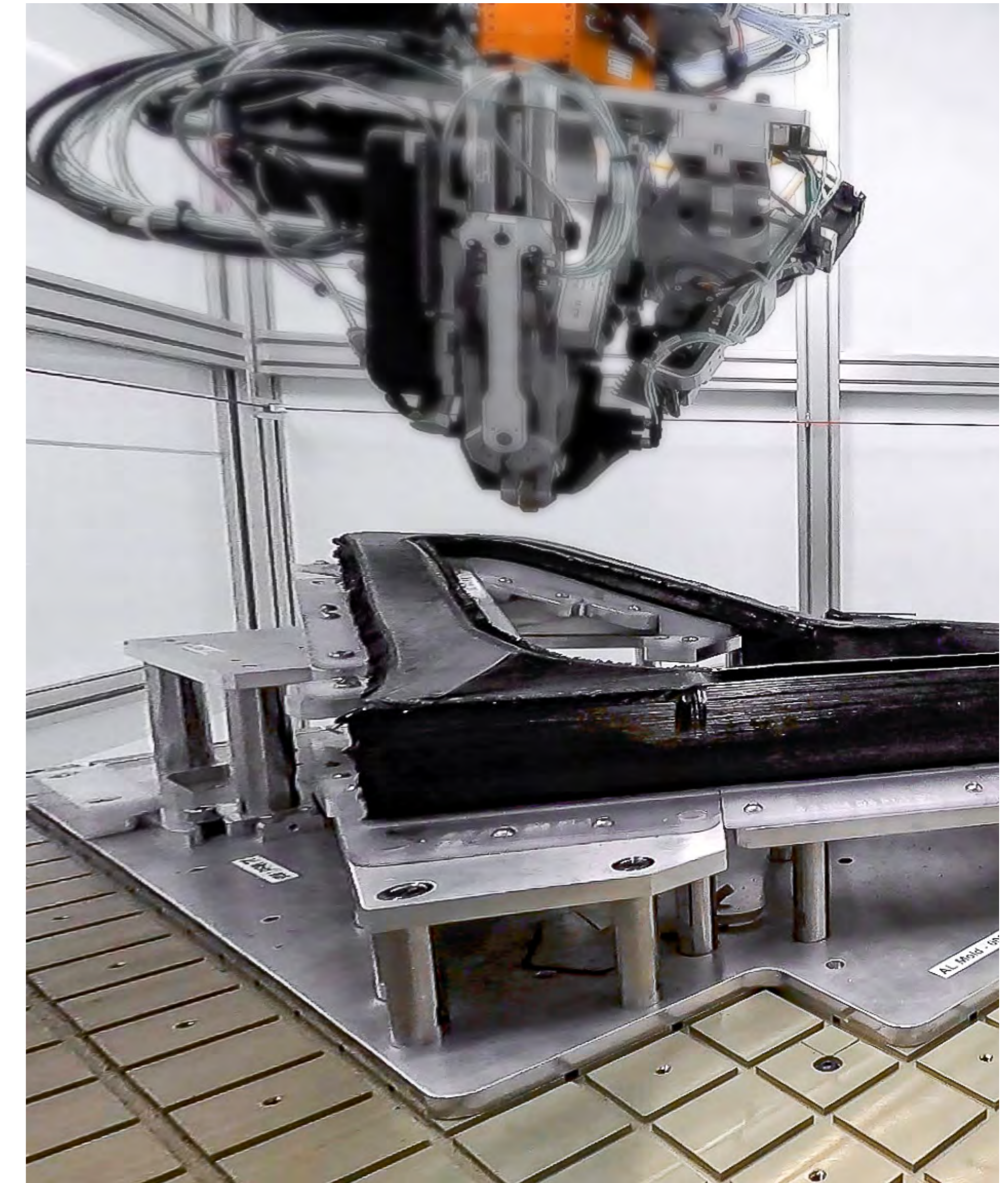
The synergy between robotics, software, and materials is completely unique and drastically different from how bikes are created with thermoset polymers today.



Every part of the frame has its own geometry and load scenarios, and composite parts will have their own optimum positioning of the carbon fibers to meet these requirements.



Arevo's in-house software engineers the directionality of each carbon fiber.



A robot arm then uses a laser to melt and bond the carbon fibers together accordingly, precisely placing them into their desired position and direction.

DIRECT ENERGY DEPOSITION (DED) PROCESS



The melting and solidification of the thermoplastic-based composites in Superstrata's manufacturing process is reversible, which enables recycling of the composite material at the end of its life.



Each Superstrata's frame is fabricated as a single structure of continuous carbon fiber composite, ensuring the aesthetic value and durability of the product.

CUSTOMIZATION

Superstrata achieves an unprecedented level of customization as well as design forms that are not possible using traditional manufacturing methods.



Each frame is individually crafted according to 18 precise measurements, accommodating riders from 4'7" to 7'4".



Superstrata is fully customizable in over 500,000 total combinations (components, colors and frame sizes).

SUPERSTRATA CARBON FIBER WHEELS



SUPERSTRATA C (BIKE)

The advanced materials and engineering processes allow an unconventional design - a bike frame without the need for a seat tube.



SUPERSTRATA E (E-BIKE)

Slim in-tube battery for a sleek and aerodynamic ride



SPECS

