

LEC – Lesotho Electricity Company



**Combi unit project –
Pole mounted transformer protection upgrade.**

May 2017

LEC – Lesotho Electricity Company

Introduction

From the 24 April – 28 April 2017, Live Line Technology conducted a stores visit & installation training in Maseru and outlying areas to assist LEC with the recently acquired Combi units which is pole mounted transformer protection.

The new technology has been adopted by LEC, as a stores item.

4x 12kv Combi sets were installed across Northern , Central A , Central B and Southern regions. A total of 700km travelled and 4x transformers fitted with Combi sets by LEC staff trained under the supervision of Live Line Technology.

Live Line Technology

Transformer Combi Unit Installations



Pole mounted transformer protection 11kv & 33kv

May 2017

Northern Region - Leribe

Installation team : Moeketsi Monoane, Nkate Sekaja, Mokhitli Lesaana, Toka Tsita, Tieho Senikwe, Motsamai Ramphalile, Rethabile Seboka.

1st Installation - Tuesday 25 April 2017

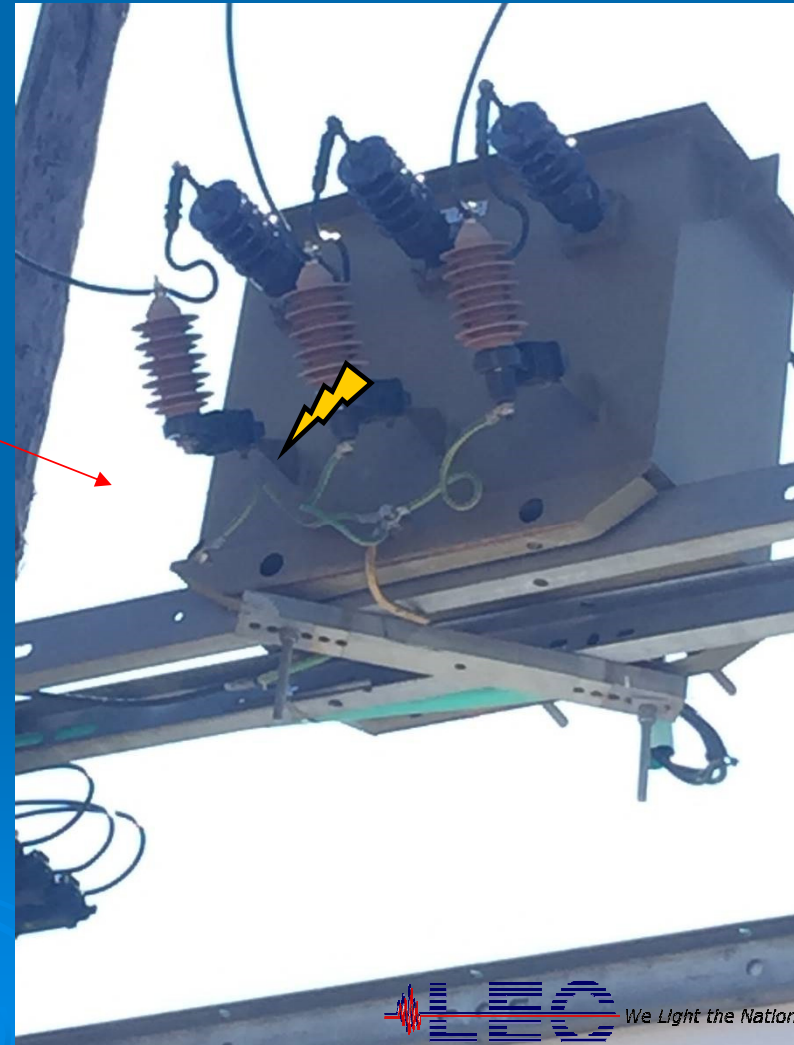
Combi installation - Tuesday 25 April 2017

Northern region - Leribe

1x 50kva Transformer would have been lost because the surge arrester was blown.
An approximate R40 000 was saved with transformer replacement for R15000 investment.



BEFORE



Combi installation - Tuesday 25 April 2017

Improvements :

- The Combi unit will be installed on a transformer for 20 years.
- The surge arrester is only replaced when needed.
- Surge arrester alerts you when it is spent.
- Surge arrester replacement is a 3 min operation rather than 3 hours.
- Safer to maintain.
- Faster to maintain.
- Easier to maintain.

AFTER

Combi installation - Tuesday 25 April 2017

Northern region - Leribe

1x 50kva Transformer would have been lost because the surge arrester was blown. An approximate R40 000 was saved with transformer replacement for R15000 investment.



Installation team : Moeketsi Monoane, Nkate Sekaja, Mokhitli Lesaoana, Toka Tsita, Tieho Senikwe, Motsamai Ramphalile, Rethabile Seboka.

Central A- Berea, Sefikeng, TY

Installation team : Chabana Likotsi, Mlambo Nhlapo, Tsepo Mothebe, Tekane Rajane, James Mabeta, Khutlana Mashapha , Thabiso Sehobai, L.Mokhele.

2nd Installation - Wednesday 26 April 2017

Combi installation - Wednesday 26 April 2017

Central A- Berea, Sefikeng, TY

1x 50kva Transformer would have been lost because the surge arrester was blown. An approximate R40 000 was saved with transformer replacement for R15000 investment.



BEFORE

Blown surge arrester on site



A transformer failure would have transpired, with the next lightning storm.

Combi installation - Wednesday 26 April 2017

Central A- Berea, Sefikeng, TY



Improvements :

When a surge arrester is spent it alerts LEC. Transformers will no longer be lost due to lightning.

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

Installation team :

Chabana Likotsi, Mlambo Nhlapo, Tsepo Mothebe, Tekane Rajane, James Mabeta, Khutlana Mashapha , Thabiso Sehobai, L.Mokhele.

Installation took 2-3 hours to install.

Southern Region – Quiting, Morosi High School

Installation team : Lazaro Makae, Tebatso Thale ,Tlau Maile, Molepi Teke, Moeketsi Sieane, Linda Mochochoko , Mokutu Nkwebe.

3rd Installation - Thursday 27 April 2017

Combi installation - Thursday 27 April 2017

Southern Region - Quting , Morosi High School.



BEFORE

Disadvantages :

Installation high up on a mountain.

Lightning activity is high.

Site not often visited due to remoteness.

Surge arresters have poor chance of getting replaced and difficult to access.

Transformers have a high probability of getting damaged during lightning storms.

Combi installation - Thursday 27 April 2017

Southern Region - Quting , Morosi High School.

Improvements :

Surge arrester has 100% chance of replacement.

Replace surge arrester with link stick & safely from ground.

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

Installation team :

Lazaro Makae, Tebatso Thale ,
Tlau Maile, Molepi Teke,
Moeketsi Sieane, Linda Mochochoko
Mokutu Nkwebe.

Installation took 2 hours.

AFTER

Central B – Thaba Chitja

Installation team : Thuso Motiki, Tsepo Lekola , Mothae Thaene, Richard Matlotlo , Matela Natitoane, Phomolo Masaile, Thabiso Shai, Ramulo Rentlo, S. Pheretlo, M.Lepheane.

4th Installation - Friday 28 April 2017

Combi installation - Friday 28 April 2017

Central B – Thaba Chitja

1x 50kva Transformer would have been lost because the surge arrester was blown.
An approximate R40 000 was saved with transformer replacement for R15000 investment.



Combi installation - Friday 28 April 2017



AFTER

Improvements :

Surge arrester has 100% chance of replacement.

Replace surge arrester with link stick & safely from ground.

Transformer surge protection is improved significantly.

Installation team : Team Thaba Chitja

Thuso Motiki, Tsepo Lekola , Mothae Thaene, Richard Matlotlo , Matela Natitoane, Phomolo Masaile, Thabiso Shai, Ramulo Rentlo, S. Pheretlo, M.Lepheane

Time taken to install = 1.45 hours.

Combi installation - 24 - 28 April 2017

Conclusion :

LEC saved a potential loss of R150 000 (3x transformers would have been lost due to blown surge arresters.) The investment was a one time purchase of R45 000.

Replacement surge arresters are R1550-00 each.

Pole mounted transformers will have a 20 year life span.

Extending transformers lifespans are achieved with Combi unit because when the surge arrester is spent, it isolates the transformer until the surge arrester is replaced. It take about 2 hours to install a Combi unit.

Bonding of the Combi unit on the MV and LV side is imperative.

The ongoing Combi unit upgrade program will significantly reduce the losses of transformers within LEC.

Combi installation - 24 - 28 April 2017

Thank you – Re a le Boga

Live Line Technology sincerely thanks LEC for the opportunity to showcase our technology and eliminate pole mounted transformer losses.