Solution to the icing of generator blades

Overview

The solution involves an active deicing device that uses a conductive polymer paint to heat relevant surfaces of the blade under electric potential difference. This article explores the causes and consequences of wind turbine blade icing and introduces smart solutions, including how the FS Vertical Axis Wind Turbine by Elege New Energy offers enhanced resilience in icing environments. For wind farm owners Wicetec offers WIPS Ice Prevention System. TWI has contributed its materials expertise to a two-year collaborative research project to develop a novel method of tackling ice build-up on wind turbine blades. Ice build-up poses a number of problems for wind turbines: Performance losses of up to 20 per cent due to reduced efficiency caused by. Ice buildup on blades drastically alters their aerodynamic profile and weight distribution, leading to a sharp decline in power generation efficiency; it induces turbine vibrations, accelerating component fatigue; and uneven ice shedding seriously threatens equipment and personnel safety., which directly affect the operation of wind turbines. A light icing event can reduce energy production by 15-30%.

Article Content

Study on ice melting state changes and energy consumption in ...

Icing on wind turbine blades poses significant hazards, altering their aerodynamic shape and leading to power losses or even complete shutdown of turbines in severe cases. ...

The cold, hard truth about ice on turbine blades

After experiencing significant wind-farm downtime due to ice buildup on turbine blades, the operators of the 150-turbine Lac Alfred ...

Wind Turbine Blades Anti-icing Solutions

As the primary site for ice initiation, the blade leading edge directly benefits from anti-icing coatings, which effectively reduce hail and ...

Ice Protection System

Our patented technology is both an anti-icing and de-icing system. The system heats the blade from the inside utilizing ...

DeICE-UT: Anti and De-icing turbine blades

The DeICE-UT project overcomes the limitations of existing wind turbine blade de-icing systems through an innovative dual de-icing system ...

A Review of Wind Turbine Icing and Anti/De-Icing ...

Researchers have proposed many solutions for wind turbine anti/de-icing, such as anti/de-icing coating, heating melting, ultrasonic ...

Ice on Wind Turbine Blades? No More! | Wicetec Oy

With Wicetec Ice Prevention System, you can avoid harmful ice-induced downtimes with extended standstills and numerous re-start attempts. This increases the lifetime of the turbines and ...

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Disclosed is a wind turbine generator blade anti-icing system, comprising an icing monitoring apparatus and a gas-thermal deicing system.

A Solution for Ice Accretion Detection on Wind Turbine Blades

Abstract: This paper proposes a solution for ice accretion detection on wind turbine blades. The solution involves an active deicing device that uses a conductive polymer paint to heat ...

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