SCOAR 25 *2.3.2*

SEMICONDUCTOR OVERVOLTAGE ARRESTER (SCOAR)
An intrinsically safe way to Earth AC

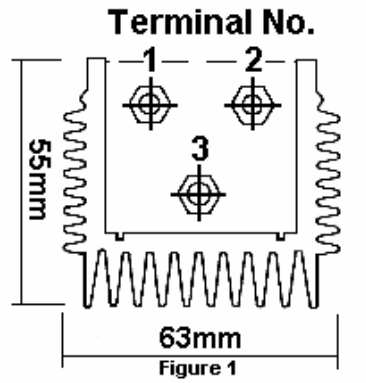

Figure 1

FACT **Metallic structures are prone to Induced Alternating Currents, Lightning Strikes, and Earth Grounding Fault currents**

FACT **These can be a serious safety threat to personnel and Plant**

FACT **As with some other types of units Potassium Hydroxide is classified as an IATA UN1813 CLASS 8 Hazardous chemical, the use of which is covered by legislation such as the UK COSHH regulation**

The historic method of controlling these problems has been by using a POTASSIUM HYDOXIDE solution (KOH) filled polarisation or grounding cell.

Whilst KOH cells are an excellent means of achieving this goal the very use of KOH solutions present a very real hazard to those installing and maintaining the equipment.

The SCOAR 25 is designed to mitigate induced AC overvoltages, without affecting Cathodic Protection efficiency.

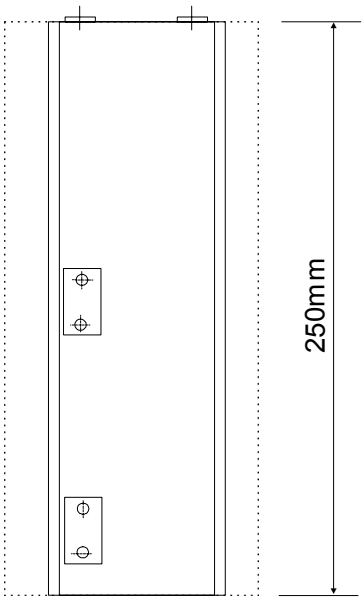

Figure 2

Pipelines and similar structures situated close to high tension power lines are subject to a strong electromagnetic field. Under certain circumstances this field can cause the induction of AC voltages in the structure. This phenomenon in turn can lead to an increase in the risk of electric shock to staff, and deterioration in the effectiveness of a cathodic protection system.

The induced voltages can be controlled and reduced by earthing the pipelines. However a direct connection to earth will further reduce the effectiveness of the cathodic protection. To prevent this the **SCOAR 25** is connected between the pipeline and the earthing device allowing the free flow of AC but restricting DC current discharge.

In principle the device consists of a set of antiparallel thyristors activated by a potential across the overvoltage arrester. To minimize damage of the cathodic protection the discharged AC is partially rectified. The resulting DC vector is used to compensate for the cathodic protection current absorbed by the earthing device.

TECHNICAL SPECIFICATIONS: Semiconductor overvoltage arrester - SCOAR - (TYPE 25 A)

Application:

Overvoltage arrester applicable for pipelines and similar constructions subjected to 50 - 60 Hz AC. The arrester should be connected as shown in Figure 3

General Operating Details

The SCOAR 25 is activated by a voltage of approx 22 Vrms between structure and earth. When activated a voltage drop in the forward direction, across the arrester is present. (See Figures A and B). The zero flow of the discharge current deactivates the overvoltage arrester. The arrester is reactivated in the next half cycle of the overvoltage at a voltage "Un". The overvoltage arrester does not activate if the amplitude of the overvoltage is less than Un.

General data:

Activation voltage (Ua):		22V (rms)
Max. discharge current:	I (lightning Impulse):	2.0 kA (0.4μs)
	I (0.5s)	1.0 kA (rms)
	I (continuous)	25 A (rms)
Insulation degree of cooling profile:		2.5 A (rms)

Due to heat development free air circulation is necessary around the SCOAR. Placed in a vertical polyethylene cylinder (Diameter = 11cm or 4" Nominal Bore) with two air vents (Area = 25 cm^2) cut out above and below the overvoltage arrester, the cooling unit has a maximum temperature of 55°C above the ambient temperature.

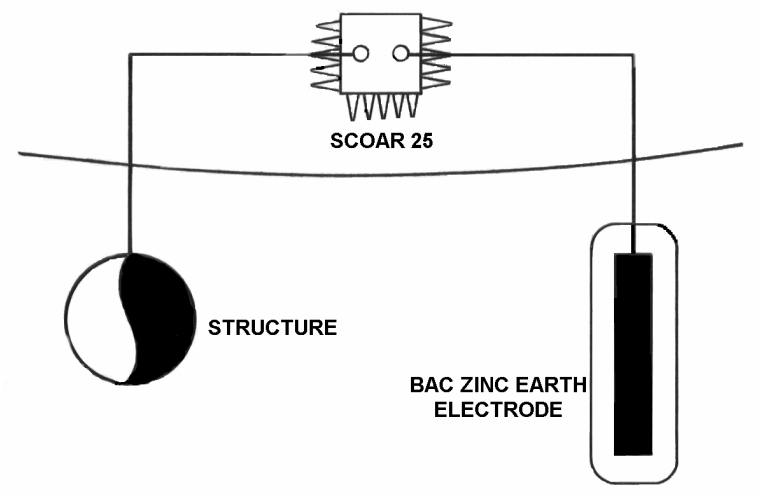

Figure 3