

De/anti-icing warranties – a utility perspective

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None (C1)

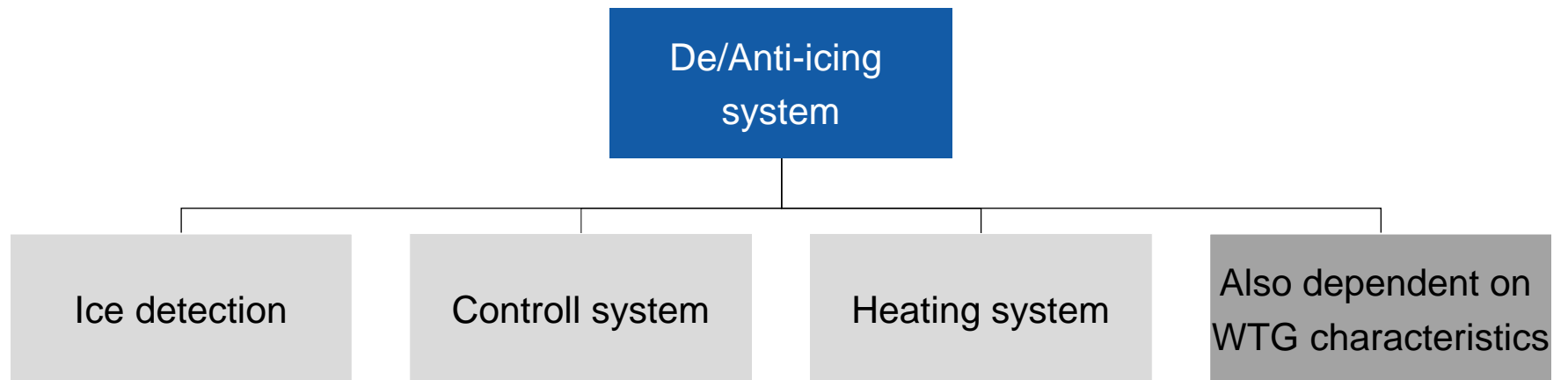
Agenda

1	Background
2	Definition of a de/anti-icing system
3	Need of warranties
4	How to warrant
5	Value of warranties

Background

- Icing climate in the north of Sweden is harsh
- Profitable investments in these areas need well performing de/anti-icing systems
- To be able to take investment decisions one needs to be confident that the de/anti-icing system will provide a high performance

A de/anti-icing systems subsystem



Need of warranties

- General lack of confidence from the industry
 - Limited track record of (most) systems available
 - Few third party assessments
 - Problematic with data for own assessments
- To facilitate investments, risks for the investor need to be mitigated
 - Best knowledge possibility of the system is the system supplier (= turbine supplier)

How warranties can be given

- Accumulated icing loss warranty (system performance warranty)
 - A limit on the maximum loss related to icing

- Sub-system performance warranty
 - Warranty of the performance of the heat application
 - For anti-icing system, ability to keep heated areas ice free
 - For de-icing system, ability to remove ice within a given limited time
 - Warranty of the performance of the ice detection
 - Ability to set the parameters in the control system

Value of warranties

- The de/anti-icing system is not only a sub-system to the turbine, or a prerequisite for projects to be realised
- Suppliers who give extensive warranties will have significantly higher possibilities to win tenders, compare to suppliers who only provides lesser warranties
- Delivering projects with de/anti-icing system today highly increases their chance of winning projects in the future

Further work and challenges

- Standardisation work would help, to facility warranties
- Experience and knowledge sharing

To be able to give the best warranties possible the supplier needs

- Increased track record
- Additional third party assessments
- Further understanding of the impact of different site conditions

Thank you for your attention

Let us know how you want to cooperate