APPLICATION NOTE

Live Line Indicators

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1. Scope

"Live Line indicators" come in many different sizes, shapes, colours and have different modes of operation.

The primary objective for fitting such items to a circuit is to give a visual indication for the presence of a voltage.
The live line indicator is fitted at strategic points to make operators aware of the presence of a voltage and in particular is used where the voltage can pose a hazard or risk.

Typical risks would be electrical shock to personnel or ignition of an explosive atmosphere due to arcing.

In Coal Mine operation these risks occur when, but are not limited to, with the opening of explosion protected enclosures or connection or disconnection sockets. Hence they are generally fitted in close proximity to sockets or doors.

2. Overview

The "live Line indicators" are designed to work over a wide voltage range, in an attempt to give indication of any detectable voltage. The range is not infinite and is limited by safe practice and the operating system voltage.

Typically 6.6kV and 11kV indicator units will work down to 3kV and are not very effective below this voltage. These units are typically configured to **flash** a neon light when voltage is present. The frequency of the flash will decrease with lower voltages. The neon indicators generally have a yellow or orange glow. Each phase indicator is coupled to the Live Circuit by a capacitive divider and hence will only indicate the presence of an **AC** voltage.

3.3kV, 1kV and 550V indicator units will typically give indication from 10 Volt upwards. They come in a range of colours and are sometimes colour coded to the phases. These units are galvanically coupled to the live circuit using a special arrangement of voltage reducing and surge protection devices and are generally LED indicators.
Not all indicators are configured the same, but Dimako units use back to back LEDs and will give

- alternate indication of each half cycle of AC voltage
  or
- in the case of DC only one LED will be illuminated.

Generally the intensity of the indication will increase with increasing voltage.

Note: *There are some 3.3kV Live Line Indicator units in service that use capacitive coupling methods but these are not very common and tend to be very bulky and space consuming*.

3. IMPORTANT NOTE

The "Live line indicator" is

- only intended to indicate the presence of voltage as an extra measure of safety
  and
- when extinguished is NOT intended to be used to indicate the isolation status of a circuit.

End User Isolation Procedures must always be adhered to before circuits can be worked on or exposed.

Note: P*rincipally Live Line Indicators units are not infallible and have a long but limited service life. Proper isolation is a matter of life or death and procedures need to be in place to ensure safety*.

4. Operation

All Dimako Live line Indicators are passive units and do not contain batteries. If there is a glow from the indicator then there **will be a voltage present**. If all power is removed and isolated, the Live Line Indicator units will extinguish. Sometimes an operator may see a low level glow (lower than normal service) and assume the circuit Live Line indicator should be off because a motor or machine is not running.

If the indicator is glowing there will be a Voltage present: it is not possible to have a glow in the absence of voltage.

In Coal mining applications this glow may well come from an intrinsically safe earth fault search circuit, which is intended to lockout the circuit in the event of an earth fault.

With Dimako 3.3kV, 1kV and 500V Plug and socket outlets the operator will notice that as the Power is de-energised the Indicators will go completely dark and approximately 3 Seconds later will glow dimly when the Earth Fault Lockout Search Voltage is applied to the Outgoing Circuit.