Are your assets frozen by icing ?

Icetek

Stay ahead of the storm with the IC-1

We provide innovative solutions for the wind energy sector, specializing in **atmospheric icing detection**. By detecting these conditions **several hours before** the wind turbines are affected, wind farm operators and owners are able to implement proactive strategies, thereby ensuring better performance.

Our flagship product is **an ice sensor** (IC-1) specifically engineered for wind turbines. Developed through over 15 years of intensive research, this technology has been deployed in over 25 wind farms, demonstrating exceptional performance even in the harshest conditions. Its unparalleled reliabilty and robustness have facilitated rapid adoption throughout North America.

The IC-1 sensor is strategically installed on the wind turbine's nacelle, allowing it to **cover an area with a radius of a few kilometers** and provide comprehensive on-site meteorological data.

The IC-1 sensor provides a comprehensive overview of conditions using typical meteorological data (temperature, wind speed and direction, atmospheric pressure, solar radiation) and ice-specific data (**LWC, event severity, ice thickness and ice type**). The synergy of this data, through algorithms developed by Icetek, enables wind farm operators to make informed decisions to optimize turbine operations.

Our IC-1 sensor enables:
● Smart activation of anti-icing and de-icing systems.
● Implementation of ice operation turbine control modes and other alternative operational strategies.
● Intelligent temporary halting of turbines during icing events.
● Informed decision-making regarding ice throw risks.
● Referencing turbine performance to observed meteorological conditions.

Case Study 1
Eastern Canada

Early Ice Detection with Anticipatory Blade Heating

Activate anti-icing systems upon initial ice detection to ensure blades are preheated for optimal performance during the oncoming icing event.

Optimize your heating

Blade heating activation

Increased production

Operational knowledge

Unnecessary heating reduction

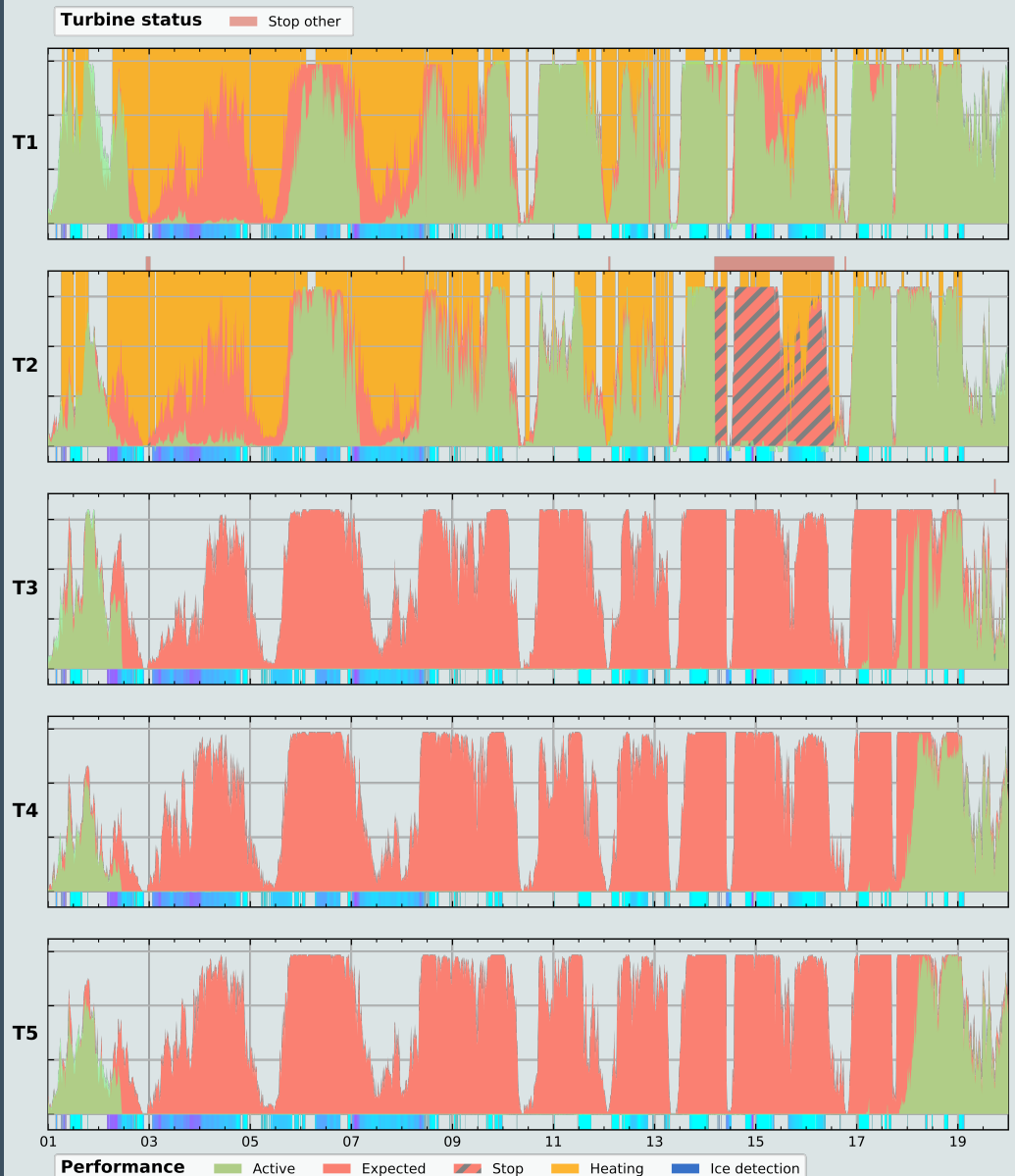### +485 MWh
Additional energy produced per wind turbine

-28 MWh
Heating consumption

+457 MWh
Net gain per turbine

+6% AEP
In a single event

Turbine status — Stop other

T1

T2

T3

T4

T5

01 03 05 07 09 11 13 15 17 19

Performance — Active — Expected — Stop — Heating — Ice detection
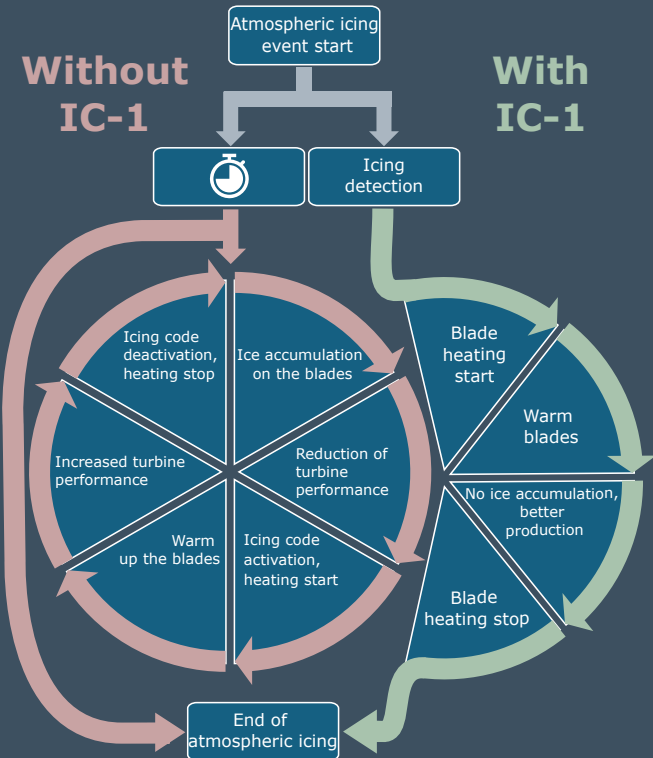
Improve heating strategies for better efficiency

Contrasting turbine heating strategies: status code triggers from WTG vs. advanced ice sensor detection/activation.
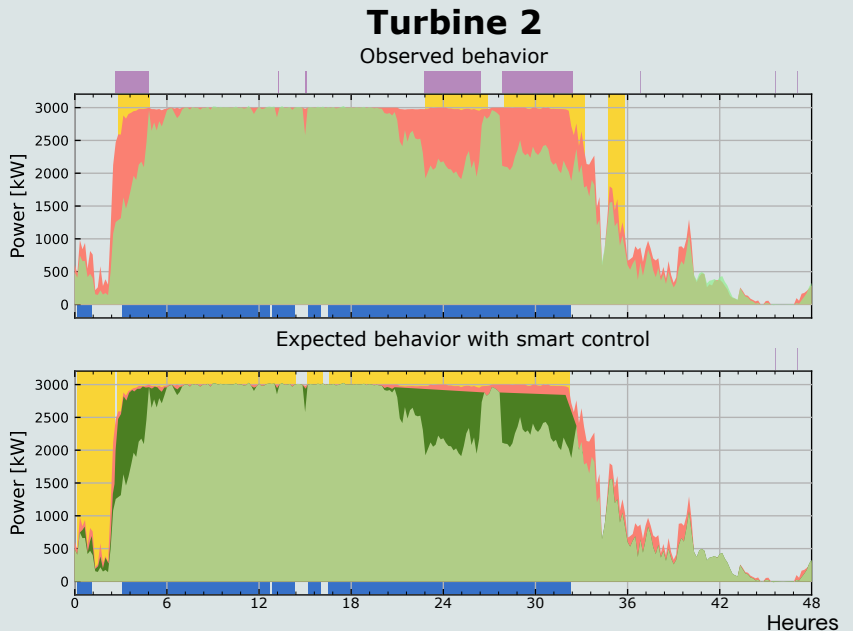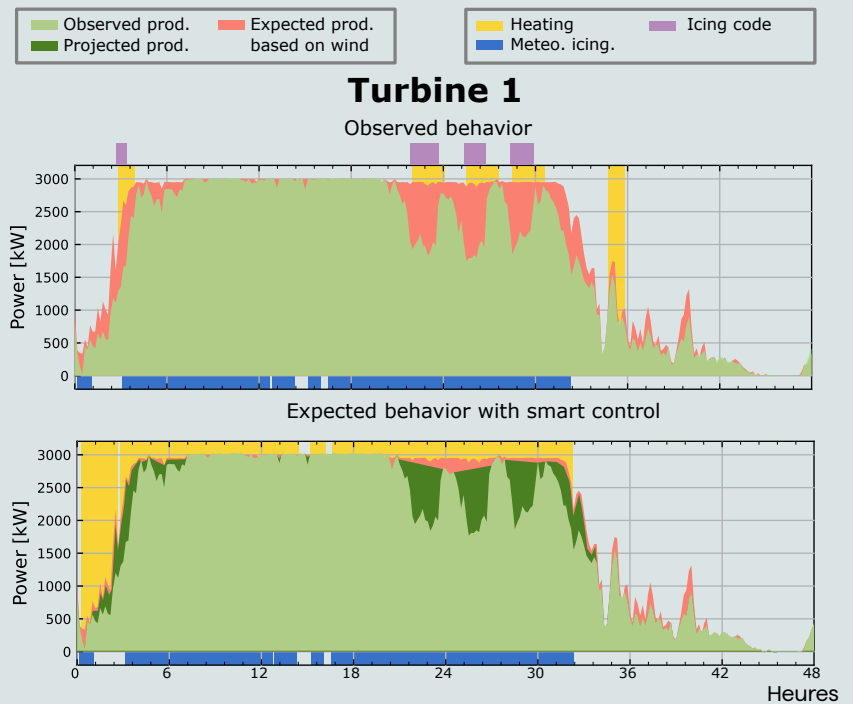
Break the cycle

Without IC-1 / With IC-1

Atmospheric icing event start

Icing detection

Ice accumulation on the blades
Reduction of turbine performance
Icing code activation, heating start
Warm up the blades
Increased turbine performance
Icing code deactivation, heating stop

Blade heating start
Warm blades
No ice accumulation, better production
Blade heating stop

End of atmospheric icing

+11 MWh
Additional energy produced per wind turbine

-1 MWh
Heating consumption

+10 MWh
Net gain per turbine

Legend: Observed prod. | Expected prod. based on wind | Heating | Icing code | Projected prod. | Meteo. icing.

Turbine 1
Observed behavior

Expected behavior with smart control

Turbine 2
Observed behavior

Expected behavior with smart control

Icetek

Benefits and advantages

Owners and operators

• Proactive measurement of icing events and their intensity
• Proactivity vs. reactivity
• Optimization of asset performance
• Increased profitability and maximization of value
• Enhanced predictability through real-time data
• Improved safety and extended asset lifespan

Manufacturers

• Access to real-time meteorological data
• Optimization of heating system control
• Maximization of heating efficiency
• Reduction of heating costs
• Elimination of icing detection errors
• Enhanced profitability

Advanced data analysis

Thanks to our advanced analytical tools, we collect, process, and interpret the data generated by your wind turbines, providing valuable insights to optimize energy production and reduce your operational costs. Our team of experts deeply analyzes trends, patterns, and anomalies, and accurately calculates losses due to icing and the performance of your heating solutions, in order to provide clear and personalized recommendations.

Our mission

Our mission is to provide the wind industry with powerful tools to maximize energy extraction while enhancing safety. By using our innovative meteorological detection, control, and analysis solutions, we are able to optimize your operations based on accurate and reliable data.

Proactive action plan

Blade heating trigger

Redution of unnecessary heating

Preventive stop minimizing icing

Operational knowledge

Reduction of icing damages

Improved on-site safety

Increased production

Contact us

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