# 3D Printed Wind Turbine Parts

**Additive manufacturing technologies and materials help speed development, reduce costs, and balance strength with weight**

## OVERVIEW

In partnership with Forward AM, VentoStream used additive manufacturing to prototype, iterate, and manufacture strong, complex, and lightweight parts quickly and cost-effectively. In addition to supplying Ultrafuse® PAHT CF15, a carbon-fiber filled polymer, Forward AM helped VentoStream to optimize its design for additive manufacturing.

You can read the full use case here: 3D Printed Wind Turbine Parts (forward-am.com)

## QUICK FACTS

Materials:

Ultrafuse® PAHT CF15

Industry:

Wind Turbines, Clean Energy

Technology:

FFF

VentoStream
INSPIRED BY NATURE

VentoStream of Bubendorf, Switzerland wants to make a decisive contribution to the environmentally-friendly energy supply of the future. Inspired by turbine-powered aircraft, the Swiss startup has developed a new type of wind turbine called the Tornado that generates significantly more power than conventional, propeller-style units.

VENTOSTREAM.COM

7x increase in iteration speeds

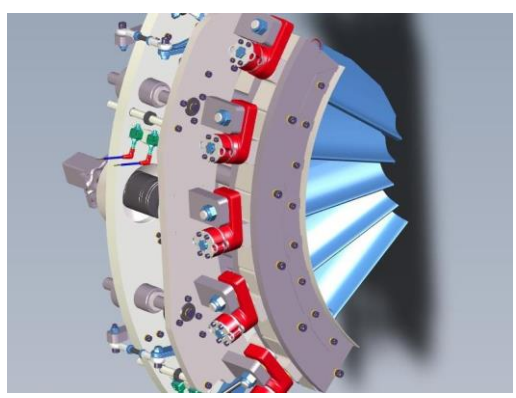
70% reduction in part costs

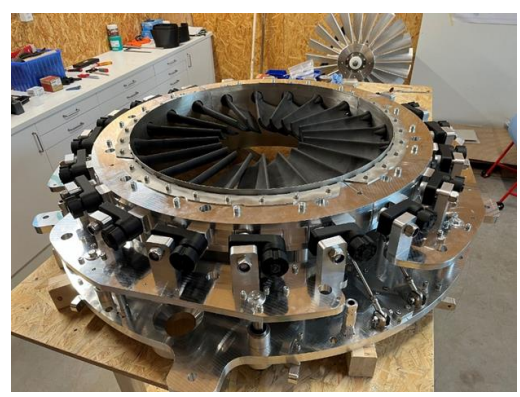
50% less storage space required

## Challenge: Create strong, lightweight parts for wind turbines allowing for both quick and cost-effective ways to iterate designs and produce replacement parts during field testing.

Ventostream needed a manufacturing process that could create complex lattices. Traditional manufacturing can produce simple lattices, but processes like casting and molding can take days or weeks to complete. They also limit design freedom and typically require additional assembly. Plus, there's tooling to pay for, wait for, and modify when there are design changes.

In addition, VentoStream needed long-lasting parts that could withstand the sun's ultraviolet (UV) rays and outdoor weather conditions, including precipitation and a range of temperatures. Spinning parts like turbines are also prone to buildups of dust and static electricity. During wind turbine maintenance, electrostatic discharge (ESD) can put technicians at risk.





VentoStream used Forward AM's Ultrafuse® PAHT CF15 to 3D print parts that are both strong and lightweight. This high-performance polyimide contains 15% carbon fiber and resists UV light, aging, outdoor temperatures, and weather. It's also ESD safe and supports the prototyping and production of complex parts with geometries, such as lattices, that traditional manufacturing can't achieve.

The assistance that VentoStream received wasn't limited to material selection, however. Importantly, Forward AM helped the wind turbine company fine-tune its use of Ultrafuse® PAHT CF15 for superior print quality with a BambuLab X1C 3D printer. Forward AM also worked with VentoStream to adjust its 3D models for dimensionally-correct parts.

## Learn more about Ultrafuse® PAHT CF15:


- EU +49 6221 67417 900
- sales@forward-am.com
- www.forward-am.com