



# Technical Bulletin

## Wind Blade Damage

### EFFECTIVE MAINTENANCE FOR LEADING EDGE EROSION

The Sandia National Laboratory Blade Research Collaborative reports:

Blade reliability is emerging as one of the most costly elements of wind plant installations and operation because blade damage or failure can cause extensive down time and lead to expensive repairs. Blade reliability will become even more critical because of the increasing numbers and sizes of operating utility-grade turbines. The growth of wind energy power production is well documented and has been on the order of 15-20% per year for the past several years in the US. The DOE has a vision of 20% wind power penetrations of up to 20% by 2030 in the US. If such a goal is even close to being reached there will be hundreds of thousands of utility-grade wind turbines operating in the US alone.

The Blade Research Collaborative report goes further to state: Almost every data source experienced erosion to some extent. This varied from small areas of “pitting” through to larger areas where the exterior coating was worn away and exposing damaged laminates. A substantial portion of the erosion seen occurred on the leading edge of the blades.

Why does this occur?

Three reasons.

First, the leading edge is not an “edge”. It is a radius. Current systems used at point of manufacture and in the field to finish off the wind blades shrink and do not fully adhere and protect the blade.

Secondly, the vast majority of systems in use do not have the ability to protect the blades from degradation by UV radiation

Thirdly, Systems do not adequately provide an effective barrier to water intrusion

Wind Farm Operators report that failure of wind blades is very costly to the efficient operation of the facility. Replacement of a blade currently costs in excess of \$250,000 dollars and individual blade repairs can cost in excess of \$30,000 dollars

Utilizing the EPOX-Z NRG system provides an effective barrier against UV degradation, water intrusion and shrinkage across the blade edge all at a fraction of the cost of blade repair and replacement.