



SIEMENS



# Siemens Wind Power Blade De-icing

20 years of experience with blade de-icing

Bo Birkemose, Product Lifecycle Management

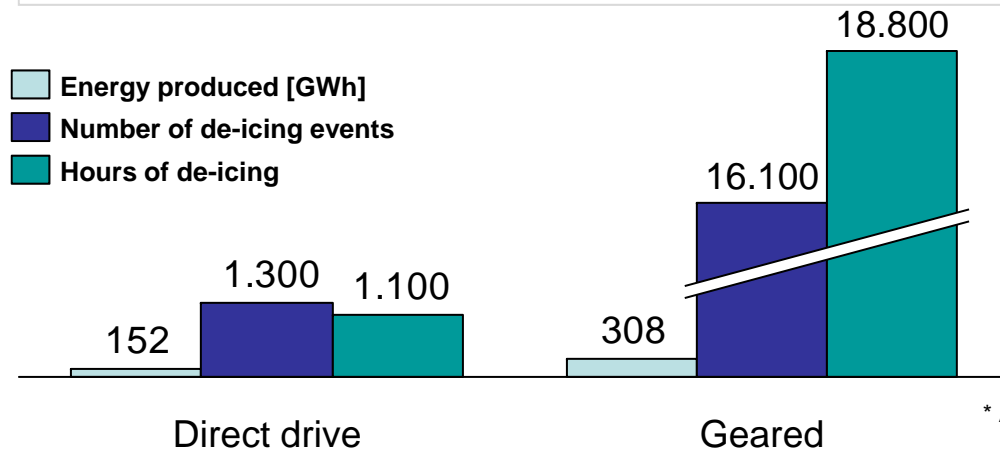
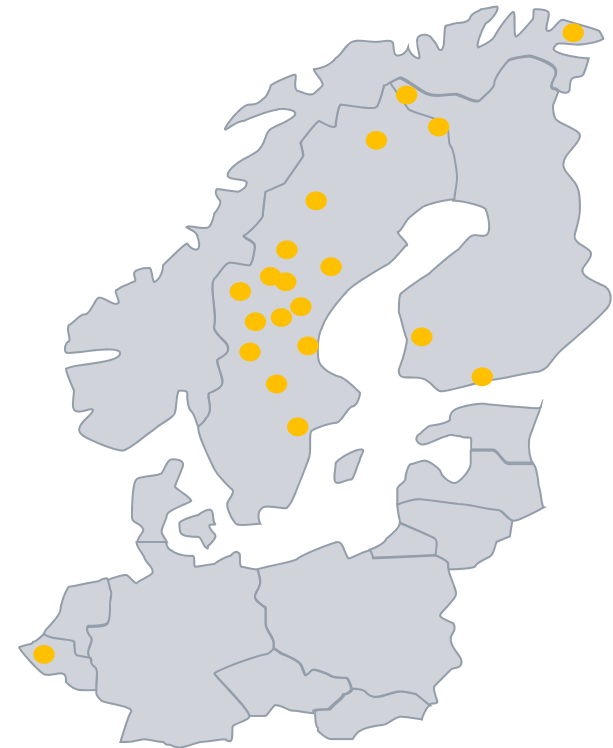
## Discussion points

- Siemens Wind Power fleet in operation
- Market potential and future system development
- Performance warranties

# Siemens Wind Power Projects sold with de-icing

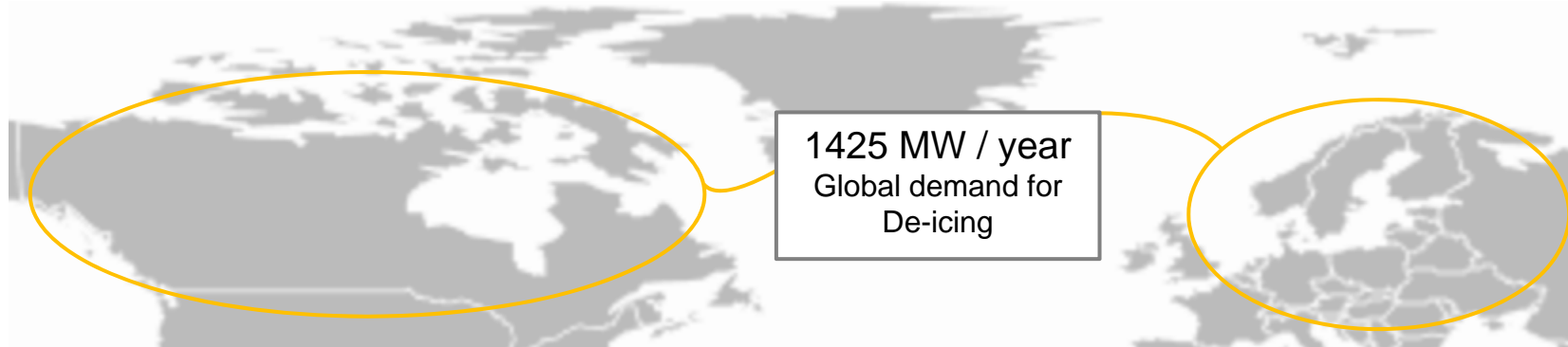
## Installed and contracted projects

- *Previous platforms: 18 units (1994 -1999)*
  - Bonus 150kW, Bonus 450kW, Bonus 600kW, Bonus 1MW
- *Direct Drive platform: 221 units (2013 -2015)*
  - SWT-3.0-113 , SWT-2.3-113, SWT-3.0-101, SWT-3.2-113 2A
- *Geared Platform: 61 units (2011 - 2013)*
  - SWT-2.3-101



\* Accumulated numbers during period of winter 2013 and 2014

## Market potential for de-icing



A well-functioning de-icing system is a “must” in Scandinavia, where it is required on:

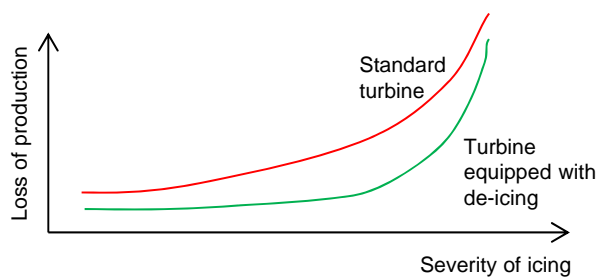
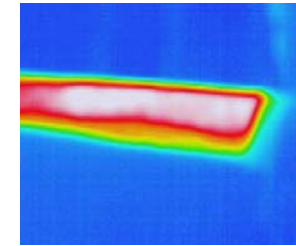
- approx. 75 % of the Swedish projects => 450 MW per annum
- approx. 50 % of the Finnish projects => 100 MW per annum
- approx. 33 % of the Norwegian projects => 200 MW per annum

Demand also requested in

- approx. 25% of the Belgian projects => 100MW
- approx. 25% of the Austrian projects => 75MW
- approx. 25% of the Canadian projects => 200 MW
- approx. 10% of the German projects => 300MW

# Performance warranties

- When will customers take benefit of de-icing systems
  - Increased energy production
  - Extended lifetime
  - Less repair work needed
  - Better safety
  
- Industry need of common approach
  - Standardization of icing conditions
  - Standardization of validation of methods for performance



The image features a background of a wind farm at sunset. The sky transitions from a deep purple at the top to a bright orange near the horizon. Silhouettes of wind turbines and a line of trees are visible against the bright part of the sky. In the top left corner, there is a dark blue vertical bar. A white horizontal bar is positioned below the Siemens logo. The Siemens logo itself is in a teal color.

**SIEMENS**

Thank you for your attention

[www.siemens.com/wind](http://www.siemens.com/wind)