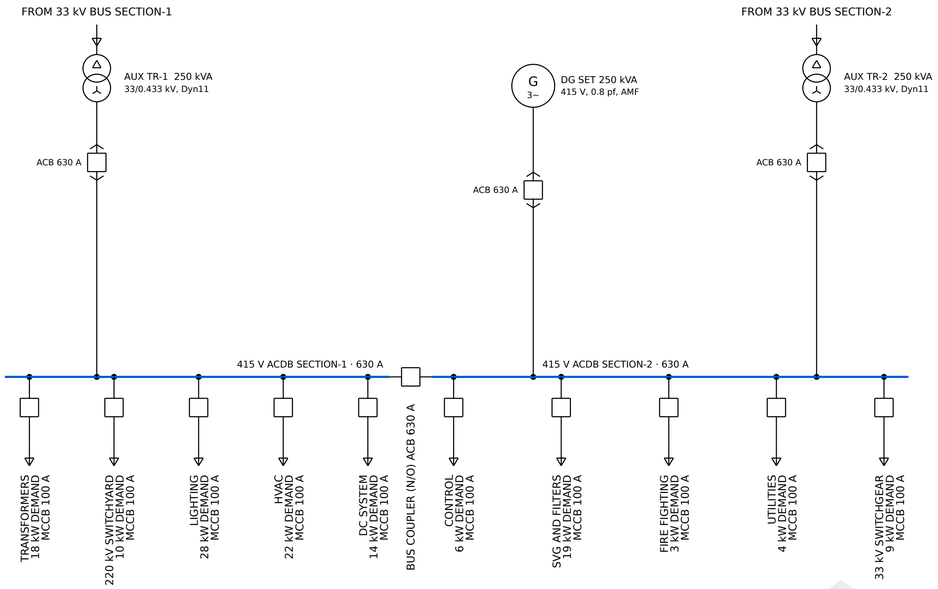
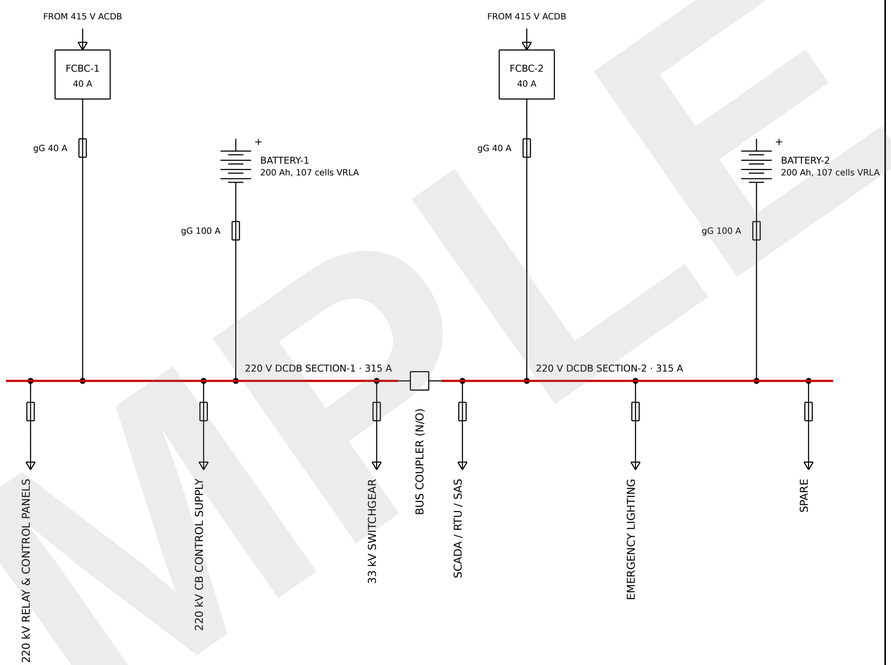
415 V AC DISTRIBUTION BOARD

Interlock: at most two of the three incomers are closed. The DG feeds Section-1 through the coupler.



220 V DC DISTRIBUTION BOARD

2 × 100 % batteries and chargers. One charger and one battery feed each section.



AUXILIARY SUPPLY

Maximum demand √(133² + 74²) = 152 kVA (133 kW, 74 kvar). With the 1.2 margin 183 kVA: aux transformers 2 × 250 kVA.

DG set 250 kVA for the full aux load (200 kVA required).

The main electric fire-water pump (37.0 kW) starts DOL with a 14.8 % voltage dip (limit 15.0 %).

Battery 2 × 200 Ah VRLA, 107 cells: float 241 V, end of discharge 187 V. IEEE Std 485 requires 163 Ah for 10 h.

Chargers 2 × 40 A float-cum-boost. IEEE Std 946 requires 32.5 A.

LOADS BY GROUP (CONNECTED / DEMAND kW)

Transformers: 19.2 / 18.1
220 kV switchyard: 19.1 / 10.4
Lighting: 28.2 / 28.2
HVAC: 21.6 / 21.6
DC system: 25.2 / 13.6
Control: 6.0 / 6.0
SVG and filters: 18.8 / 18.8
Fire fighting: 42.5 / 2.8
Utilities: 58.7 / 4.3
33 kV switchgear: 9.2 / 9.2

NOTES

1. Load ratings are the design's values. Change them in the load list on the Auxiliary supply step.
2. The telecom supplier provides the 48 V DC telecom battery and charger.
3. Not to scale.
4. Ratings are at or above the full-load current: breakers IEC 60947-2 rated currents, fuses IEC 60269-1 gG sizes, boards IEC 61439-2 rated currents. DC feeder fuses and cables are sized at detail design.

SubstationLayout

REV	DATE	DESCRIPTION	BY
0	2 Nov 2026	Issued	Sample engineer

PROJECT	Sample 220/33 kV pooling substation
CLIENT	Sample client
LOCATION	Sample site
TITLE	AUXILIARY SUPPLY: 415 V AC AND 220 V DC SLD 220/33 kV POOLING SUBSTATION, 250 MW

	NAME	DATE
DRAWN	Sample engineer	2 Nov 2026
CHECKED	Sample engineer	2 Nov 2026
APPROVED	Sample engineer	2 Nov 2026

DRG. NO.	SSL-E-AUX-001	REV.	0
SCALE	NTS	SIZE A1	Sheet 1 of 1

SAMPLE

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