Paris Session 2022

RTV life expectancy (experience in heavy polluted areas and ageing)

Overhead lines SC B2

PS1 Question 1.12

experience in use of RTV coated insulators in heavy polluted areas and ageing

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RTV life expectancy

- Considerations on life expectancy are reported, together with many other aspects concerning RTV, in TB 837 concluding that, at the present level of knowledge, it is not possible to predict the expected service life of an RTV coating (and consequently, to extend generic warranties and guarantees)
- Ageing and life expectancy are closely linked to several factors including but not limited to the specific RTV material formulation and characteristics, insulator geometry and sizing, application quality and environmental stresses
- Based on field experience, coating life may extend from a few years to more than 20 years.
- The USCD (unified specific creepage distance)selected is one of the most important parameter determining RTV longevity.

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Selection of USCD for HTM insulators

- Pollution withstand is the design value for ceramic insulator under pollution conditions
- For HTM (hydrophobicity transfer material insulators), e.g. ceramic insulator coated with RTV, coating ageing can also occur at voltage values significantly below the withstand voltage in the presence of corona and leakage currents (also of low magnitudes).
- Pollution tests may hardly represent HTM insulator performance, with their surface conditions varying all along their life
- Consequently, pollution tests will not provide direct indication on the expected service performances.
- USCD (unified specific creepage distance) for HTM insulators should be selected to limit the possibility of leakage currents all along insulator life
- Therefore, different margin between the pollution withstand voltage and the service voltage may need to be considered for HTM (e.g. USCD RTV) and non HTM insulators (e.g. USCD ceramic).

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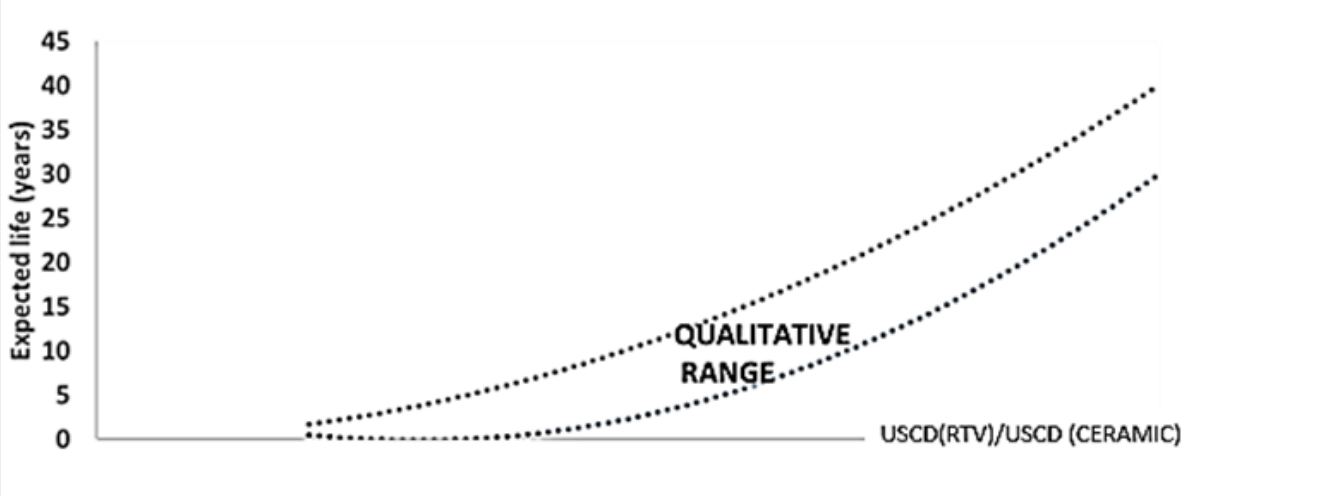
Influence of adopted USCD on the expected life

- Too low USCD RTV values (much lower than USCD (CERAMIC) required for the considered field conditions) may promote leakage currents, consequent loss of hydrophobicity and shortening of the expected RTV coating life, as qualitatively shown here below. The highest life is expected when USCD RTV is close to USCD (CERAMIC) (ratio between them equal 1) and lower for ratios lower than 1.



Dependence of expected life on the ratio USCD RTV/ USCD CERAMIC(uncoated insulator): qualitative range

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Conclusion

- Quantitative data on the dependence of the life on USCD are not available and only qualitative trends can be given.
- Collection of field data is recommended toward designing the required quantitative life expectance curve.

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