

Paris Session 2022



Using TR-XLPE Insulation for Wet High Voltage Array Cables

SC B1 Insulated Cables - PS1 - Q4

What are the limits of current technical guidance documents?
Which are possible areas that need to be enhanced to support the expanding
industry for insulated power cables?

Tim Person, USA



Group Discussion Meeting

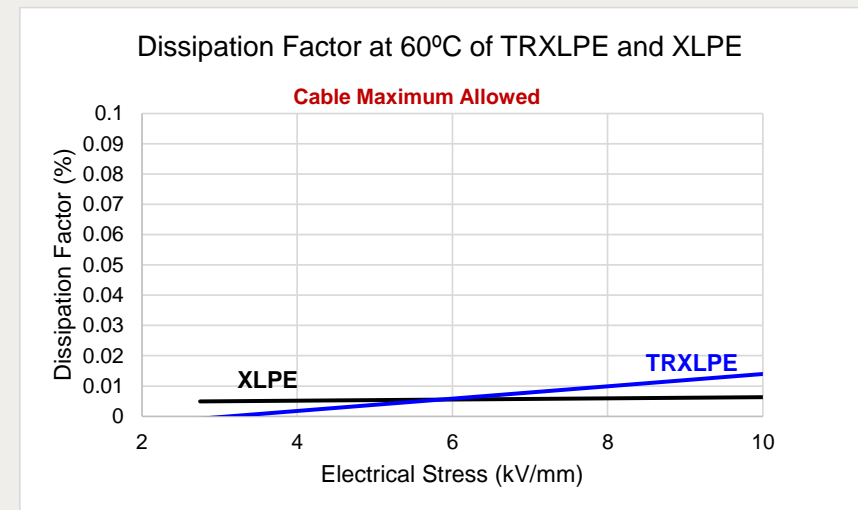
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TR-XLPE Insulated Cables For Wet High Voltage Array Cable

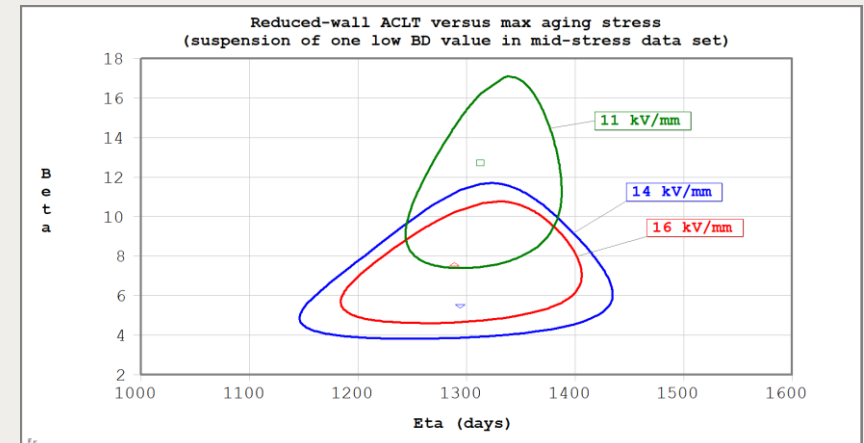
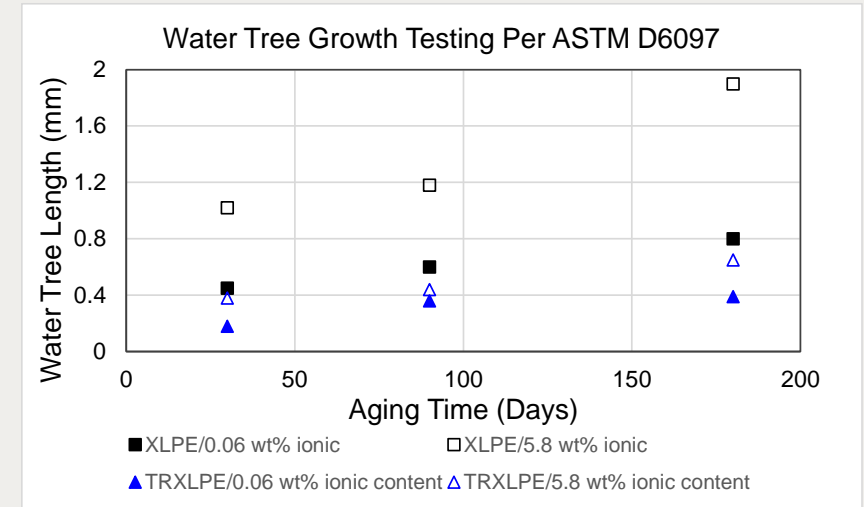
- To improve the energy generated by offshore wind farms there is a drive to larger turbines which can lead to needing to increase the array cable voltage higher than today's 66 kV.
- To address system economics, wet high voltage cables are an option as they address the cable economics as well as simplify the cable manufacturing process.
- TR-XLPE insulation has a low electrical loss characteristic, like XLPE, for minimum dielectric loss



TR-XLPE Insulated Cables For Wet High Voltage Array Cable



- TR-XLPE insulation has a robust performance in the presence of moisture
- Salt water has minimal impact on TR-XLPE water tree retardance which is important for offshore wind farms
- TR-XLPE has shown excellent retention of dielectric strength under highly accelerated wet aging in North American and European qualification test protocols
- TR-XLPE has shown excellent performance in wet, accelerated cable life testing at high voltage electrical stresses



TR-XLPE Insulated Cables For Wet High Voltage Array Cable



- CIGRE TB 722 outlines recommendations for additional testing for submarine cables up to 60 kV (UM=72.5 kV) that includes guidance for wet cable designs.
- Wet high voltage cable tests can be conducted for voltages higher than 60 kV based on the extension of the current recommendations in CIGRE TB722.
- We suggest there needs to be consensus about extending these test protocols to higher voltages as well as accepted that meeting these recommendations would indicate a reliable solution.