Subject: What is loose contact?

Loose contact is a condition which occurs when the wire is loose in the terminal, or a plug sits loose in the socket, or a screw is loose in a connection. These are valid in LV circuits.

While in MV & HV circuits, loose contacts can be due to cables becoming loose in lugs, bolts holding lugs on to the terminal becoming loose, or a circuit breaker with its male & female contacts becoming loose, or a aluminum cable terminations in a copper lug becoming loose.

The list is endless both in the LV circuit & HV circuits.

How serious are we in detecting loose contact in LV domestic or commercial circuits? These go un noticed as the consumers may not be technically competent to notice the initial tell tale marks of loose contact, in the form of localized heating, or discoloration of plug & socket, or discoloration of wires carrying current. Practically no one undertakes maintenance of these circuits till a healthy equipment fails to perform its duty in the circuit.

Periodic maintenance carried out by Industries using MV or HV supply can deduct loose contact and take corrective steps. The best tool available is to measure Contact Resistance, of the circuit using a bridge delivering high DC current of the order of 100amps. Contact measurements are carried out for breaker, terminals, bus bar connections among others. The results expected are in micro ohms, higher results indicate loose contact.

Thermal scanners are an important tool for measuring hot spots when the circuit is energized.

To summarize, A loose contact can produce:

1. Spark b/w cable and equipment.
2. Damage of cable lugs.
3. Heating of any insulation nearby.
4. Can ignite any inflammable material near by
5. Voltage reduction b/w the terminals etc.

Loose connection is the most Dangerous thing in electrical engineering and one should always avoid it.

Due to loose connection the contact resistance will increase and when the current flows through it, it will start heating at the connection point and if the current continues the contact point may melt and disconnect the supply.

Some commonly known defective wiring practices that can lead to Electrical Fires include:

- Loose connections.
- Aluminum and copper conductors spliced together with an incorrect connector. Aluminum oxide causes overheating.
- Some insulation piercing connectors when applied incorrectly can make poor connections due to insufficient contact area or pressure.

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