Villinger research & development

Villinger GmbH
Gewerbepark 6
6142 Mieders, Austria

Mail: info@villinger.com
Tel: +43-5225-64455
Web: www.ldi.aero

RISP - Rotor Ice Shed Protection

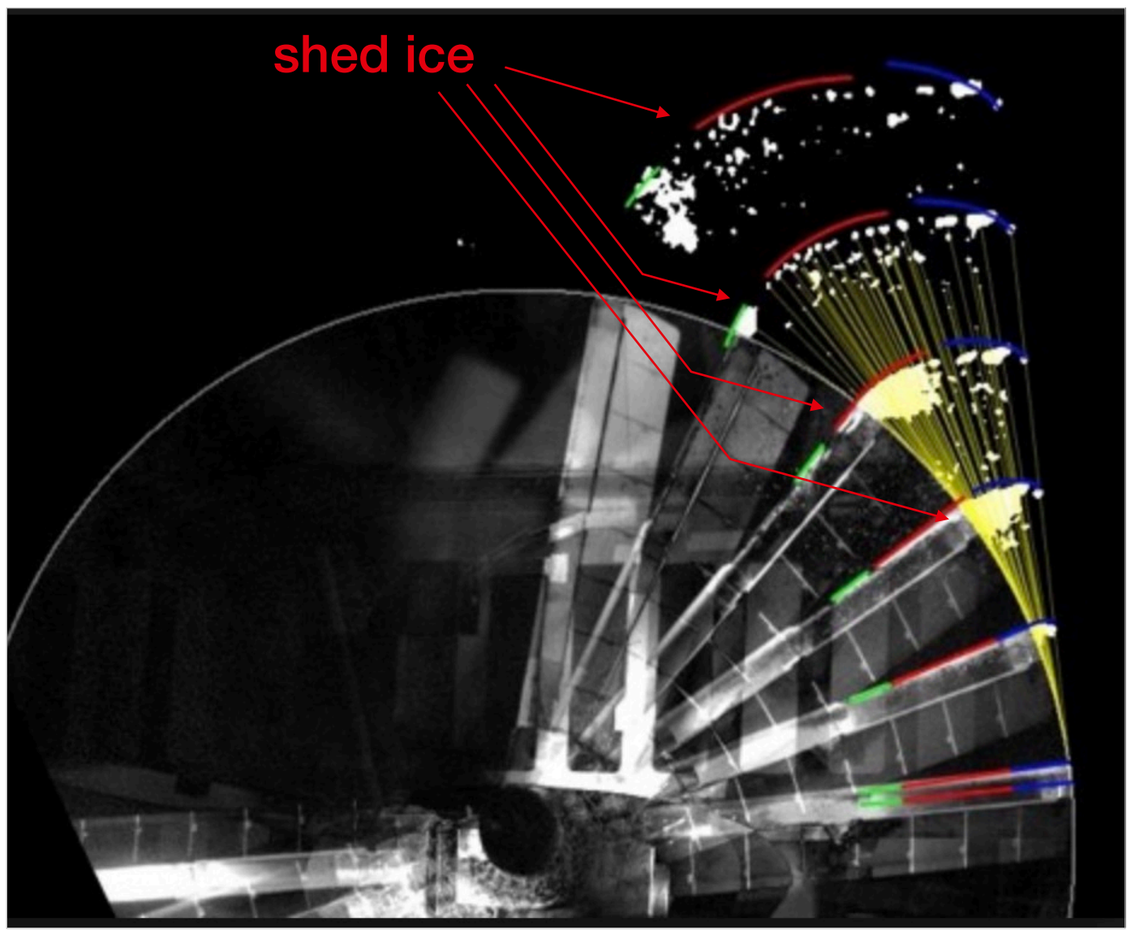
Patent pend. A50377/2017

The problem: Shed ice from rotor blades can be a ballistic concern in several applications

Geared jet engines:	internal and cowling damage
Tilt rotor aircraft:	damage fuselage
Helicopter tail rotor:	damage fenestron
Multi engine aircraft:	damage fuselage
Wind turbines:	danger to humans and animals

Stages of rotor ice impact phenomenon:

- Delamination
- Shedding
- Break up
- Trajectory



The solution: RISP rotor shed ice protection system

A protection system to prevent hazardous ballistic impact from rotor shed ice named RISP (Pat p. A50377/2017) has been developed by Markus Villinger and Jose Palacios. RISP is capable to prevent from large pieces of ice sliding off the tip of the blade after delamination.

RISP systems may be designed for a wide variety of Rotors - often even as a retrofit system and may be used in combination with other ice protection systems.

Ice fall from wind turbines

Wind turbines may throw junks of ice with high velocity more then three times of turbine diameter far and weighing several kg - creating danger to humans and animals.