



Icing on the wings of the wind turbines poses a challenge for the wind power parks in the north. Greger Nilsson from Norrfjärden runs the company Blade Solutions and has invented methods to repair deicing systems of wind turbines

FOTO: BLADE SOLUTIONS/PRESS



It was the passion for sailing and skiing that led Greger Nilsson to research fiber composites, the same material that is used in the production of wings for wind turbines.



Repair of wind turbine blades requires work at high altitude. With Greger Nilsson's patented system, Blade Solutions can repair the wing's de-icing system all year round.



A few millimeters of ice formation is enough to halve the power of the turbines and many plants are closed in the event of ice formation, waiting for calm. Greger Nilsson's methods mean that the de-icing systems can be repaired even in winter.

The small business owner keeps the wind turbines ice-free

NORRA SVERIGE

The winter climate creates major challenges for wind farms in the north. Greger Nilsson from Norrfjärden has developed and patented a ground-breaking method to keep wind turbine blades ice-free. Now he runs the company Blade Solutions.

The cold climate creates challenges for wind farms being built in northern regions as icing on the blades leads to unplanned shut-downs and reduced produc-

tion. The former researcher Greger Nilsson from Norrfjärden has developed and patented methods to remedy the problems. Now he runs the company Blade

Solutions, which specializes in repairing heating systems on the wings of wind turbines.

- If you get as little as five millimeters of ice on the wing, you halve the turbine effect. Sometimes the ice can fall down by itself, but often you have to stop the work until the next one. You save enormous money if you remove the ice, says Greger Nilsson.

For many years, wind turbines have been manufactured with installed systems to keep the blades

ice-free. When the wind power revolution took off in earnest about ten years ago, Greger Nilsson discovered that there was a lack of developed methods for maintaining and repairing these systems, which led him into the wind power industry. In 2013 he started Blade Solutions.

- Around 2010, a large expansion of wind power began. Even then, there were de-icing systems installed, but there were no methods to fix them. I spent a winter devising repair methods for

these systems. There was a lot of interest, so I took out a patent for the method I developed, and that's what we make a living from today, says Greger Nilsson.

The system that Greger Nilsson developed is based on connecting power to carbon fiber. The thinness of the material makes it difficult to work with, and many other engineers and companies have tried to operationalize methods for repairing the wind turbines' heating systems, but have failed.

“ Many have tried but failed. It is very expensive when you fail at something and then you may have to replace the entire blade.

Greger Nilsson

- Our method involves putting a very thin layer of carbon fiber to which you apply power, much like in the rear window of a car. It is 0.2 millimeters thick,

which makes it difficult to work with. Many have tried but failed. It is very expensive when you fail at something and then you may have to replace the entire blade. Then it costs millions. We developed a method that works and ten years later it still works.

The work itself is not suitable for those who are afraid of heights. Greger Nilsson and his colleagues use climbing equipment and with the help of motorized ropes they climb up to the wings to be repaired,

which means they work at a height of around 100 meters.

- In order to be able to work, I started taking courses in industrial climbing. You hang from a rope and then you have a backup if the main rope should break. The works are between 100-140 meters high. We use rope mops and drive with a small engine from the ground up, he says and continues:

- Working at high altitude is not exactly natural, but you learn. We also have good stuff and only work when

the weather is good. If it's windy or raining, there will be no work. A lot of time is spent waiting for the right weather, but it's safer that way.

Greger Nilsson has a background as a researcher in plastics and composites, which is also the material used to build the wings of wind turbines. The interest in composites in particular came from Greger Nilsson's long-standing passion for sailing and skiing, which made him focus on this material in his studies, first

at bachelor's level and then as a researcher.

- I have been skiing and sailing a lot for a long time, and both skis and boats are built from composites. When I was a student, I therefore read lots of courses in plastics and composites. It is easier to study if you are interested in what you are reading, and then it came naturally that I did my ex-job at what is today RISE in Öjebyn. I became an industrial PhD student and then continued as a researcher, he says. Today, he performs most

of the work for Skellefteå Kraft, where he services their wind turbines. - Skellefteå Kraft has around 150 wind turbines scattered in Malå, Storuman and Arjeplog. All of their works have the type of de-icing system that we work with.

Greger Nilsson's methods also attract attention abroad, and in 2022 Blade Solutions was hired to repair wind turbines in Canada. Despite positive experiences, however, Greger Nilsson prefers to work

closer to home in Norrfjärden.

- Last autumn we went to Canada to work. They had the same problems where many Canadian companies have tried and failed to solve these problems. It was fun working there but I want to work locally.

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