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Comparison of radiation and thermal ageing simulation procedures for NPP cables

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The accelerated radiation and thermal ageing of cables has a special importance in the type qualification test of NPP cables as it should provide for the cable ageing by an accelerated but real process of ageing, i.e., by the homogeneous oxidation of the cable polymeric materials. A comparison of three cable ageing techniques was performed on the representative NPP cables based on EVA and XLPE jacket and insulation materials. These techniques cover separated and combined radiation and thermal ageing under high dose rate (3 kGy/h) and low dose rate (5 Gy/h) in temperatures from 75 °C to 150 °C. The results of mechanical and physico - chemical properties are discussed and a recommendation for qualification test procedures are proposed.

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