

Precision blade balancing by Polytech

Wind turbine blade balancing - a world-class skill

Before turbine blades are mounted, they have to be balanced. Unbalanced blades create severe vibration and damage to the turbine. Well-balanced rotors are therefore essential. Some blade manufacturers balance two blades at a time against the weight of the third. Others balance all three simultaneously.

Traditional balancing methods such as lead or steel weights have serious disadvantages and risk damaging the blades. As conductors, they also attract lightning, which can be disastrous.

Through years of experience, PolyTech has developed blade balancing systems that avoid such hazards - a huge plus for the blade and the blade manufacturer. All methods employ reaction injection moulding (RIM), in which two liquid polymer components combine to create a single solid.

PolyTech A/S
Industrivej 37
DK-6740 Bramming
Denmark

Tel +45 75 10 10 26
Fax +45 75 10 11 26
info@poly-tech.dk
www.poly-tech.dk

State-of-the-art balancing

PolyTech - the world's blade balancing specialist

PolyTech has supplied blade balancing systems to most of the world for over 15 years. The systems are therefore well-tested, fully-documented, and can be delivered world wide.

Liquid balancing - state-of-the-art precision

Liquid balancing entails two components that are RIM-prepared in high density Polyurethane. The material is injected through a small hole of only 5mm, with the required density directed into a predefined place/chamber in the blade, after which the mix hardens.

PolyTech has also developed machines that automate injection, ensuring that weight and mixing ratio is always correct. These balancing machines offer various options for volume, automation, traceability etc, according to customer needs.

Onsite uptower kits are also available.

- There is no waste - the only material used is the material that goes into the blades.
- The blades can be rebalanced while mounted on the turbine, should the balance change through damage or surface repair.

Technical data - Material:

Substance: High density solid polyether based polyurethane elastomer, 55 Shore A

Density range: 2-3000 kg/m³.

Curing time: 45-90 minutes, depending on temperature

Adhesiveness to inner blade surface: (peel pried 2-4MPa shear strength)

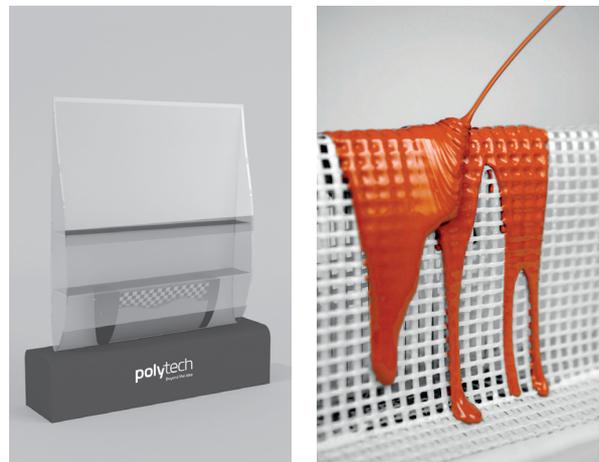
Technical data - Balancing chamber:

Gable ends: Solid polyether based polyurethane elastomer, 70 Shore D

Fiberglass mesh: Mass/m² (700g)

Venting tube through the chamber for air/water

Highly bondable with common glues



Slab balancing - the expert alternative

High density Polyurethane is delivered through predetermined geometry per customer requirements. The slabs are then glued in place.

PolyTech's RIM-based polymer systems have significant advantages as balancing systems:

- High density polyurethane has excellent semi-flexible properties that reduce blade damage, provide low temperature flexibility, and resist hydrolysis.
- The insertion of balancing material does not affect the flexibility of the blade.
- As the material is non-conductive, it does not affect lightning protection system.
- The system is very easy and safe to use. It also improves production efficiency.