

REDUCING RISK WITHIN MINING

The reality with Electrical assets that are in service in mines and within the manufacturing sector is that they have been in service for at least 25 years, with various levels of installation standards and maintenance.

The original design of these Electrical assets allowed for redundancy within the high voltage distribution system (i.e. it was possible to offload up to 50% of cable networks by alternative supply routes). 25 years have marched on and the reality is that most installations are running well beyond their original maximum loadings.

THE CHALLENGES BEING PRESENTED

- I want to know what will fail in advance of the protection system operating.
- I want to know in advance how to repair a problem prior to the problem arising?
- I want to plan this shutdown without affecting production.
- I want all my operational/maintenance staff on-site during this planned shutdown.
- I want to co-ordinate other mechanical repairs during this shutdown.
- I don't want my customers to be affected by this shutdown.
- I don't want my financial indicators to be affected.
- What changes need to be done with this model and what is available?

The answer to all the above is to start using new technology and believe in the results. ON-LINE PARTIAL DISCHARGE is gaining a high reputation for answering the "Call of the Challenge".

Both sides of the Tasman Sea (Australia & New Zealand) this month saw two cases where the asset owner was unaware of a pending outage. Using On-Line Partial Discharge survey methods, the pending outages were detected. In both instances, had they remained undetected, a relatively long outage would have occurred.

CASE HISTORY 1

11kV Switch Board

A 30 year old SOHI switchboard was in service within the manufacturing sector. The maintenance history was unknown due to contractor restructuring. While carrying out a survey on the 11kV cables, high levels of Partial Discharge levels were detected. The location was accurately pinpointed to two separate locations.

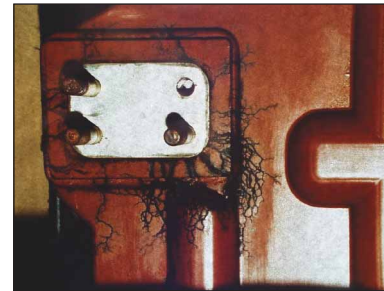
The industry was a 24/7 operation with 247 employees. Without a planned shutdown this operation would have resulted in a serious situation. The product within pipes would have gone hard and large volumes of spoiled product would have had to be dumped. Also, start up would have been a long slow process that would have resulted in market deadlines being missed. The direct savings in money terms were not disclosed due to confidential agreements.

Location 1



This localised Partial Discharge.....will lead to this

Location 2



Tracking on SOHI epoxy resin bus-bar. On-Line Partial Discharge identified this serious condition prior to failure.

CASE HISTORY 2

11kV Motor Cable Termination - Mining Sector

When checking all the 11kV motor terminations, On-Line Partial Discharge identified this serious condition prior to failure.



In both case histories the following was planned in a timely manner:

- Direct cost savings with no direct forced outage;
- Allowed for pre-arrangement of suitable qualified cable/switchgear specialists;
- Secondary faults due to primary fault are reduced - e.g. a failed bushing that fails within an enclosure will cause further damage, e.g. fire;
- No personnel injury to operational staff as the problem was clearly identified in advance.

PROGRAMMED SURVEYS

On-Line Cable Partial Discharge is now a recommended method of determining the condition of service-aged equipment such as cables and switchgear – while the equipment is in-service. The methodology to achieve this is to carry out programmed surveys to establish a trend and monitor any deterioration that is occurring. By carrying out repairs on-line, TRUE in-service conditions are measured which will ensure a continued reliable operation.

RESULT

The asset owner uses "Best Practices" due to adopting an On-Line Partial Discharge monitoring program.

