

**RI
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NEXT GENERATION DE-ICING

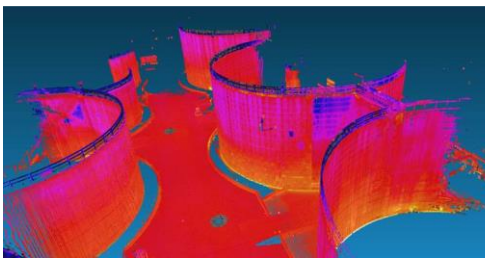
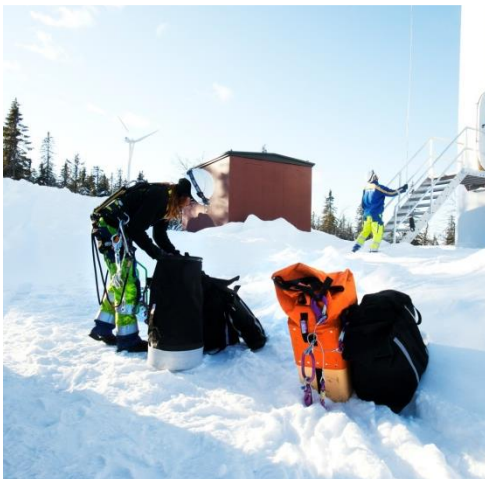
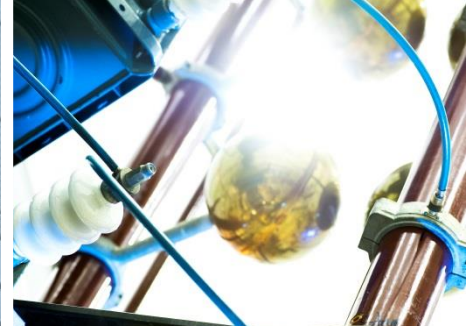
Tanja Tränkle

February 2017

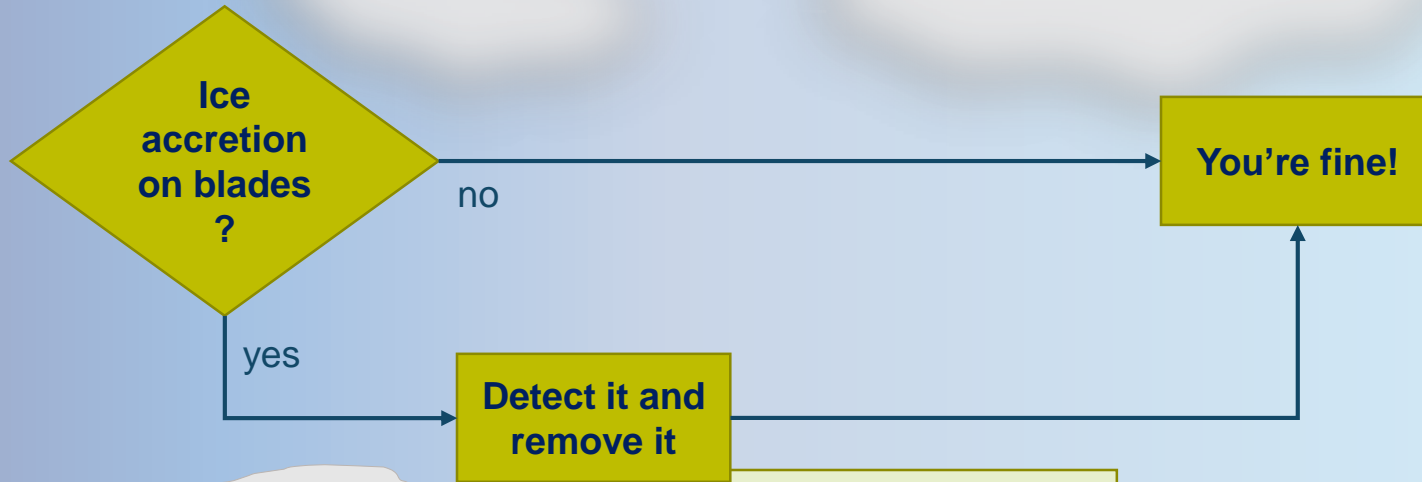
RISE Research Institutes of Sweden

Renewable Energy

Wind Power



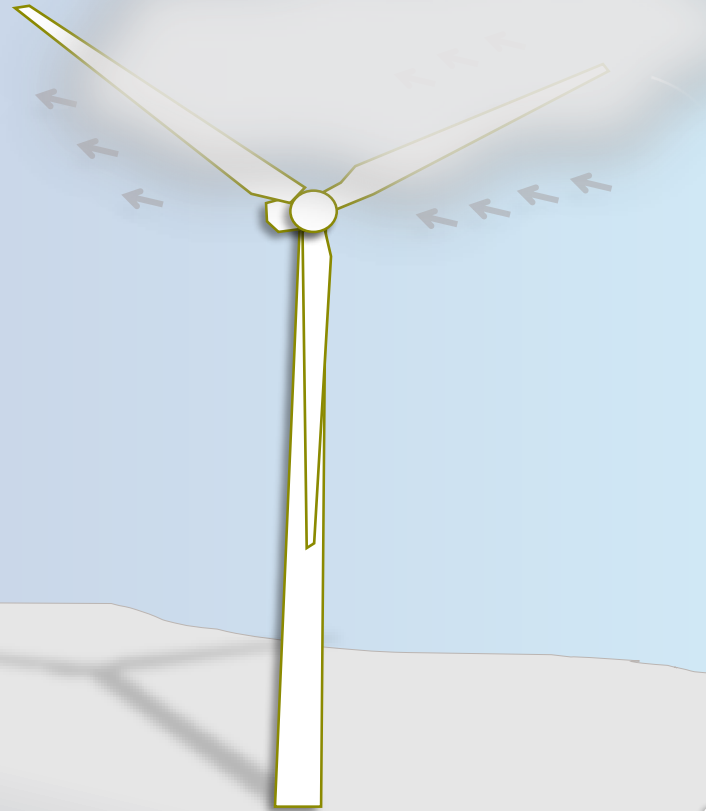
Isn't it easy...?



- continuously
- reliably
- efficiently
- during normal operation
- with least energy possible

Imagine...

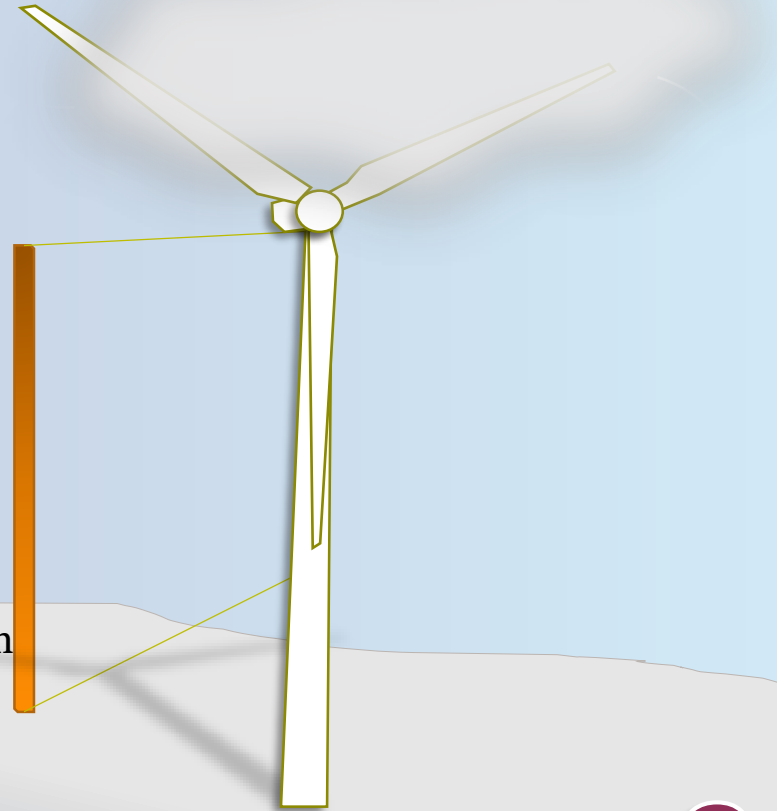
- ...if we could transform kinetic energy from moving air into instant thermal energy at the blade surface?
- ...a coating that is absorbing energy from small air movements around
- ...energy to keep the right spots of the surface of the blades at a temperature high enough so no ice can accrete



1

Imagine...

- ...efficient de-icing solution, working at normal operation
- ...a solution without moving parts
- ...if ice was removed efficiently from each blade whilst passing the tower at whatever operational rotational speed
- ...the activating device integrated within the wind turbine tower

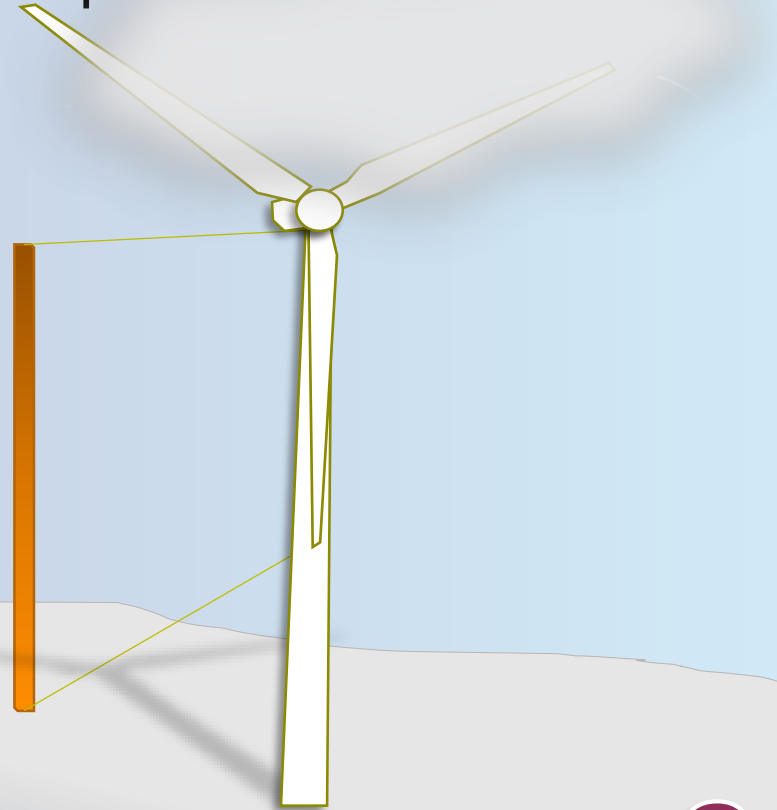


2

Tower Integrated Ultra High Speed Blade-by-Blade De-Icing

Which technology could be useful?

- Laser?
- Magnetic induction?
- Microwaves?
- Contactless power transfer system?
- ...?

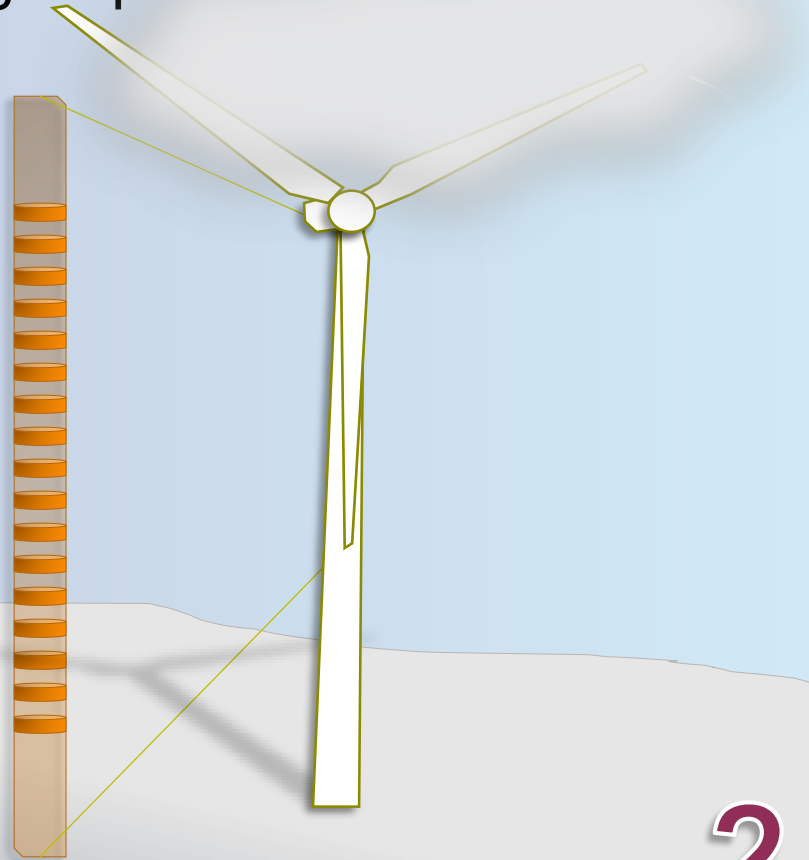


2

Tower Integrated Ultra High Speed Blade-by-Blade De-Icing

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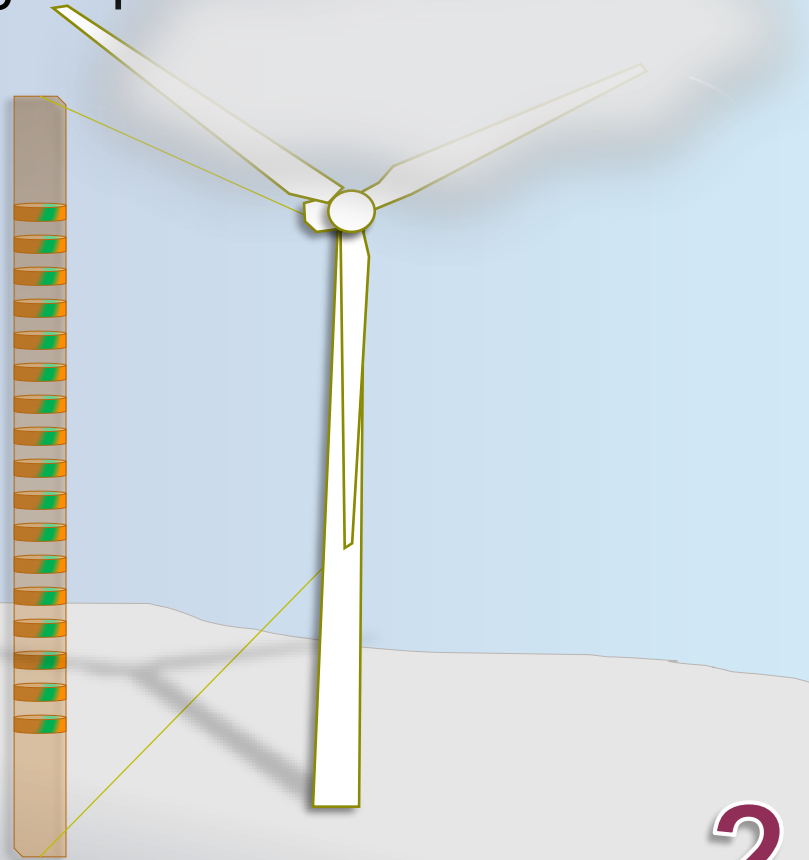
- Laser?
- Magnetic induction?
- Microwaves?
- Contactless power transfer system?
- ...?



Tower Integrated Ultra High Speed Blade-by-Blade De-Icing

Which technology could be useful?

- Laser?
- Magnetic induction?
- Microwaves?
- Contactless power transfer system?
- ...?



2



COLD CLIMATE ...JUST IMAGINE!

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