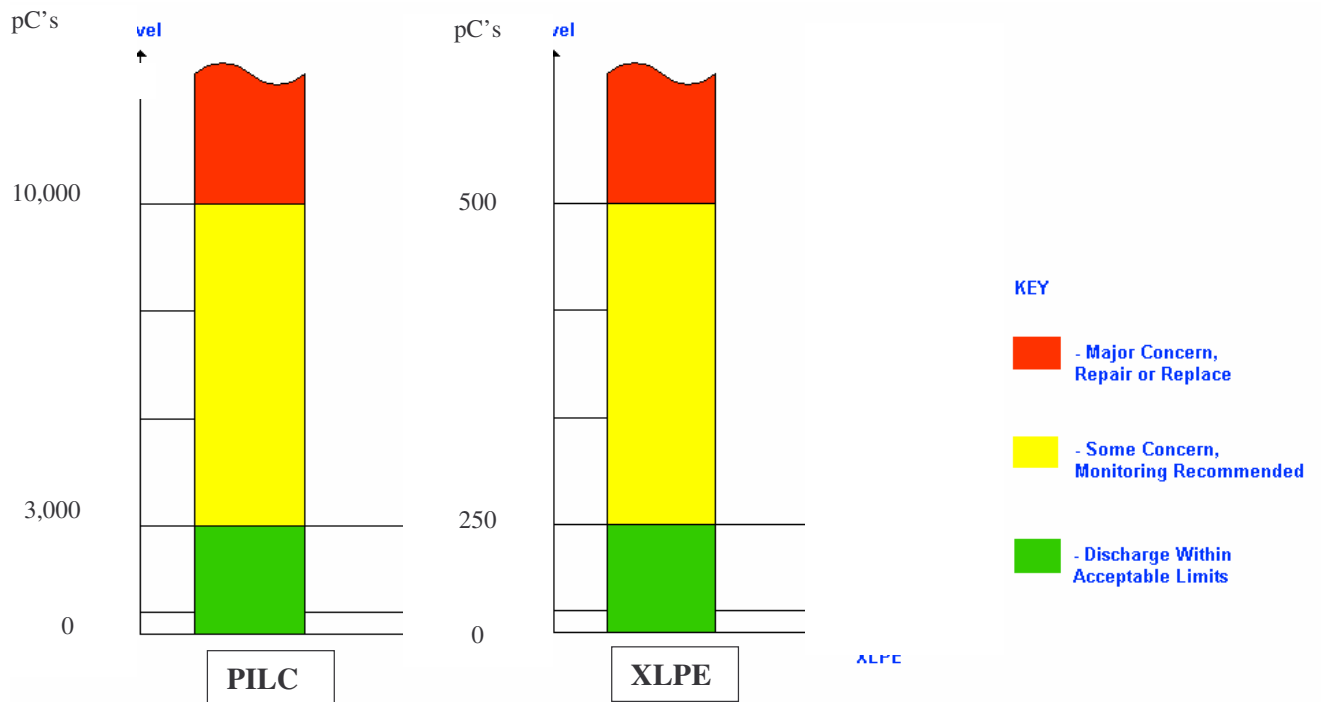


**OSM-Longshot™ PD Testing of MV Cables – Threshold Levels for Diagnostics**

In order to place PD Test results obtained from PD testing of HV Cables through a combination of the OSM-Longshot™ with the split-core High Frequency Current Transformers (HFCT’s) into context the following guideline, PD threshold levels for **6.6kV to 33kV Medium Voltage Cables** can be considered by the user (levels pC’s).

N.B. It should be noted that these PD levels are based on IPEC’s own experience of PD testing (mainly in the UK) and are not definitive figures. The levels given are meant as a guideline only and could be considered in some cases to be conservative. They do nevertheless provide a basis for developing a ‘League Table’ of In-service MV Cable Insulation Asset Condition from which to make Asset Management Decisions.

It is recommended that the user/customer develop their own ‘at risk’ HV Cable PD levels as part of IPEC’s Diagnostic Consultancy and Training course on PD Diagnostics. In this way the PD levels for different levels of concern or action can be developed in line with the general condition of the plant owners equipment and their maintenance schedules and budgets.



**NOTE: PD LEVEL FOR CABLE JOINTS & TERMINATIONS:**

**PILC Joints & Terminations**

Green-0-5000pC  
 Amber-5,000-15,000pC  
 Red-15,000pC+

**XLPE Joints & Terminations**

Green-0-500pC  
 Amber-500-2,500pC  
 Red - 2,500pC+

**Figure 1: Indicative PD Levels in 11kV PILC & XLPE Cables & Joints**

## Discussion

The indicative figures for PD Levels vs. Condition given in Figure 1 show that for switchgear connected to Paper Insulated Lead Sheathed Cables (PILC), discharge below 3000pC is acceptable (green), between 3000pC and 10000pC is a cause for concern (amber) and anything above 10000pC (red) could be considered to be potentially on a trend to failure and the problem should be investigated further (possibly with cable mapping testing and then repair).

The indicative figures are much less for XLPE cables at less than 250pC (Green), between 250 and 500pC (Amber) and above 500pC (Red - large cause for concern).

For 'mixed' cables (a mixture of XLPE, PILC, EPR or other cable types) it is necessary to find where the source of the discharge is (position on the cable) before making any diagnostic decision. To achieve this it is necessary to apply Cable Mapping Technology (refer to IPEC for further information on IPEC's On-Line Cable PD Mapping Technology).

The respective PD Levels vs Condition for PILC and XLPE Joints and Terminations given at the bottom of Figure 1 are slightly higher than for the cables as accessories have more insulation in them than the cables and are generally more resistant degradation from PD activity.