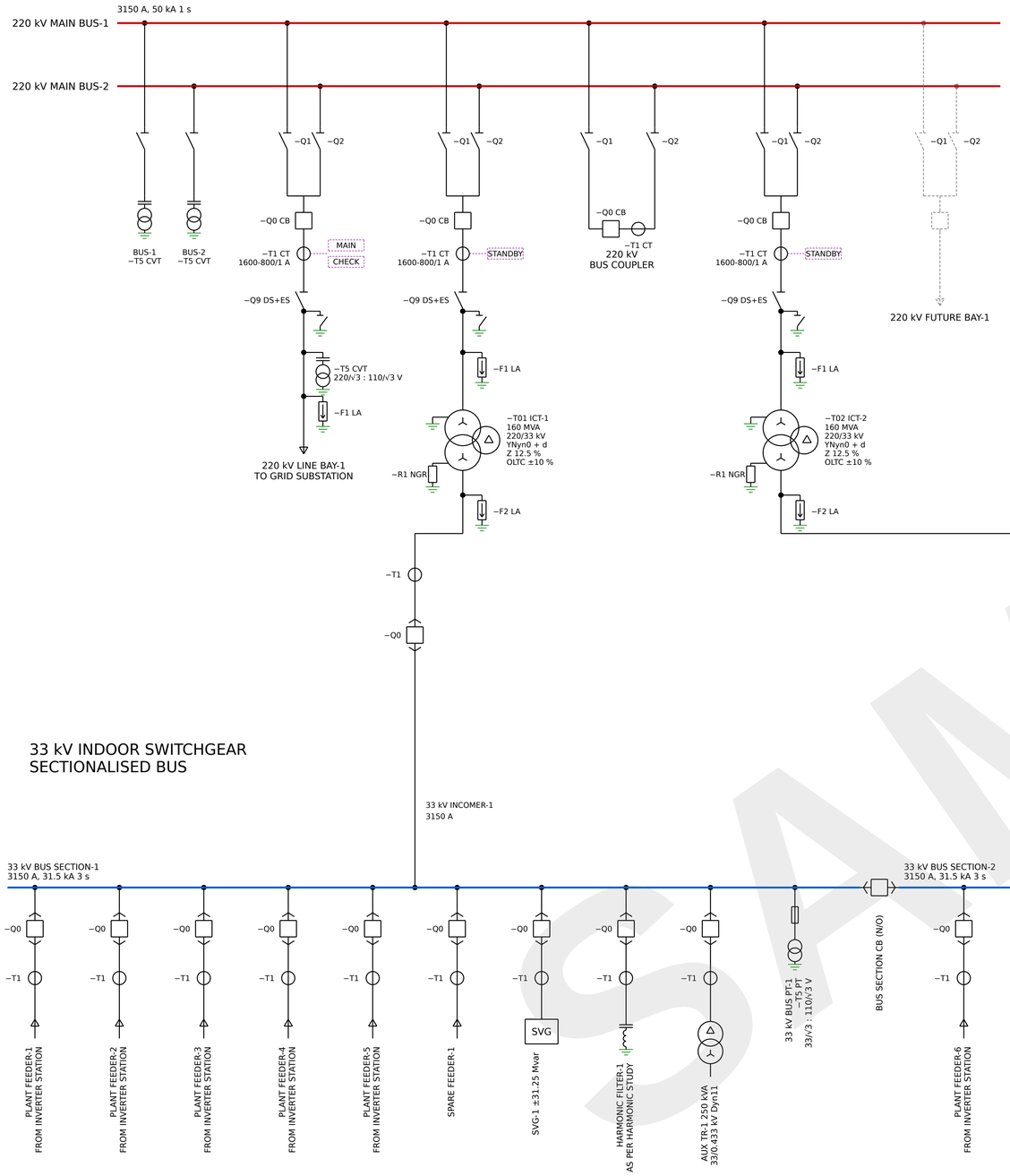
220 kV SWITCHYARD: AIS, DOUBLE MAIN BUS



33 kV INDOOR SWITCHGEAR SECTIONALISED BUS

NOTES

1. Short-circuit ratings are checked in calculation SSL-C-SCC-001. The arrester rating follows the insulation co-ordination study and the SVG rating the reactive power study.
2. 220 kV: AIS, double main bus with bus coupler. 33 kV: sectionalised bus, one section per ICT, bus-section CB normally open, indoor switchgear (withdrawable VCB).
3. ABT meters: Main + Check at the 220 kV line bay, Standby on each ICT HV, on the metering cores of the CTs and CVTs.
4. No wave trap: protection and SCADA over OPGW.
5. Standards: IEC, CEA Technical Standards and CBIP Manual.
6. Designations: IEC 81346-2:2019 letter codes (Q switching devices, T transformers, F arresters, L reactors, R resistors) with the numbering of DIN 40719-2 that Indian utilities keep; T1 / T5 for CT / CVT (IEC 81346-2:2019 classes BCA / BAA); −Q8 the earth switch of −Q9.

EQUIPMENT RATINGS

220 kV: Um 245 kV, BIL 1050 kVp, 50 kA 1 s.

220 kV bus 3150 A, bays 1600 A, LA 216 kV.

ICT: 2 × 160 MVA, 220/33 kV, YNyn0 + d tertiary, Z 12.5 %, OLTC ±10 % in 1.25 % steps.

33 kV: Um 36 kV, BIL 170 kVp, 31.5 kA 3 s, LA 30 kV.

33 kV bus 3150 A, incomers 3150 A, feeders 1250 A.

SVG 2 × ±31.25 Mvar.

220 kV CT 1600-800/1 A, 5 cores: 0.2S, 0.2S, 5P20, 5P20, PS, 15 VA. CVT 220/√3 : 110/√3 V, 3 secondaries: 0.2, 3P, open delta, 50 VA.

33 kV CT: incomers 3150/1 A, feeders 1250/1 A, SVG 630/1 A, harmonic filter 630/1 A, aux TR 100/1 A, the same cores. Bus PT 33/√3 : 110/√3 V, 3 secondaries: 0.2, 3P, open delta, 50 VA.

Aux TR 2 × 250 kVA, 33/0.433 kV: one duty, one standby through an LT changeover.

LEGEND

- Circuit breaker (SF6)
- Withdrawable VCB
- Isolator
- Isolator with earth switch
- Current transformer
- Fuse
- CVT
- Bus PT with fuse
- Surge arrester
- ICT YNyn0 + d (NGR)
- Auxiliary transformer Dyn11
- Static var generator (SVG)
- Harmonic filter
- Feeder from the plant
- Line to the grid
- ABT meter (ABT)
- Future bay

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	SINGLE LINE DIAGRAM 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-SLD-001	REV.	0
SCALE	NTS	SIZE A1	Sheet 1 of 1

SAMPLE