Experimental study of ice accretion on circular cylinders at moderate low temperatures

For the assessment of aerodynamic instability of iced bridge cables various calculation models are available. Input for these models are amongst others aerodynamic load coefficients usually determined in wind tunnel tests on generic or simplified models of iced cable sections. Even though icing of structures is widely studied, the particular climatic boundary conditions regarding bridge cable vibrations have so far been omitted. The presented study was performed in March 2009 in the Altitude Icing Wind Tunnel at the National Research Council of Canada (NRC) in Ottawa with the purpose of establishing detailed knowledge on the shape characteristics of ice accretion on circular cylinders under the specific conditions where large amplitude vibration of iced bridge have been observed in nature. Hence, the study shall serve as a reference and the results will be used for validation of numerical and experimental simulations and for future work in a recently developed climatic wind tunnel facility specifically built to investigate cable vibration.

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