

FUNDAMENTALS AND PRACTICAL APPLICATIONS OF PARTIAL DISCHARGE

Knowing and understanding the life of a high voltage asset requires a lifetime of experience and commitment.

Before a Partial Discharge Engineer can locate and combat Partial Discharge, it is essential to have a good working knowledge and extensive experience of what he is up against. Not knowing the *enemy* can result in disaster!

Both switchgear and cables represent a tremendous investment. An incorrect diagnosis can greatly increase the possibility of personnel hazard and asset damage. Those who have been close to an explosion of either a piece of metalclad MV switchgear or cable termination in the confines of a substation would need no convincing that what we are talking about here, is one of the worst possible accidents.

Would you compromise the safety of your staff by believing this can be done in-house by untrained or inexperienced staff? Unless companies have the significant resources and technical expertise to make the call on what is normal or abnormal (on all makes and models of equipment), getting it wrong can result in a very serious crisis!

REQUIRES EXTENSIVE EXPERIENCE

Partial Discharge detection/location/mapping on switchgear and cables requires extensive experience on all types of installations, as each substation installation varies due to:

- Age of equipment,
- Maintenance levels during the life of the equipment,
- The environment it operates in e.g. humid atmospheres versus dusty atmospheres, etc.,
- Types of equipment, and
- Duty cycle.

CASE HISTORY

A client's electrical technician was asked to check for Partial Discharge in an older substation; unfortunately, he misinterpreted the results. He passed the installation as being safe for staff to work on but a failure occurred three days later. The resulting damage was so extensive with loss of supply to both the Zone substation and downstream customers, the actual total monetary value remains unknown.



Resulting damage caused by an inexperienced PD survey.

ADVANTAGES OF OUTSOURCING VS IN-HOUSE

1. Experience prevents similar case histories and does not compromise the safety of your staff,
2. By having regular surveys on aging equipment, the client has an up to date status of the condition assessment of his equipment. This history of valuable information is used as a driver for capital replacements and setting the right level of maintenance.
3. To get good information, you do need an understanding of what you are looking for (PD detection and location is not straightforward).

Once Partial Discharge is identified, you need to understand the mechanism that is causing the PD. This leads to the correct repair being undertaken. Treating a symptom is not curing the base problem – this is where experience counts. HVS staff have been actively involved in the high voltage industry for over 39 years which is why our Case History client now uses HVS to undertake all their On-line Partial Discharge diagnostic surveys. ⚡



ON-LINE CABLE PARTIAL DISCHARGE

DETECT AND LOCATE THESE FAULTS



Cables • Switchgear Generators • Motors

On-line and Off-line High Voltage Cable Testing

Retention of Life in High Voltage Switchgear Audits

High Voltage Switchgear Consultancy

Factory Acceptance Testing for Clients

High Voltage Asset Management

High Voltage Electrical Inspections

Insurance Investigations



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