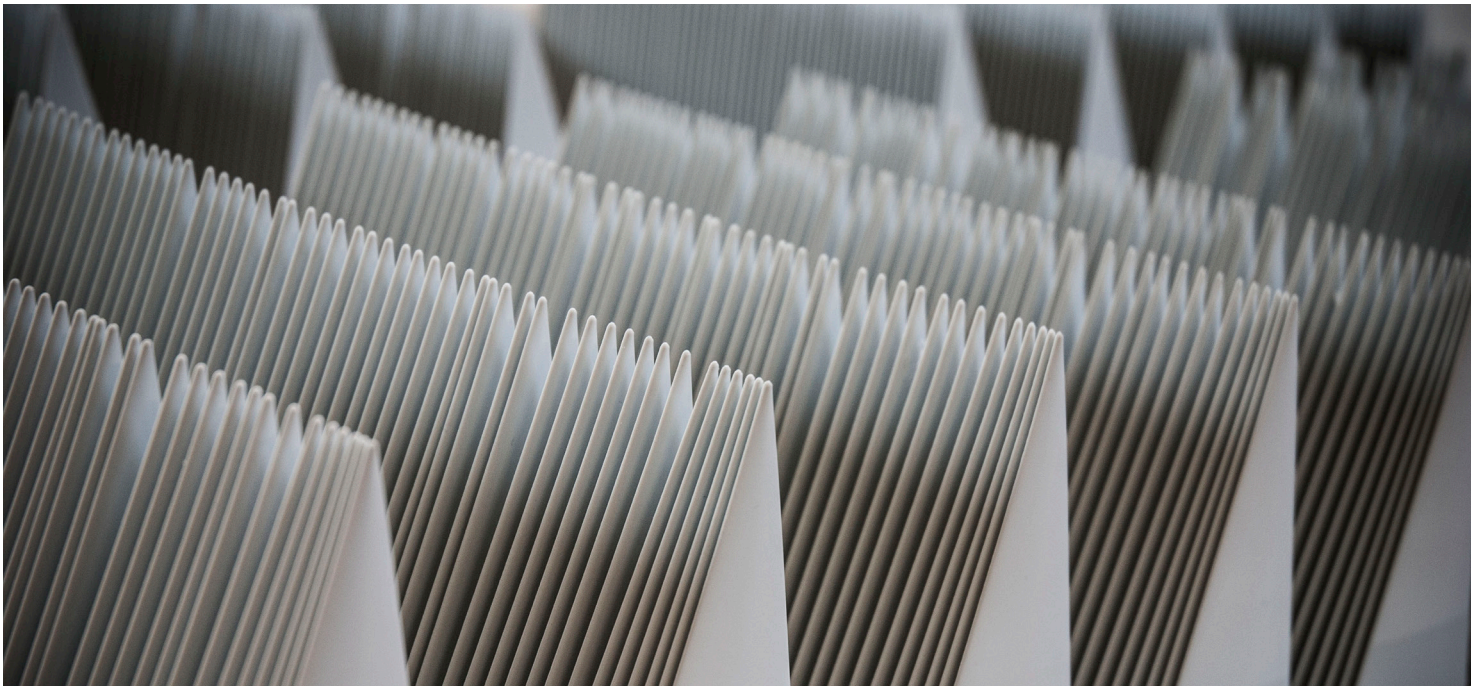

Blade Add-ons
TO BOOST PERFORMANCE

Optimising upgrades to maximise blade performance and reliability is an ongoing effort for PolyTech.
We cooperate closely with customer aerodynamic engineers to design and manufacture a wide variety of blade add-ons, tailored to customer requirements.
Production methods vary according to types and geometries, application process as well as properties of the selected materials.

Add-on quality and integrity

Hundreds of thousands of PolyTech blade add-ons are already at work, improving wind turbine performance around the world.

Considerable improvements in efficiency can be achieved - however, any addition fitted to a moving body under constant stress is bound to have limitations. Selecting a wrong material or bond strategy can lead to add-ons falling off or cracking under environmental impacts.

To counteract these limitations, PolyTech focuses on materials, designs and bond strategies that last, ensuring maximum cost effectiveness. Parts are all custom-made. PolyTech is your partner from initial design to in-factory installation or aftermarket retrofit. Whatever customers require, PolyTech ensures highest quality and best market price.

SUMMARY OF POLYTECH ADD-ON ADVANTAGES

- ✓ Documented quality with own laboratory
- ✓ Almost limitless geometry
- ✓ Customer material selection
- ✓ Ongoing material testing
- ✓ Customer bond strategy to fit the individual blade
- ✓ Best in market price
- ✓ Performance boost

More information on PolyTech Add-ons:
Phone +45 75 10 10 26
E-mail: info@poly-tech.dk

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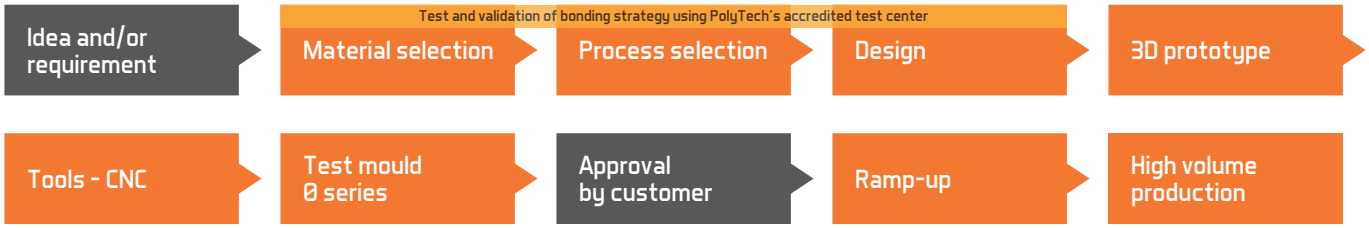
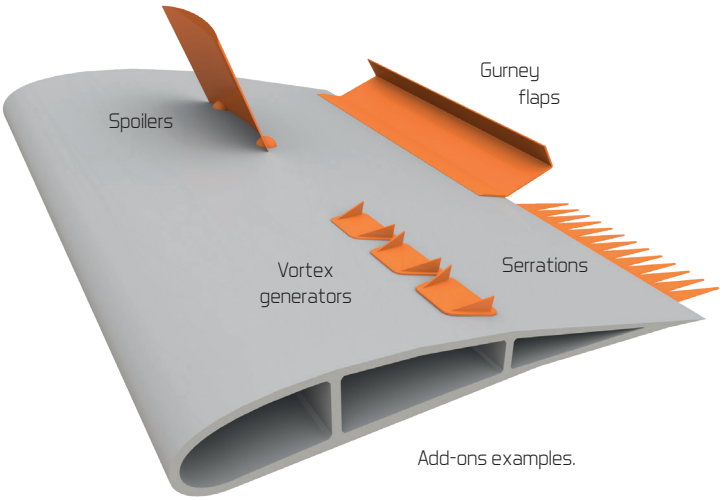
ALL THE WAY PolyTech and customers in confidential partnership, complemented by A-Z capabilities - testing, in-house mould production and subsequent production using injection moulding, extrusion, polyurethane moulding or Rapid Fibre Moulding.





Add-ons examples.

Serrations

Serrations reduce blade noise and improve lift, a simple addition that eliminates the turbulence caused by a straight, sharp edge - as common experienced in the wind industry. The big challenge is to design, produce and install such parts to work reliably for years in snow, sleet and hail - the real world beyond the theories of a wind tunnel.

Gurney flaps

A gurney flap is usually set at a right angle to the pressure side surface of the blade, projecting 1- 5% of the blade chord. Such trailing edge devices are low cost, easy to install and instantly boost the performance of existing blades. They are so effective that many new aerofoils and blades include them in their design.

Vortex generators

Vortex generators compensate for diminished aerodynamics on parts of the blade such as the circular root. With the blade in motion through the air, vortex generators act on the slow-moving boundary layer in contact with its surface, delaying local flow separation and reducing turbulence.

Spoilers

Spoilers help minimize drag and increase lift in the root end of the blade, which leads to increased production. Due to the cylindric form of the blade root it will create drag with diminished aerodynamics. Utilizing custom made spoilers, fully tested and made in the right materials, it will be another effective product to increase AEP and bring down LCOE.

Documented testing

Prior to the design phase, PolyTech conducts material tests in our own accredited test center. Choice of material is crucial to decide on the application methods.

PolyTech produces many scaled custom designs for testing in wind tunnels.

By simulating the most punishing conditions in the PolyTech Test Center, designs can be tweaked and altered until reaching the customer specification and beyond.

Full scale parts are also made, tested and prototyped before any large investment is made in manufacturing equipment.

We are able to test the impact of UV, salt spray and rain erosion and perform gloss test, tensile test, peel test, shear tests and tear tests as well as combinations of the above.

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