

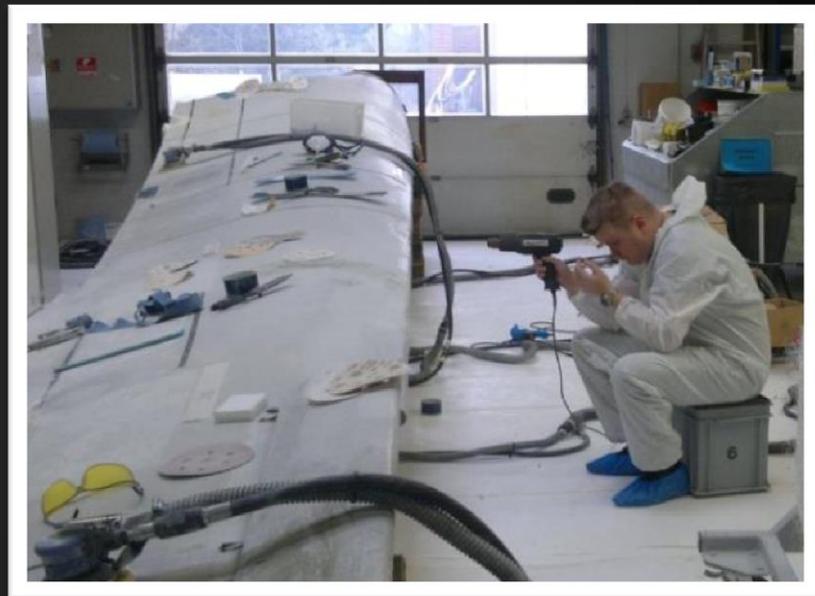
Cold climate rotor blade repairs using advanced UV curing resin system

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Winterwind 2014

Traditional blade repairs

- Traditional methods usually require an ambient temperature of +15 or more and relative humidity below 60%.
- Creates a lot of waste
- On-site measurements for 2 component systems can be inaccurate → quality issues
- The curing times are measured in hours
- Work season is limited to summer months



Advanced UV curing resin system

- Modified epoxy based resin system with UV cure
- Mono-component resin and prepreg fabrics
- Very little waste
- GL certified product range
- Works in +5 temperature and up to 90% RH
- Cures in minutes using UVA light
- Compatible with polyester, epoxy and vinylester blades



Cold climate blade repairs in Sweden

Customer: Jämtkraft
Site: Hornberget
Turbine: Vestas V90
Time: January 2014
Average temperature: -15 to -25
Type: Significant delamination of approx. 2000mm * 300mm in size

The repair enabled the turbine to return full production months earlier than what would have been possible otherwise.



Cold climate blade repairs in Sweden



Prior to work ice was manually removed from the blade

Cold climate blade repairs in Sweden

Custom designed, fully insulated blade repair module was prefabricated to provide suitable environmental conditions for the winter repair.

The module was installed in one day using slings attached to the hard points in the nacelle.



Cold climate blade repairs in Sweden

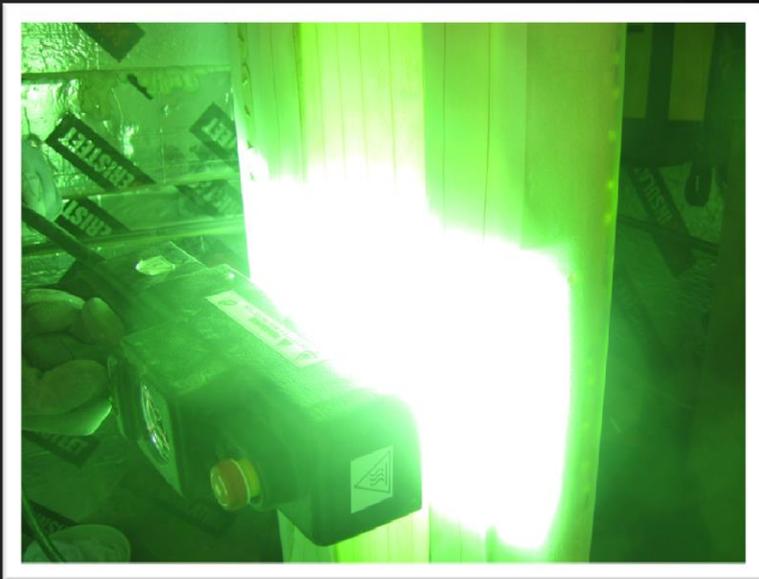


Blade repair module provided safe and stable working conditions for repairs

A temperature of 12 to 20 C and relative humidity of 30 – 50% was maintained in the blade repair module throughout the project while outside temperature were as low as -25 C.

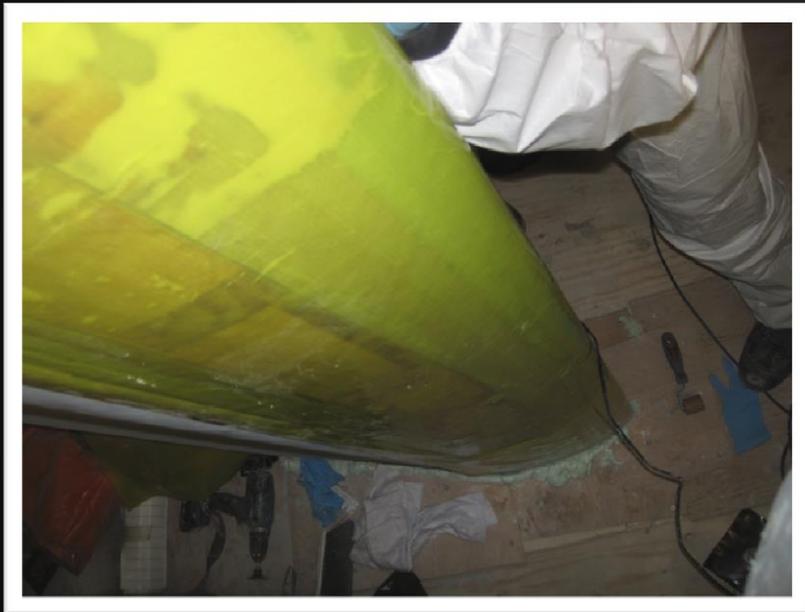


Cold climate blade repairs in Sweden



UV curing resin system with prepreg fabrics were used.

Cold climate blade repairs in Sweden



The entire project lasted 7 days including set-up, blade de-icing, actual repair, finishing works and dismantling.

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