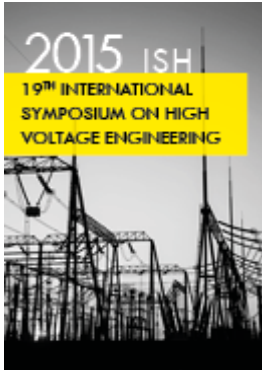


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Partial Discharge Patterns of Typical Installation Defects in MV Power Cable Terminations

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Abstracts

The partial discharge patterns of three typical defects in MV cable terminations were characterised. The defects included a semi-conductor feather, a tram line in the cross-linked polyethylene insulation and a ring cut in the cross-linked polyethylene. Terminations were prepared with these artificial defects and subjected to a standard overvoltage test, during which partial discharge activity was monitored. All the defects passed the voltage test, despite some showing significant discharges. The semi-conductor feather defect exhibited partial discharge behaviour resembling a corona-like discharge. The tram line defect had a discharge pattern consistent with that of a narrow cavity, and the ring cut showed a flat cavity partial discharge pattern. Partial discharge magnitudes of the semi-conductor feather were found to increase with increasing applied voltage, consistent with surface discharge behaviour. In contrast, the tram line and ring cut defects showed constant discharge magnitudes with increasing voltage, thereby verifying the two defects as void discharges. The results showed that common installation defects in MV cable terminations can be characterised using partial discharge measurements.