



**OPENING UP
THE SMART GRID**

Method Statement

**Replacement of unit
substation type Merlin Gerin
direct coupled LV Cabinet Door**



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Prepared by:	Andrew Harrison	10.07.2018
Reviewed by:	Tim Butler	14.08.2018
Recommended by:	Dave Russell	13.11.2018
Approved (WPD):	Chris Harrap	13.11.2018

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Telephone +44 (0) 1332 827446. E-mail wpdinnovation@westernpower.co.uk.

Glossary

Term	Definition
ALVIN	Automated Low Voltage Intelligent Network
HV	High Voltage
LV	Low Voltage
LV-CAP™	Low Voltage Common Application Platform
NOP	Normally Open Point

1 Introduction

This method statement forms part of a suite of method statement documentation which has been created specifically for the OpenLV project that is being conducted by WPD in conjunction with EA Technology Ltd. The OpenLV project is a proof of concept study to determine the viability and functionality of a form of distributed intelligence being applied to an electrical distribution system. One aspect of OpenLV concerns the “meshing” of two secondary distribution substations as a means of overcoming load issues.

1.1 Document Scope

The OpenLV project has identified a number of WPD locations where substation meshing can take place. These sites have been subject to site inspections and a range of network checks. Whilst the OpenLV team have taken the upmost care in selecting sites for inclusion of the project which cause minimal impact to WPD, a small number of the proposed suitable locations identified will require minor modification works to be completed before plant and equipment required for the OpenLV project could be temporarily installed.

This document is a method statement which supports just one of the specific minor works required, namely the replacement of a transformer mounted fuse cabinet door, specifically for Merlin Gerin/Schneider cabinets regardless of the number of outgoing ways. The new door is deeper set and allows for the installation of the ALVIN Reclose device.



Figure 1 - Merlin Gerin transformer mounted LV cabinet

1.2 Merlin Gerin LV Transformer mounted fuse cabinet Schematic

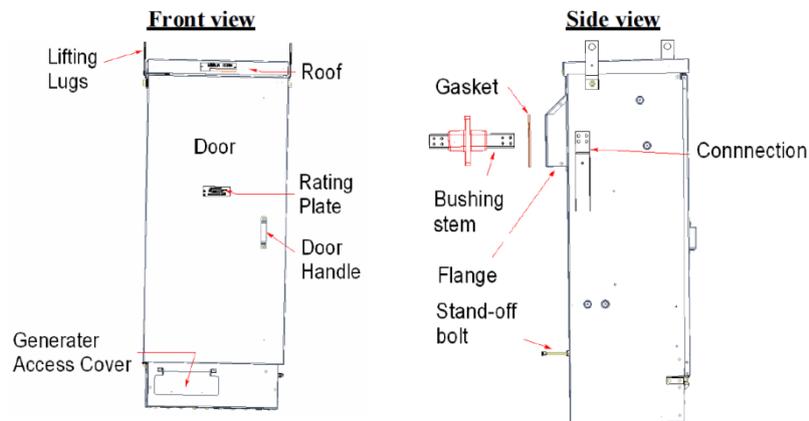


Figure 2 - Merlin Gerin LV Transformer mounted fuse cabinet Schematic

1.3 Additional Requirements

Prior to undertaking dismantling work on a live LV cabinet, it will be necessary to provide justification as to why this work is to be undertaken live by completing a specific risk assessment (see ST:OS1A) and submitting this, with this proposed procedure, for approval.

The Authorised Person (named below) carrying out the work shall hold an LVSW authorisation and be accompanied by a Competent Person (named below). Prior to the work on site starting a copy of this document shall be issued to both persons and they shall confirm that they have read and understand this document by signing Table 1 below.

If, for any reason, the requirements of this document cannot be complied with then all work shall cease until such time as an alternative approved method of work can be established.

Table 1 - Authorised & Competent Persons

Title	Required information
Substation ID	
Substation Name	
LV Enclosure Serial No.	
Date of Door Refit	
Authorised Person	<i>Print name</i>
	<i>Signature</i>
Competent Person	<i>Print name</i>
	<i>Signature</i>

1.4 Risk Assessment

Before any work is carried out a site-specific safety risk assessment shall be carried out in accordance with WPD document ST:HS20A by those carrying out the work as named above.

The electrical risks associated with working on live LV cabinets are:

- Contact with live electricity resulting in burns and electric shock
- Flashover causing fire and explosion resulting in burns and eye injuries

These electrical risks are controlled by:

- The use of competent personnel
- The following of approved procedures
- The effective use of shrouding
- The correct use of approved PPE
- The correct use of approved insulated tools

1.5 Personal Protective Equipment

The following PPE shall be worn by both the Authorised Person and the Competent Person named above throughout the entire procedure:

- AFR clothing in accordance with WPD document ST:HS8H
- Class 0 rubber gloves in accordance with WPD document ST:HS8B
- A full-face visor in accordance with WPD document ST:HS8D

A rubber mat shall be used for standing and kneeling whilst the work is completed on the LV cabinet.

All PPE and the rubber mat shall be inspected before use to ensure that it is in date, clean, in good condition and fit for purpose. Any PPE found to be worn or defective shall be removed from service and replaced before the individual affected commences work.

Only approved fully insulated tools should be used. These tools shall be inspected before use.

1.6 Approved Procedure

1. Inspect the exterior condition of the cabinet for rust etc. Where excessive rust or damage is present **do not** proceed until the cabinet has been made dead in accordance with rule 8.2 of the Distribution Safety Rules.
2. Open the cabinet door and carry out a visual inspection of the internal condition of the cabinet. Pay particular attention to any unused/normally open fuse-ways. **Do not** proceed until all exposed mains conductors have been shrouded.

Check for excessive rusting paying particular attention to the underside of the lid. It will not be possible to inspect certain areas of some cabinets due to internal shielding of components. **Do not remove any shield or barrier** in order to gain access to these areas.



Figure 3 - View of LV cabinet internals

3. Check that all mains conductors are effectively shrouded by design or by the use of approved temporary shrouding. If it is not possible to achieve complete shrouding, then the cabinet shall be made dead in accordance with rule 8.2 of the Distribution Safety Rules.

4. Remove the cabinet roof. This is achieved by first removing the two M10 combi-nuts from the inside of the cabinet (located just behind the front cross member at the top of the cabinet – see Figure 4 below).



Figure 4 - View of LV Cabinet M10 roof combi-nut

5. Lift the front of the LV cabinet roof approximately 25mm, then push the roof panel backwards until the roof pins clear the brackets, the panel can then be lifted away. Consider using two people to perform this lift as larger cabinet roofs can be heavy.
6. After removal of the cabinet roof, verify the ventilation mesh remains in place, is secure and undamaged. Specifically, ensure that the mesh will prevent any tools or components being accidentally dropped into the LV Enclosure.

If the mesh is missing or is unsuitable to prevent accidental ingress of unwanted items, the work must be halted until suitable repairs can be undertaken.

7. Whilst an assistant holds and supports the open LV cabinet door, remove the two M8 bolts (as shown in the figure below) normally at the top left-hand side of the cabinet which secure the cabinet door to the cabinet. Once removed, the cabinet door can be lifted away from the lower door hinge and replaced.



Figure 5 - LV Cabinet door securing bolts

8. Insert the replacement cabinet door into the lower door hinge fitting, and loosely re-fit the top M8 securing bolts. Move/adjust the door position to ensure correct alignment with the cabinet in both the open and closed position, then re-tighten the M8 securing bolts.
9. Re-fit the cabinet roof, by simply following the instructions for removal in reverse.
Note: When refitting the roof panel, do not over tighten the combi-nuts.
Max torque setting 10Nm.
10. Upon completion of the required works, remove all tools and equipment from the LV cabinet and secure the door closed.

