1. Objective

This Standards Alert is to advise of the release of Version 2.5 of the Substation Battery Size Calculator.

2. Scope

This tool applies to VRLA (Valve Regulated Lead Acid) batteries used in all EQL Substation applications (Bulk Supply, Zone and C&I).

3. Introduction

The tool is based on IEEE485 Recommended Practice for Sizing Lead-Acid Batteries for Stationary Applications (2010) and has been provided as a Design aid to select the correct size battery system from those available on current period contract.

There are five main steps that the calculation tools guides the user through are:

1. Defining the loads that the battery needs to support based on proposed or recommended values.
2. Building a load profile for the autonomy time.
3. Selecting the battery type from the list available on contract.
4. Selecting the number of battery strings to be used in parallel.
5. Calculating the required Ampere-hour (Ah) capacity of the battery and comparing this to the chosen item.

Business standards for Autonomy Time, Temp Factor, Design Margin, Aging Factor, Minimum Battery Voltage are specified in STNW3022 and shall be used in conjunction with the tool.

NOTE

The design of the battery charger is beyond the scope of this calculation tool.

4. Period Contract Batteries

Further details on substation stationary batteries can be found in the following locations.
4.1. South East

TSD0079 Substation Battery Chargers and Batteries

4.2. North South

00000015 Selection Guide

5. Link to Calculator Tool

The calculator tool is located on the Substation Standards SharePoint site in the Substation Design Tools section.


6. Revision Notes

The following revisions have been included in version 2.5

- Load Profile Calculation table added.
- Tab Colours and numbering added.
- Batteries discharge details now in lookup table.
- Battery selection on Front Sheet now uses lookup table.
- Additional Battery discharge details added for Haze and CYA batteries.
- K-Factor Sheet populated from Results Sheet battery selection and lookup tables.
- Battery selection on Front Sheet conditionally formatted.
- Plant Table added to Front Sheet.
- Load values for Battery Cycle Definition Table now taken from Load Table.
- Secondary System Load and Switchgear Tabs added.
- Changes to macros within the calculator tool to support the above revisions.
- Updated Instructions.

7. Update to Manuals

During 2020 EQL Substations Standards plan to merge the requirements of RED 693, Standard Network Building Blocks - Substations and STNW3022, Substation Standard Standard for DC Supplies. The changes here will be included in the merged document.

8. Further Information

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