Laboratory and field partial discharge measurement in HVDC power cables

Malcolm **SELTZER-GRANT** (1)

1 HVPD Ltd, Manchester, UK, malcolm@hvpd.co.uk

The authors present work from laboratory and field partial discharge (PD) testing on HVDC power cables. The work has been carried out as part of a development project for monitoring of PD under HVDC stress for HVDC grid applications in the offshore renewable energy. PD measurement under DC stress presents many challenges, mainly in understanding the degradation process and being able to make reliable measurements in a field environment.

Laboratory measurements on have been on made insulation and XLPE cable samples with fabricated defects to better understand the onset of PD activity under DC stress. In addition PD measurements have been as in a cable aging laboratory. Field measurements and continuous monitoring has been carried out on in service HVDC interconnectors with results presented.

The relevance of AC PD measurement techniques to DC applications is discussed along with sensor options for in service HVDC cable systems. Methods for identification of PD and interference from power conversion equipment are shown along with discussion on the requirements for systems to monitor PD in DC cables.