STATRON
NON STOP POWER

Battery Energy Storage System (BESS)
BASE LOAD POWER HUB

Statron ref. 331497

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002	02.11.2024	CPA	First Revised Version

Arc Flash Study
BESS

for Base Load Power Hub (BLPH) Project

Classification: confidential

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Table 1: Version overview

	Date	Name
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Table 2: Approval overview

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Original document

This document is an original document of FREQCON GmbH.

1 Introduction

1.1 Other Applicable Documents

The following documents are applicable:

Document type	Document Name
BESS Overall Electrical Schematics	10354_23A2007_CAE_Statron_Shell Crosswind BESS FQ 1MW 5MWh Offshore_20241017_V1.0

Table 1: Other applicable documents

1.2 Generic Terms and Abbreviations Used

This following list should help you understand some of the abbreviations used in this document.

Generic Term and Abbreviation	Description
BESS	Battery Energy Storage System
BLPH	Base Load Power Hub
PCS	Power Conversion System

Table 2: Generic terms and abbreviations used

2 Arc Flash Study

2.1 Reference Point

Reference point for the calculation are the AC busbars of AC mains circuit breaker 80Q1 inside PCS container (see following SLD extract):

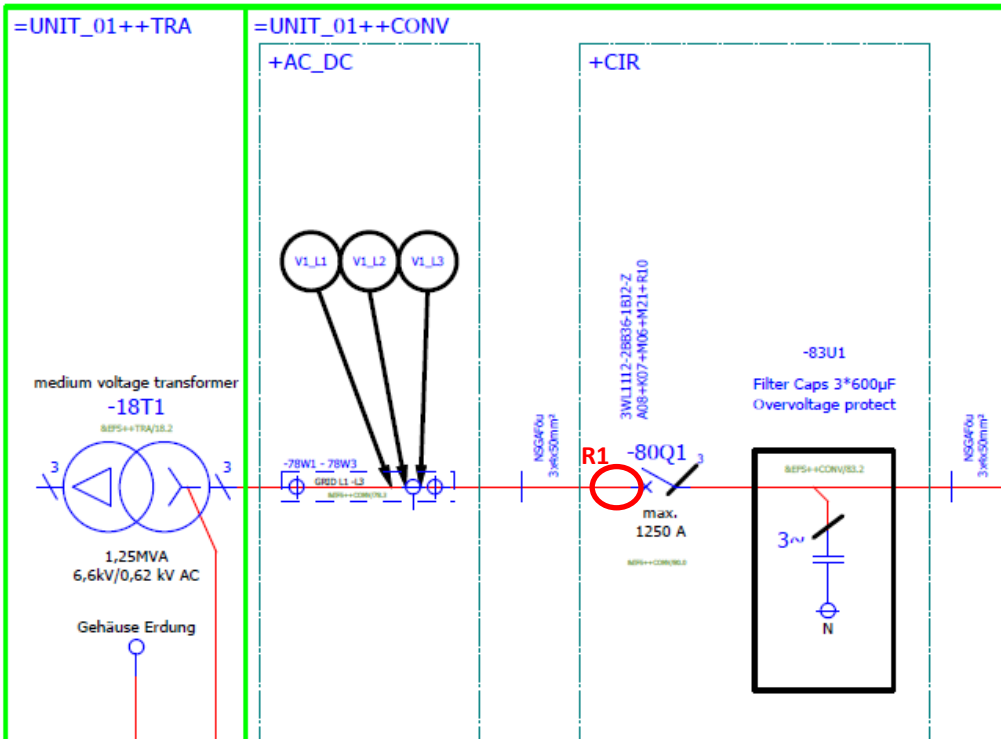


Figure 1: SLD extract showing reference point (10354_23A2007_CAE_Statron_Shell Crosswind BESS FQ 1MW 5MWh Offshore_20241017_V1.0)

2.2 Variables

For calculating the arc flash study “Online Arc Flash Calculator IEEE 1584 (2002 and 2018)” was used. (https://www.jcalc.net/arc-flash-calculator-ieee)

Variables used for arc flash study calculation:

Standard	IEEE 1584-2018			
Unit of measure	Metric			
Voltage	620	Vac		
Fault current	33,6	kA		
Arcing time for I_{arc}	100	ms		
Arcing time for I_{arc_min}	200	ms		
Equipment type	Switchgear			
Working distance	610	mm		
Enclosure width	508	mm		
Enclosure height	1245	mm		
Enclosure depth	508	mm		
Electrode configuration	Vertical in Box -VCB			
Conductor gap	32	mm		
Reset				
Calculate				

2.3 Results

Results of arc flash study calculation:

Normal Arcing Current		Reduced Arcing Current	
Arcing current I_{arc}	26.06 kA	Arcing current I_{arc_min}	23.04 kA
Incident energy	3.45 cal/cm^2	Incident energy	**6.13 cal/cm^2**
Arc flash boundary	1,181 mm	Arc flash boundary	**1,692 mm**
PPE Category	1	PPE Category	**2**
Size correction factor	1.2602		

