

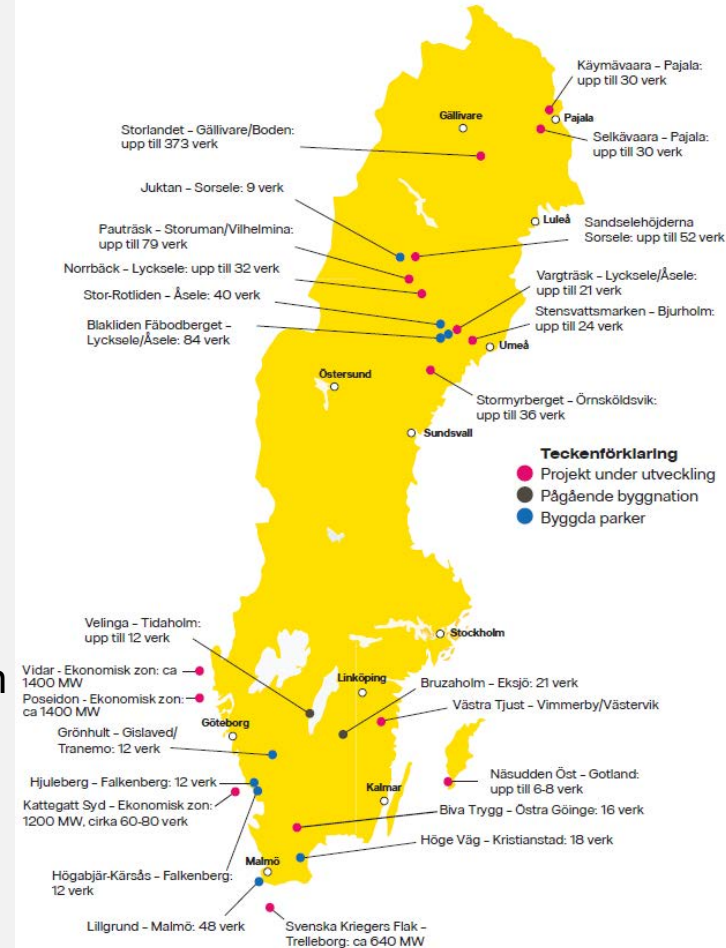


# Summary of Winterwind 2024

2024-03-20 Are  
Jennifer Pettersson,  
Senior R&D Engineer

# Vattenfall

- One of Europe's largest producers and retailers of electricity and heat
- ~20 000 employees
- Sweden, Netherlands, Germany, Denmark, UK etc
- 4.5 GW installed capacity wind power
  - 40% Onshore
- Continued strong interest in northern part of Sweden
- Interest in Offshore and cold climate in the Baltics



# Winterwind 2024

2024 · Åre · Mar 18-20

 **Winterwind**  
INTERNATIONAL WIND ENERGY CONFERENCE

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SWEDISH  
**WINDPOWER**  
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Main topics

• The real cost of icing

- Safety
- Forecasting of production loss
- Prediction of icing
- Operational strategies
- Development
- Performance of IPS
- Environment

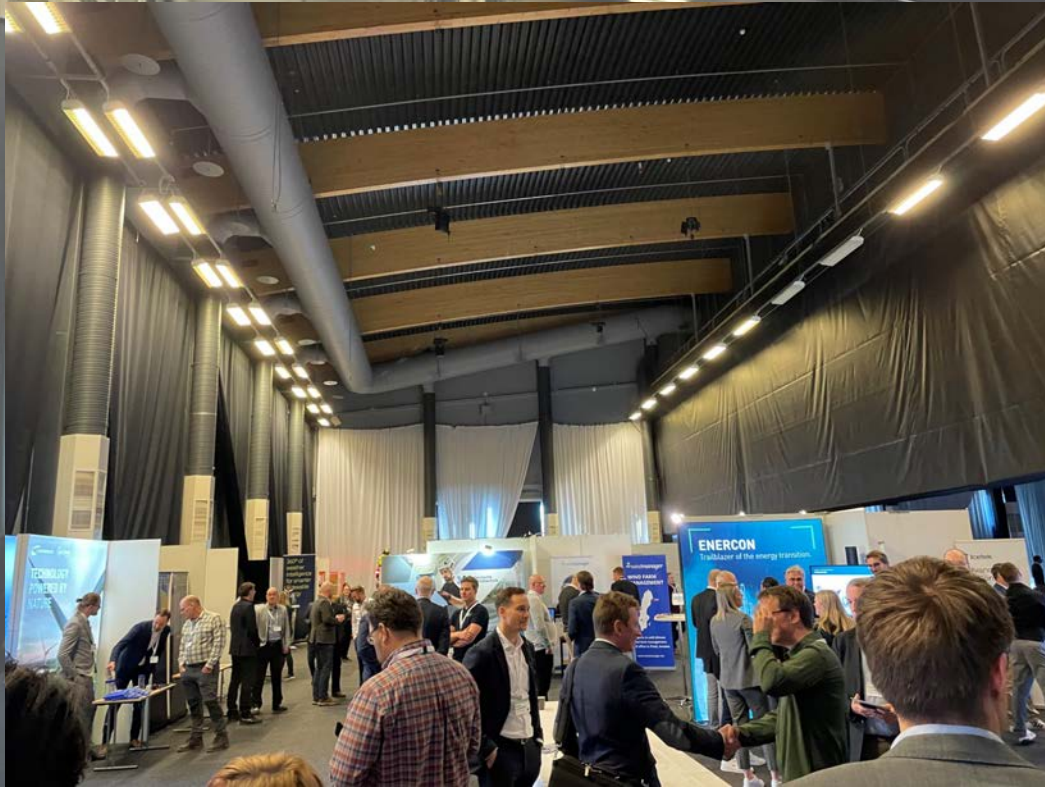
Participants ~250

Nationalities 17

Presentations 41



# Exhibitors



OEMs  
Ice detection manufacturers  
Retrofit IPS  
Inspection  
Services  
Management  
Etc..

# Fieldtrip

- Hocksjön wind farm, Jämtkraft
  - 23 WTGs
  - No blade heating?!?!
- Ragunda battery storage, Neoen



# Workshops

*How turbine design may reduce ice fall risks for personnel, Kjeller Vindteknikk/Norconsult*



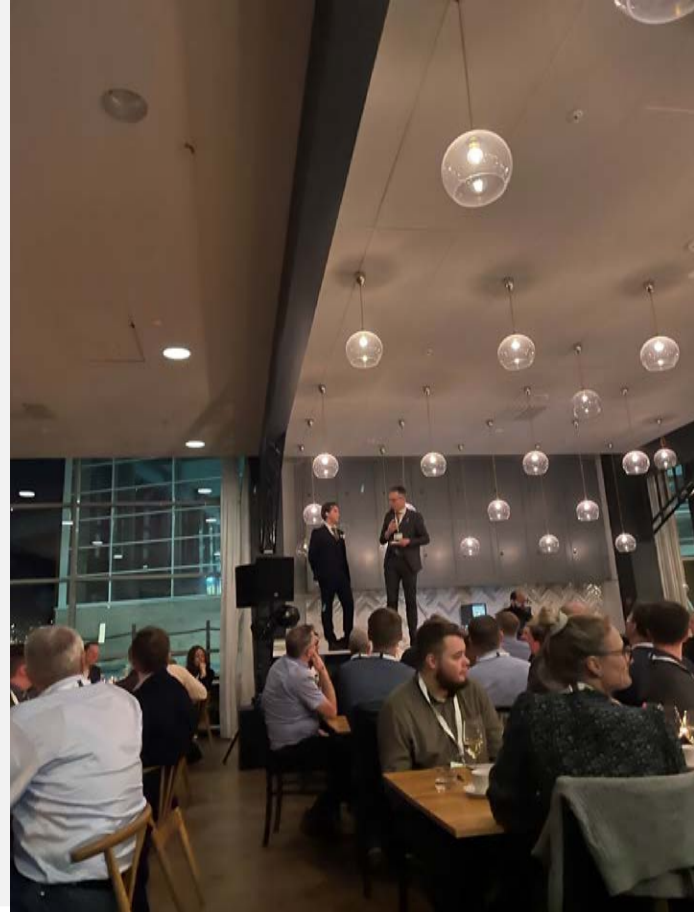
*Performance envelopes of blade heating systems, subtask IEA Wind Task 54 (Claas Rittinghaus)*



# Highlights

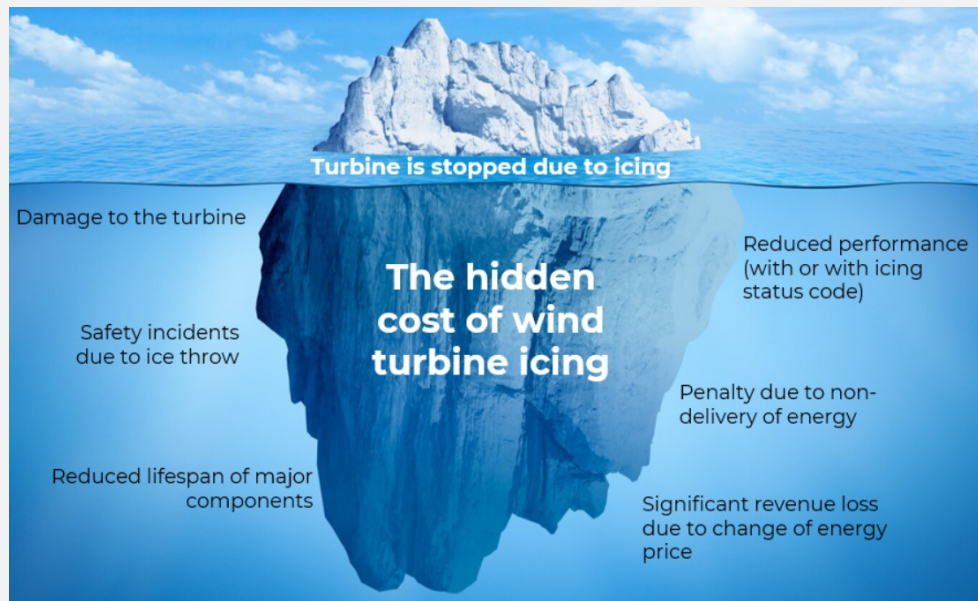


Confidentiality: C1 - Public



# So, do we now know "the real cost of icing"?

- Focusing on the economics
- Complexity increases with volatility in the market
- "Hidden" losses
- Reliable IPS and ice detection systems
- Optimizing production and/or optimizing revenue?
- Smart operations, including price forecasts as well?



Picture from Daniela Roeper, FabricAir



# A short "wishlist" for next year

- Forecasting and validation examples
- Tighter collaboration between OEMs and operators
- Control strategies
- More offshore? Sea icing?
- Continue to be open about real operational data



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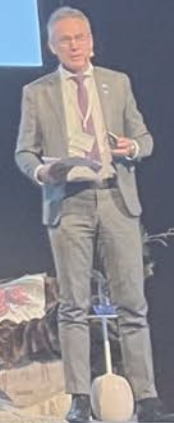
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# A special thanks to

**Per Olofsson &  
Swedish Wind Power  
association**

**Göran Ronsten  
& The program  
committee**



A wide-angle photograph of a snowy mountain landscape under a clear blue sky. In the foreground, a snow-covered slope leads up to a large, rectangular building almost entirely covered in snow. A sign on the building reads "KABINBAHAN". To the left of the building, a smaller, snow-covered structure is visible. In the distance, a few people are seen walking on the snow. The text "See you next year..." is overlaid in white, bold font across the center of the image.

See you next year...