ON-LINE PARTIAL DISCHARGE TESTING

It is now possible to rank your HV assets in order that are at the greatest risk of failing ensuring that the risks of substation outages are absolutely minimised. It is not acceptable to have an unplanned production stoppage due to a cable or switchgear failure.

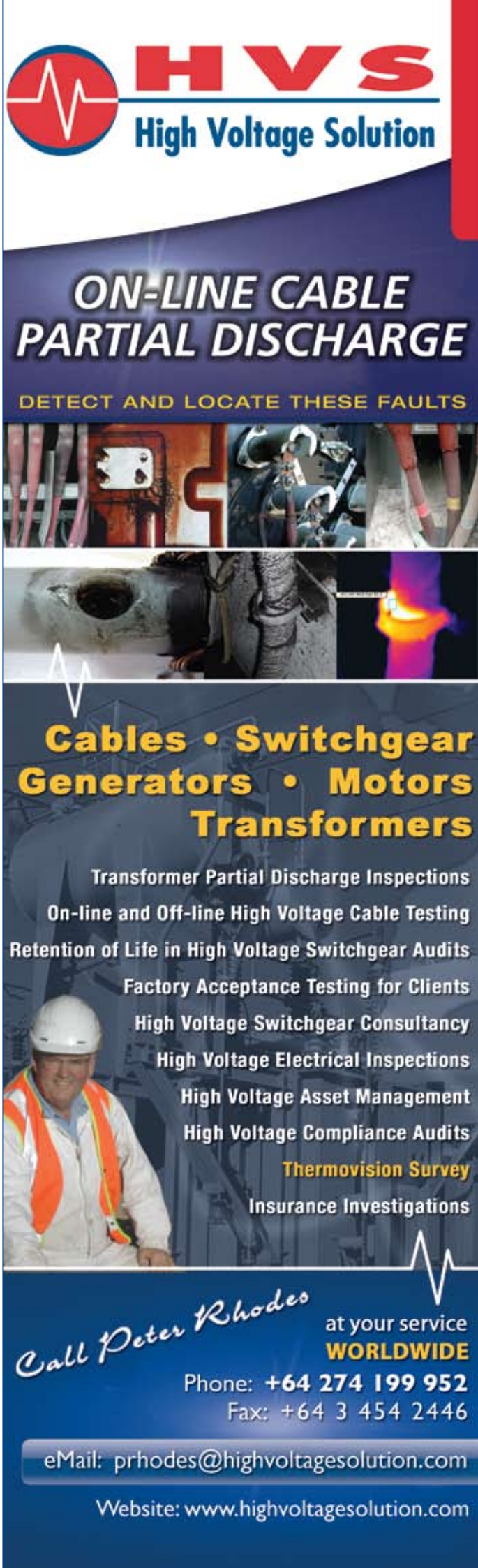
When an unplanned outage occurs, production stops, and in most cases, will cause waste or damage to occur within the plant. By using On-Line Partial Discharge Testing it is possible to have a "Real Time" report on the condition of your HV cable and switchgear assets while your plant is still running – in service with no production outages required which is ideal for the any 24 /7 operations such as mining, refineries and export operations etc.

ON-LINE PARTIAL DISCHARGE MAPPING	Advantage
This means the **cable remains in-service** with no interruption to client's loads.	Cable **does not need** to be electrically isolated from all points of supply.
	Increased numbers of cables tested per day.
	Tests a cable under normal operating conditions. (Thermal & magnetic effects are factored into test)
	Cables do not have to be disconnected from the switchgear. They are tested at normal operating voltage, **ensuring no over stressing occurs**, to the in-service HV asset (Overstressing assets reduces their life.

The weakest links in a cable system are often the terminations or cable joints, mainly because they require on-site assembly. Cables do fail due to a number of factors, such as the ingress of moisture and water into the joint, which can lead to catastrophic arcing failure of the joint; corroded sheath that lets water enter the insulation; overloaded; mechanical damage; and natural aging causing insulation properties to change state and leads to cable failures.

Undertaking On-Line Partial Discharge testing of cables and above ground switchgear in the field does requires extensive experience to know where to place the various numbers of sensors, (it is not possible to use one sensor) and analyse this data from the various sensors as it is being recorded in real time.

NEW SERVICE USES A HIGH INTENSITY CAMERA

By simultaneously undertaking an On-Line Partial Discharge test **and** Thermovision Survey using a high intensity camera, the overall outcome for the client is unsurpassed and ensures the risks of substation outages are absolutely minimised. **The below photos, taken by HVS.Com in the field, example faults that traditional methods of PD testing would not find.**

Type of fault
1. In – line 33kV joint 2. Heavy infestation of PD 3. If not found would have caused loss of supply to zone substation
The photo at left indicated high amounts of PD and was taken *prior to failure*. Photo on right is *after failure* resulting in extensive damage to incoming cubicle and 43 hours without electricity to substation and stopping production.