

Topic The Importance of Markings/Labels in the Electrical industry

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1. Problem Statement: Wrong Labeling/Markings were identified as one of the causes of industrial accidents where property is damaged and/or people are injured or have lost their life.

2. Background of the Problem

Labeling/Marking is a legislative requirement to be performed in every Electrical installation made. It is stipulated in SANS 0142 and forms part of the visual inspections to be performed upon completion of an electrical project, or after completion of changes performed from an existing installation. During maintenance this is normally not done, more especially where the custodian has full time staff that performs maintenance. This thus will end up sacrificing the safety of the same maintenance team. The feeling is that the supervisor will make sure that whatever is done in the network is done in the proper and complying manner, which is not practically true.

Label means to marked and attached to an object to indicate its contents or ownership. To mark means to spot or scratch a surface. This brings us to the characteristics of markings/labels. A label or mark must be-

- Permanent e.g. scratched or engraved surface
- Legible
- Be able to sustain normal weather conditions
- If the label is on a separate piece of material, it must be fixed with a permanent material where one will need to use a tool or lubricating material to remove it,

Markings/labels in the Electrical network are used to give information about apparatus or equipments used. Markings on cables can be used to show the type of cable, the size, the type of equipment it supplies as well as the point from which it is connected. On the mini- substations marking and labeling is used to indicate the primary and secondary supply point in case of ring feed and the load as well. For the sake of this presentation, I will concentrate on these two aspects.

2. Dangers of wrong or inadequate labeling/markings

- Unplanned power outages
- Damages to equipments and/or properties
- Personnel injuries or loss of life
- Loss of income
- Disturbed service delivery
- Unpleasant situations to clients
- Funds for redoing the work
- Loss of information

- Work stoppages
- Waste of materials e.g. wasted dough during baking
- Loss of business

3. Labeling/Markings during maintenance or repairs

- During maintenance and repair work, less concentration is made on the compliance. In most cases the main issue becomes the time to be taken to restore the power.
- Labeling/markings is done on temporary to permanent basis, if not at all,
- The available labeling material is used e.g. marking pens
- No compliance certificate is normally required mostly where the client does repair work personally
- Lack of knowledge or don't care attitude during repair work

4. Example of incident that happened due to improper or inadequate labeling:

4.1 At one of our substations called SIGMA

We were busy with replacing old switch gears

The label on the old switch gear was left on the old damaged and wrecked out switch gear

The incident happened immediately after the change of shifts

There was a ring which had tripped

The foreman ordered switching to be made after the fault on the line was identified and repaired.

The old damaged switch gear was then made life, switching to fault

The switch gear exploded

Likely there were no injuries

Sigma substation



4.2 In Bok Street on the mini-substation

The mini substation went on fire but the ring tripped at the substation

The fault was identified being the termination on the min substation that caused the fire

During the power restoration the same cable was switched on due to wrong labeling

The mini-substation exploded,

It was during the night and only Electricians who were on duty were around and had a good clearance from the mini substation.

Likely again the people who were close by had given enough space from the mini substation as this happened during switching

The mini-substation in Bok street



5. Conclusion

Lesson learned

- We nearly lost a substation due to improper labeling
- That labeling /markings be updated and verified timely
- That nobody should work while switching in progress
- That unused switch gears should be removed from substation once they are no longer in use
- That signs of do not switch on be placed on all the unused breakers
- That proper labeling be used always
- We nearly lost an employee who was supposed to remove the cover of the termination box.