STRI
HIGH VOLTAGE TESTING AND CONSULTING

Ice and Snow Testing

Ice and snow environments

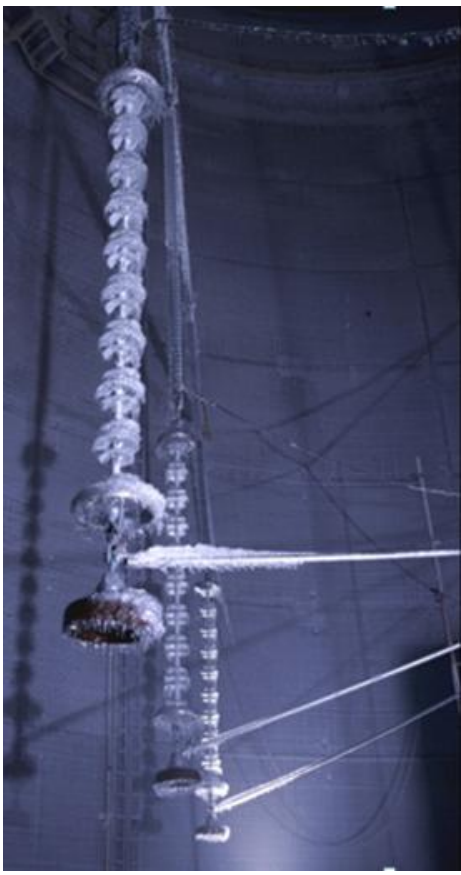
Outages of overhead lines and substations due to ice and snow take place in different environments and countries from Scandinavia to South Africa. The physical phenomena associated with such events are not yet fully understood or resolved. CIGRE has issued a few technical brochures on different aspects of these issues, but the only normative document existing at present is IEEE Standard 1783-2009.

Customized ice and snow tests of insulators

STRI's unique climate test hall (18 m in diameter and 24 m in height) makes possible ice and snow testing to simulate ice and snow conditions. It is also possible to make a combination of pollution and ice tests, when the insulators are first contaminated and then accreted by ice produced from water with certain conductivity. For AC this has been achieved for full-scale 420 kV tests, for DC this was for so far achieved only for full-scale ±350 kV tests, however a feasibility study performed by STRI confirmed that it will also be possible for 800 kV AC and ±800 kV DC. This unique climate hall provides the possibility to produce different types of ice (glaze, rime, snow with different densities and conductivities).

STRI has performed customized testing and simulation of specific service cases for different types of insulators, e.g.:

- Pollution and ice (for Canada)
- Ice and salt fog (for Iceland)
- Ice and snow with defined properties (for Japan)
- Ice and snow with defined properties (for Norway)
- Ice with defined properties (for Russia)
- Hoarfrost on conductors (for Sweden)



Reference

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STRI
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Customized ice and snow tests of conductors

STRI has been deeply involved in the investigation of ice-phobic performance and verification of other parameters of different coatings for conductors including recent nanotechnology-based coatings. This includes ice accretion and ice adhesion, RIV, visual impact, etc.

STRI has also verified different types of anti-icing devices (electrical and mechanical) which were verified by laboratory, field and service tests. STRI is fully capable to perform standard mechanical ice test for disconnectors.

References

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[3] A. Dernfalk, J. Lundengård, E. Petersson, I. Gutman, K. Tucker, S. Banerjee: “Advanced test methods for full-scale ice tests of DC insulators strings intended for ±350 kV”, IWAIS-2015, Sweden, June 28 – July 3 2015

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