ICE PREVENTION SYSTEMS

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Summary

Nomenclature

A	area
A_{heat}	heated area
c	chord
c_p	const. pressure spec. heat
c_w	spec. heat of liquid water
$\mathrm{C_d}$	discharge coefficient
e^{sat}	water saturation pressure
E_τ	energy consumption ratio
E_{IPS}	WT energy production during IPS operation
R	regeneration factor
F_o	Fourier number
ΔH_{ev}	latent heat of evaporation
h_c	convective heat transfert coefficient
K_A	wetness fraction
F_c	centrifugal force
H	length of the chordwise heated blade
h_c	convective heat transfer coefficient
L	Lewis number
L	length of the spanwise heated blade
LWC	air liquid water content
m	mass
$\dot{m}$	mass flow
mm	molecular mass
MVD	mean droplet dimension
p	static pressure
P	power
$\overline{P}_m$	mean mechanical power
$\dot{q}$	specific heat flux
$\dot{Q}$	thermal power, regenerative factor
r	radius
R	blade length
$\tilde{R}$	universal gas constant
$\mathrm{R_{wall}}$	wall thermal resistance
Re	Reynolds number
r_h	relative humidity
s	length of impingment area
Sg	surface of the generator active area
t	thickness, time
T	temperature
V	air absolute speed
w	relative wind speed
WT	wind turbine
$\dot{W}$	mechanical power
Z	number of turbine blade

Greek

ρ	density
β	collection efficiency
ε	thermal efficiency of IPS,
ε_G	global thermal efficiency
η	efficiency
λ_m	thermal conductivity
ω	rotor speed
τ	intermittency factor

Subscript

∞	undisturbed
air	air
aux	auxiliary