

Wind Turbine De-Icing with Active Thermal Nanotechnology Coating



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WINDGO Nanotech Thermal Coatings help prevent Wind Turbine Ice Build-up

WINDGO Nano Technology helps wind energy industry save up to 20% with thermal coatings.

Columbia, MO – June 27, 2019 - WINDGO, Inc., a research and development company specializing in smart material and vibrational transfer technologies, announced today that they are expanding their thermal coatings into airflow systems based on multiple patents in their nanotechnology coatings patent portfolio. Based on recent advancements related to airplane and helicopter wing thermal technologies WINDGO is expanding their active nano-thermal coatings to energy generation efficiency enhancement through the application of deicing generator blades in wind farm applications.

Environmentally friendly power generation is a high growth industry around the world. One of the methods for generation of power with minimal carbon footprint is wind power. Airflow is generated passively by means of changing weather patterns and barometric pressure differentials over time. The blades of a wind turbine are motivated to turn as the leading edge of the wind turbine blades are presented with bombarded pressure changes of air flow against the blades. The resulting rotation of the wind turbine produces a generation of electricity that is proportional to the effective transfer of air flow to rotation of the wind turbine. Any losses in potential energy are due to many possible inefficiencies due to nature and physics.

A wind turbine generator can produce converted electrical energy up to approximately 45% of the kinetic energy in theoretical air-flow wind patterns. Any mechanical friction or resistance to rotation will inevitably cause a reduction in the overall energy efficiency of the electrical output through wind energy production. Examples of friction are bearing wear, rust, dirt buildup, bending of structures, or other non-ideals of mechanical aging.

One of the significant attributes that can cause a reduction in energy production efficiency is the build up of ice on the turbine blades. Any anomaly in blade shape can change the wind turbines ability to rotate based on air flow. The ideal shape of a wind turbine blade is strategically designed to maximize the leading edge of each turbine blade so that the pressure differentials experienced by the blades cause a rotation effect of the overall wind turbine generator. Temperature and humidity can cause ice build-up on the blades that distorts the air flow patterns into a non-ideal flow against the leading edge of the wind turbine blades. The overall effect can cause a reduction in energy output of 20% inefficiency of generated power.

This means that there is an opportunity to increase production of wind farm power by as much as 25% during winter months when a wind turbine is experiencing ice build up on its blades. This opportunity to recover efficiency is significant and has caused many methods in the industry to

be attempted. Methods have been used such as heated air, thermal blanket layers on blades, colored coatings to enhance black-body radiation, and helicopters spraying jet fuel onto frozen blades.

WINDGO has patented a unique nanotechnology active thermal coating technology that evolved from their Smart Damping Adhesive US Patent 9,759,286 and their Vehicular Neurology US Patent #10,266,139.

“By coating the leading edges of a wind turbine’s blades with active nanoparticles a small excitation current can be applied to the coating to start a high frequency vibration that causes a warming effect,” says VP of R&D, David Strumpf. “The net effect when used on a leading edge surface of a wing or a blade is a significant increase in the efficiency of energy generation due to deicing.”

This new technology is in line with WINDGO’s emphasis on energy, resonance and vibration technologies and products. WINDGO, Inc. is focused on the IoT End-Node market expansion that is forecasted to exceed one trillion dollars by 2025. This new invention is based on technologies that evolved from the original works of inventor Fielding Staton. His invention of the Absorbud in 2013 has led to industry changing advancements in macro, micro, and nano-based technologies.

WINDGO/Newtonoid [PDF](#) US Patents Public Press Copy- Freely Distributed and found on the WINDGO website.

Inventors: Fielding Staton - Liberty, MO and David Strumpf – Columbia, MO

About WINDGO, Inc

[WINDGO, Inc.](#) is a privately-held company based in Columbia, MO. WINDGO, Inc. has numerous patent holdings within its Intellectual Property holding company – Newtonoid, LLC which has been in the research and development business since 2013. Founded in 2016, WINDGO, Inc. has researched, developed, and produced a variety of smart products and other intelligent product subsystems in the sensory and digital markets including Absorbud, Smart Windows, Intelligent Glass Displays, Responsive Biomedical Implants, Robot Skin Membranes, the ProVector™ Measurement Projection Mapping System, the Drone Roof Chute™ Systems & Methods for Receiving Packages Delivered by Unmanned Vehicles, the Food Puck™ Assistive Cooking Device and Sensory System, the Shingle Roof Clip System and many other patents with cross-industry applications.