



Overview of IEA Wind Task 19 results from 2013-2015

WinterWind 2016, 9-10.2.2016, Åre ,Sweden

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Outline

- What is IEA Task 19?
- Main achievements of working period 2013-2015
- Quick view to 2016-2018 activities
- Conclusions & next steps

What is IEA Wind R,D&D Task 19?

- Task 19 – Wind Energy in Cold Climates – expert group
- Working group for
 - Acquaring information on the cold climate wind energy topic
 - Writing recommendations
 - Disseminating information
 - International research collaboration
- Task worked since 2002
- Next term 2016-18 beginning
 - Newest members: Norway & UK



Main achievements 2013-2015

1)

T19IceLossMethod

T19IceLossMethod free software

- **Why need?**

1. Compare different icing site severities with each other
2. To validate the IEA Ice Classification
3. Evaluate effectiveness of various blade heating systems versus non-heated systems

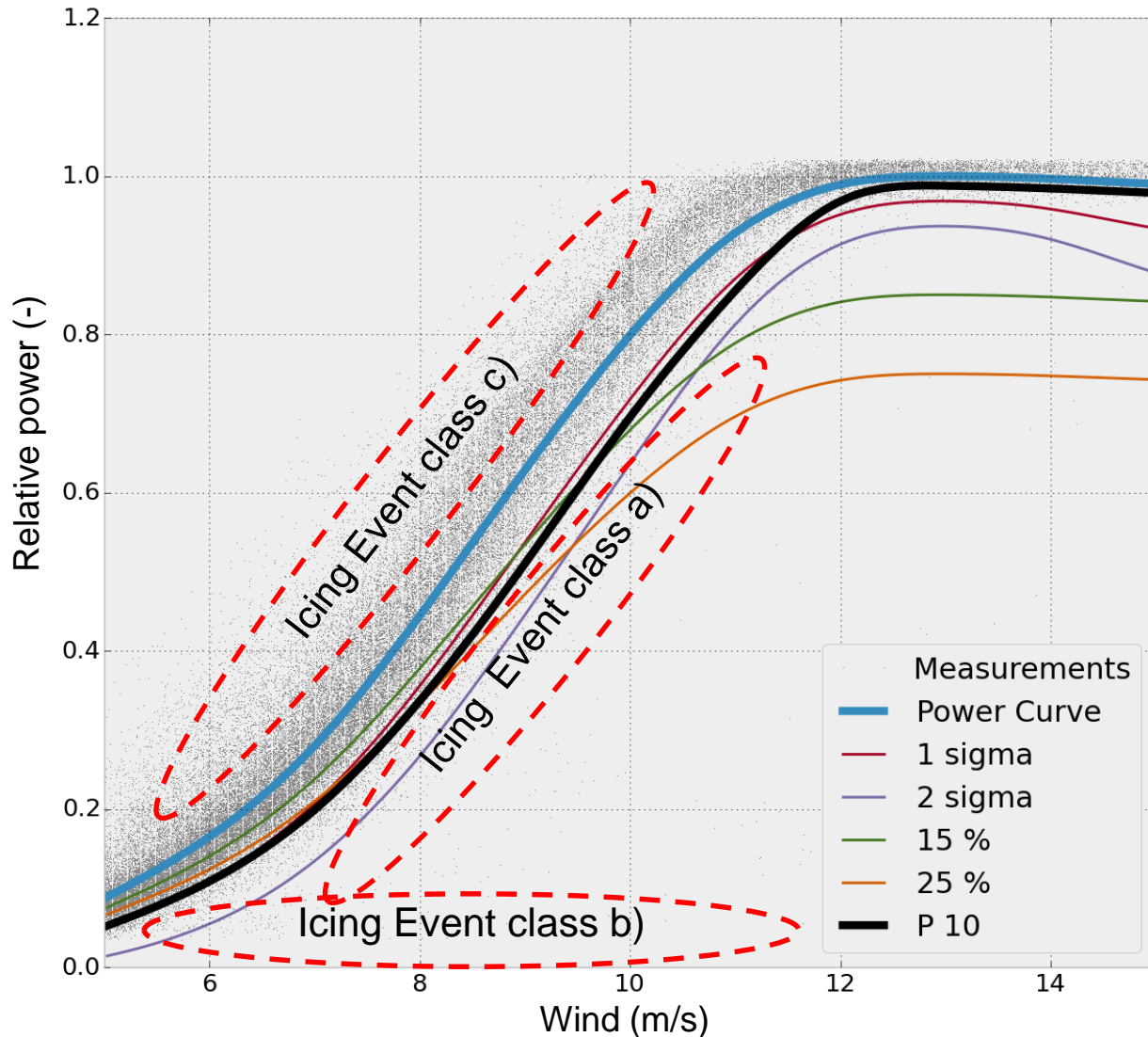
- **The Goal:**

1. Develop and validated a robust method to assess icing losses from standard SCADA data
2. The method should 1) focus on robustness and 2) minimize the uncertainties from false icing event alarms
3. Maximize easiness of calculating production losses for any SCADA dataset with a free software




T19IceLossMethod free software

- The Approach: Different Icing Event classes




Download free T19IceLossMethod here!





iea wind

Research Task Web Sites	Cooperative Agreement	Activities and Accomplishments	Country Activities	IEA Publications	IEA Wind Members	IEA Wind Home Page
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Task 19 Wind Power in Cold Climates

Task 19 Navigation

- [Task 19 Public Home Page](#)
- [Next Meeting](#)
- [Participation](#)
- [Participating Members](#)
- [Work Plan](#)
- [Task Operating Agent](#)
- [Open source software T19 Ice Loss Method](#)

Welcome to Task 19 Ice Loss Method Software start up page

T19IceLossMethod -
A standardized method to assess production losses due to icing from wind turbine SCADA data. This site describes a method to assess production losses due to icing based on standard SCADA data available from modern wind turbines. An open source software using Python code is publically available based on the method. To download the software,

Email username and password request to [Ville Lehtomaki](#)

Registration information includes:

- o First name
- o Last name
- o Valid email address
- o Country
- o Employer (company, institute etc).

Publications Resulting from Task 19 Work:

IEA Wind Recommended Practices 13. Wind Energy Projects in Cold Climates (1. Edition 2011) a pre-normative recommended practice that includes actions and procedures for wind energy projects in cold climates recommended by the experts involved in the Task 19.

Task 19 Recommended Practice [13. WIND ENERGY PROJECTS IN COLD CLIMATES](#)

IEA Wind Task 19 State-of-the-Art of Wind Energy in Cold Climates (2012 Edition) summarizes existing experiences and state-of-the-art

2)

Available Technologies - report

Available Technologies - report

Objective

- summarize available state-of-the-art cold climate wind energy solutions
- "compare & pick" your CC solution need

Target audience

- project engineer
- researcher/consultant working for developer

Gives

- Easy summary tables as core "beef"
- Entire CC value chain included

Next edition update in progress

- Launch in 2016



Download free previous 2012 edition
http://www.ieawind.org/task_19.html

Example: Ice detection summary table

Mast/nacelle detection

Detector manufacturer	Technical description	Applications		Sold items	References
HoloOptics T40 series		Meteorological icing:	x		<u>Paper:</u> [12], [13]
		Instrumental icing:			
		Icing rate:	x		<u>Perf.:</u> [14], [15]
		Icing severity:			
		Used for turbine control *:			
Combitech IceMonitor (ISO Cylinder)		Meteorological icing:	x		<u>Paper:</u> [12], [13], [17], [18], [19]
		Instrumental icing:	x		
		Icing rate:	x		
		Icing severity:	x		<u>Perf.:</u> [14],[15]
		Used for turbine control *:			

Example: CC turbines summary table

					IceProtection System		N of refs			
	<u>1^sLTC</u>	<u>LTC</u>	<u>Ice</u>	<u>IOM</u>	<u>Method</u>	<u>1st</u>	<u>instal</u>	<u>Jou</u>	<u>Per</u>	<u>Oth</u>
	<u>proto</u>	<u>[MW]</u>	<u>Dect</u>			<u>proto</u>	<u>[MW]</u>	<u>r</u>	<u>f</u>	
<u>OEM B</u>	<u>1996</u>	<u>50</u>	<u>TH</u>	<u>x</u>	<u>BB/IC</u>	<u>1999</u>	<u>20</u>	-	<u>3</u>	<u>3</u>
<u>OEM C</u>	<u>2002</u>	<u>700</u>	<u>NI</u>	<u>X</u>	<u>ET/PS</u>	<u>2012</u>	<u>50</u>	-	<u>2</u>	<u>3</u>
<u>OEM D</u>	<u>2008</u>	<u>500</u>	<u>PC</u>	-	<u>HA</u>	<u>2014</u>	<u>300</u>	-	-	<u>3</u>
<u>OEM E</u>	<u>2006</u>	<u>400</u>	<u>NI</u>	-	<u>ET</u>	<u>2008</u>	<u>600</u>	-	<u>1</u>	-
<u>OEM F</u>	<u>2001</u>	<u>500</u>	<u>PC &</u> <u>BF</u>	<u>X</u>	<u>HA</u>	<u>2014</u>	<u>180</u>	-	-	<u>4</u>

PC = Power Curve ice detection

NI = Nacelle based ice detection

TH = Temperature and humidity

BF = Blade frequency ice detection (or just rotor blade)

HA = Hot air ice protection system

ET = Electro thermal ice protection system

BB = Black blades

IC = Ice phobic coating

PS = Preventive shutdown

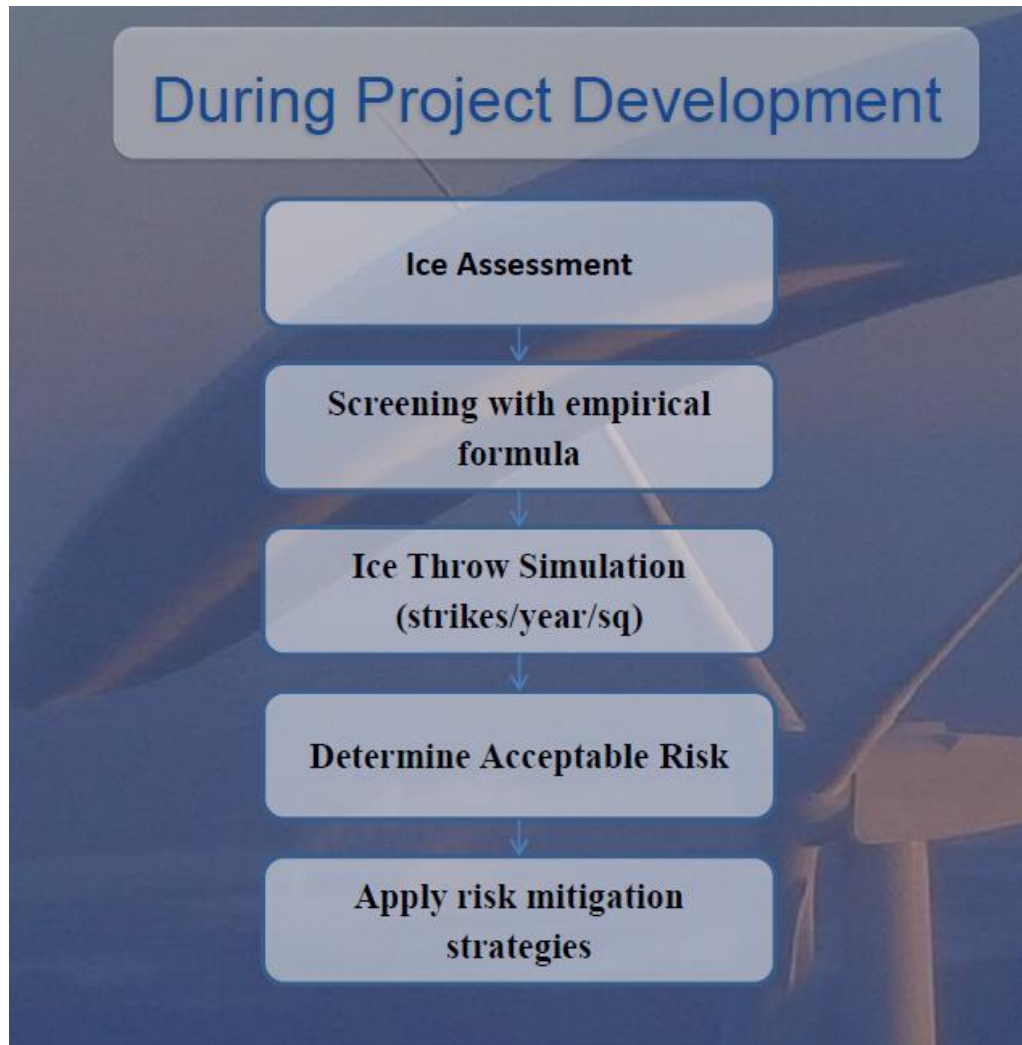
3)

Recommended practices- report

IEA Ice Classification

Validation of Ice Classification in René Cattin's presentation later...

Ice throw guidelines



What is Task 19 doing in 2016-2018?

IEA Task 19 topics for 2016-2018

Deliverables

Topic	Content	2016	2017	2018
Deployment	Market study update for 2016-2020	■		
Standardization	International standard IEC 61400-15 “Site energy yield assessment” CC aspects			■
	T19IceLossMethod valid. & development			■
	Laboratory and full scale testing			■
	Ice protection system performance evaluation guidelines		■	
Ice meas. & mapping	Ice mapping			■
	Ice sensor classification			■
Safety	International ice throw guidelines			■

Conclusions

- Main achievements of working period 2013-2015
 1. T19IceLossMethod free software
 2. Available Technologies – report (ed 2016)
 3. Recommended Practices – report (ed 2016)
- Task 19 will heavily focus on standardization in 2016-2018!
- Want to join Task 19?
Please contact Ville!!



The screenshot shows the homepage for IEA Wind Task 19, titled "Wind Power in Cold Climates". The URL is http://ieawind.org/task_19.html. The page features a navigation menu with links for Research Task Web Sites, Cooperative Agreement, Activities and Accomplishments, Country Activities, IEA Publications, IEA Wind Members, and IEA Wind Home Page. A search bar is located in the top right corner. The main content area includes a "Task 19 Navigation" sidebar with links for Public Home Page, Participation, Participating Members, Objectives, and Work Plan. The main text welcomes visitors to the Task 19 Home Page and describes the project's purpose: to gather and provide information about wind energy in cold climates, including project development, operation and maintenance (O&M), health, safety and environment (HSE), operational experiences, and recent research. It notes that cold climate areas are regions where icing events or periods with temperatures below the operational limits of standard wind turbines occur, which may impact project implementation, economics and safety. A Google Custom Search bar is also present.

Thank you!

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Only for
Cold Climate
experts