

# Combi installation 15 November 2017



**Addis Ababa – 100kv Xfr 15kv**

# Introduction

Mr. Abadi Gebrehiwot and the EEC team were visited on the 14<sup>th</sup> & 15<sup>th</sup> November 2017 for a presentation & installation.

A troublesome site with a 100kva 15kv transformer , outside Addis Ababa has been lost 2x times in 12 months.

The total losses at this site are estimated to be \$10 000 USD/annum  
A 15kv combi set was installed on Wednesday 15 November 2017.

The Combi unit will be tested, to see if it can eliminate the transformer losses at this site in the 2018 rainy season.  
(November 2017 – November 2018.).

Mr. Titus Ncube & Kevin Risi , LLT Director projects assisted with the correct connection on the installation.

# Live Line Technology



## Transformer Combi Unit

(Transformer Protection)

LIVE LINE TECHNOLOGY

T (+27) 18 468 5080

E – sales@liveline.co.za

# Addis Ababa 15kv Transformer Combi installation 15 Nov 2017



## Problems with the site

2x Transformer has been lost in 2017 due to lightning.

High lightning intense region.

Surges take too long to replace.

Surge arresters blow without staff knowing.

Technicians cut away old surge spent surge arresters.

Bonding is incorrect.

Before

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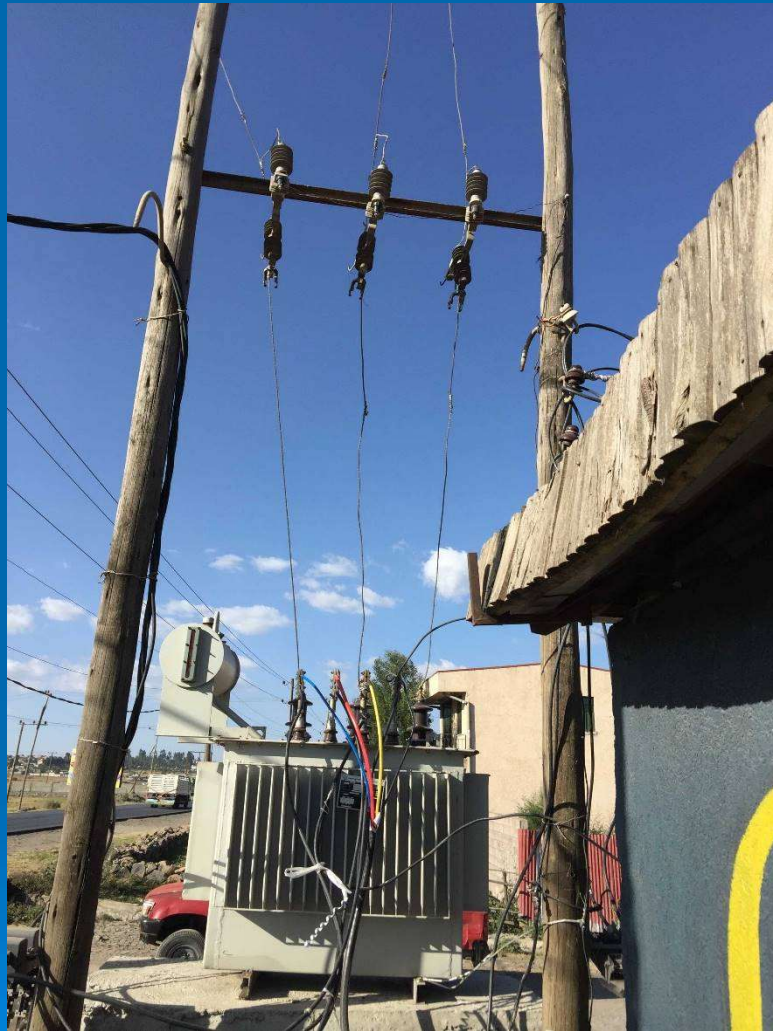
## Installation :

The Combi unit is compatible with EEC poles structures and takes 1-2 hours to install.

- Faster to maintain.
- Easier to maintain.
- Safer to maintain

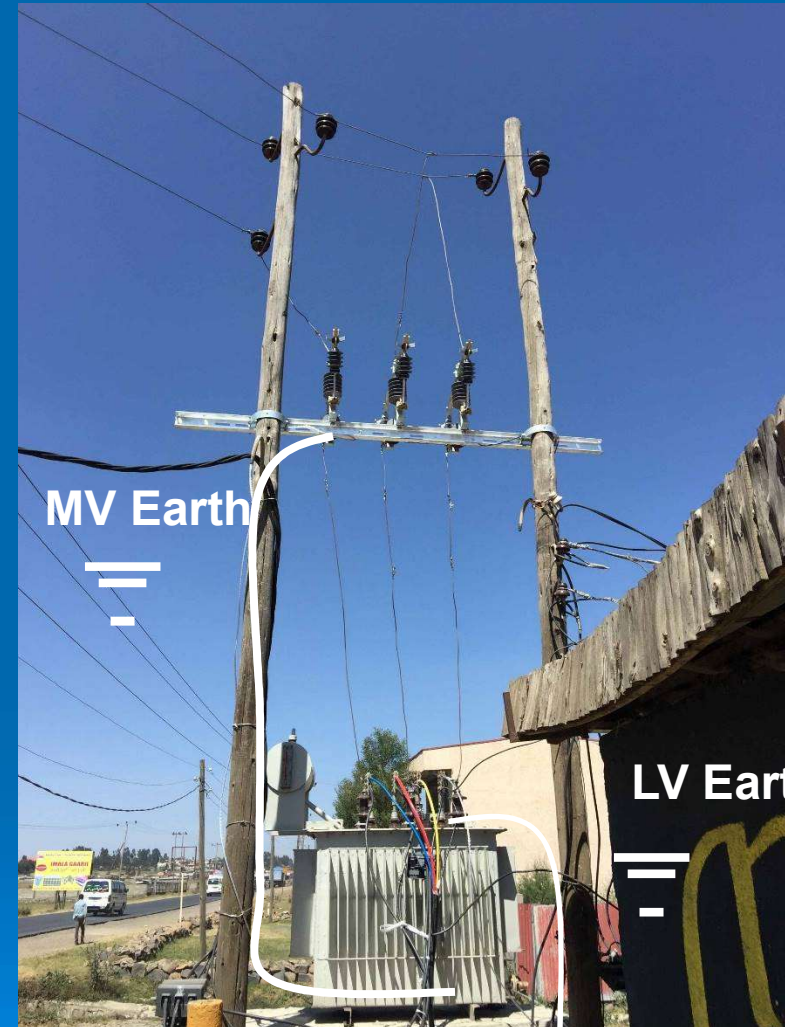
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**Before**



**No bonding**

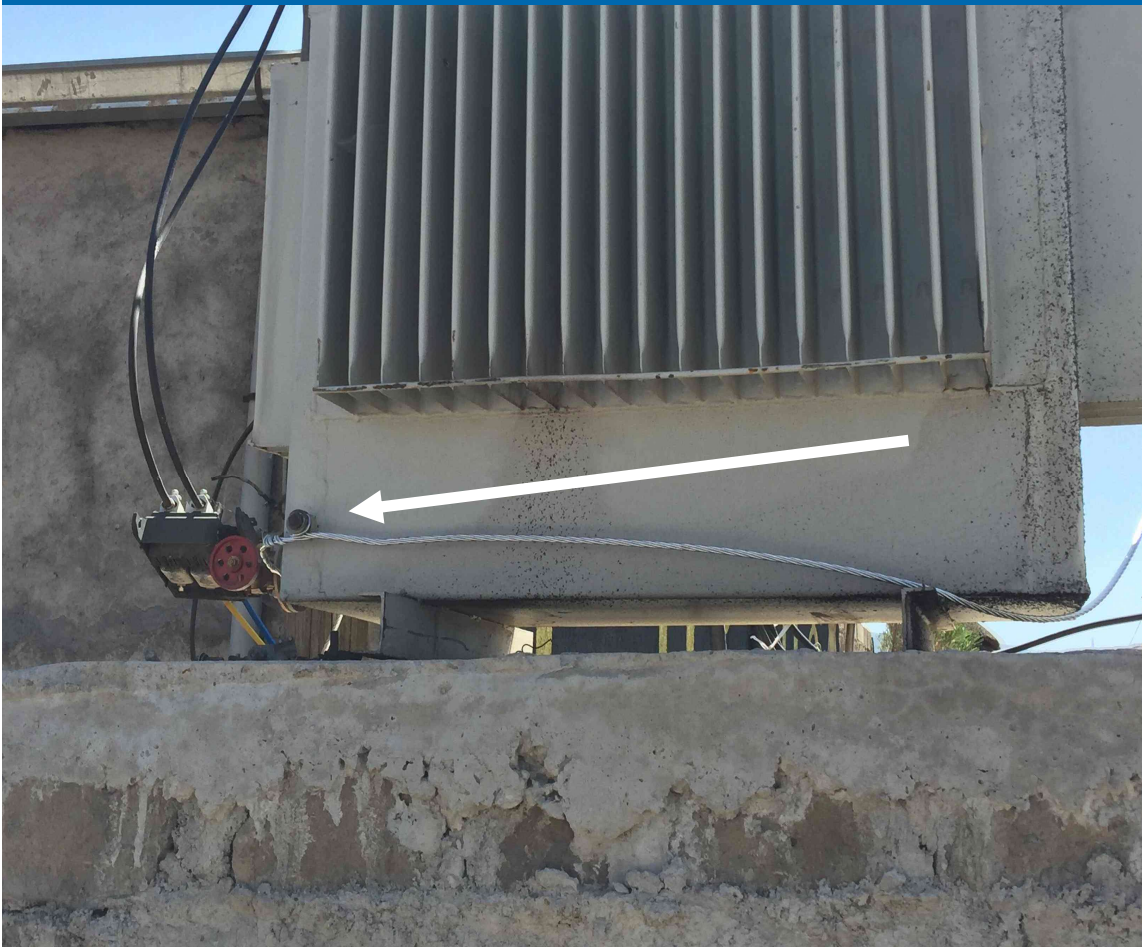
**After**



**2x (MV & LV) Earth bonded system**

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## Combi – 2x Earth bonded system



After

### MV Bonding

Copper cable 35mm must be connect between the Combi pole clamp and the transformer body.

Bonding is vital for the transformer Protection. This is connected into the crowfoot.

The voltage inside and outside of the transformer must be at the same potential during a lightning strike.

If the voltage potential = 0.

### LV Bonding

Copper cable 35mm must be connect from the neutral bushing and the transformer tank.

This is connected into the crowfoot.

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## Improvements :

Surge arrester has 100% chance of replacement.

Replace surge arrester with link stick & safely from ground.

Transformer surge protection is improved significantly. Transformer survives for 20 years.

Surge arrester alerts you when it is spent.

Surge arrester replacement

- Is a 30 seconds operation
- rather than 3 hours.

Safer, Quick & Fast, Easier to replace.

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## Advantages:

1. Link stick replacement of surge arrester.
2. 30 second operation.
3. No outage for replacement.
4. Safer from ground.
5. 100% replacement probability

## Conclusion :

1. The Combi unit improves transformer protection.
2. Transformers should have a 20 year life span.  
Transformers should not blow before they reach this age.
3. Fuses should not blow when the rainy weather comes.
4. Surge arresters should be replaced as soon as possible to ensure , the protection of the transformer.
5. EEC can reduce transformer losses, nuisance fuse blows and improve surge arrester replacement by deploying Combi units in troublesome areas / hotspots.

End – thank -you