Bill of materials

Project	Client	Location	Revision	Date
Sample 220/33 kV pooling substation	Sample client	Sample site	0	2 Nov 2026

Document no.	Prepared	Checked	Approved
SSL-C-BOM-001	Sample engineer	Sample engineer	Sample engineer

Rev	Date	Description	By
0	2 Nov 2026	Issued	Sample engineer

220/33 kV pooling substation, 250 MW. Quantities from the design. No prices. Structure steel is an estimate. Verify the makes before use.

HV switchyard

S.No	Item	Specification	Unit	Qty	Spares	Total qty	Makes
1	SF6 circuit breaker, 3-pole	245 kV, BIL 1050 kVp, 50 kA 1 s, 1600 A, spring operated	set	4	0	4	Hitachi Energy, Siemens Energy, GE Vernova, CG Power
2	SF6 circuit breaker spare pole	245 kV, BIL 1050 kVp, 50 kA 1 s, one interrupter pole of the breaker above	nos	0	1	1	Hitachi Energy, Siemens Energy, GE Vernova, CG Power
3	Isolator, HCB, 3-phase, motor operated	245 kV, BIL 1050 kVp, 50 kA 1 s, 1600 A, without earth switch	set	10	0	10	Hitachi Energy, Siemens Energy, GE Vernova, CG Power
4	Isolator, HCB, 3-phase, with 1 earth switch	245 kV, BIL 1050 kVp, 50 kA 1 s, 1600 A	set	3	0	3	Hitachi Energy, Siemens Energy, GE Vernova, CG Power
5	Current transformer, single phase	245 kV, BIL 1050 kVp, 50 kA 1 s, 1600-800/1 A, 5 cores: 0.2S, 0.2S, 5P20, 5P20, PS, 15 VA	nos	12	3	15	Hitachi Energy, Siemens Energy, GE Vernova, CG Power
6	Capacitor voltage transformer, single phase	245 kV, BIL 1050 kVp, 50 kA 1 s, 220/√3 : 110/√3 V, 3 secondaries: 0.2, 3P, open delta, 50 VA	nos	9	3	12	Hitachi Energy, Siemens Energy, GE Vernova, CG Power
7	Surge arrester, station class, with counter	216 kV rated, 10 kA, class 3	nos	9	3	12	Hitachi Energy, Siemens Energy, CG Power
8	Bus post insulator	245 kV, solid core, 8 kN	nos	54	6	60	Aditya Birla Insulators, Sediver, To be named by the owner
9	Aluminium tube, 4" IPS (OD 114.3 mm)	AA 6101-T6, main bus and interconnection	m	916	46	962	Hindalco, Apar Industries
10	Clamps, connectors and spacers	to suit tube and equipment terminals	lot	1	0	1	Hindalco, Apar Industries

Transformers

S.No	Item	Specification	Unit	Qty	Spares	Total qty	Makes
11	Power transformer (ICT), 3-winding	160 MVA, 220/33 kV, YNyn0 + d tertiary, Z 12.5 %, OLTC ±10 %, ONAN/ONAF	nos	2	0	2	Hitachi Energy, Siemens Energy, GE Vernova, CG Power
12	Neutral grounding resistor	33 kV, 1000 A for 10 s, 19.05 Ω	nos	2	0	2	CG Power, To be named by the owner
13	Surge arrester at ICT LV terminals	30 kV rated, 10 kA	nos	6	3	9	Hitachi Energy, Siemens Energy, CG Power

33 kV switchgear

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S.No	Item	Specification	Unit	Qty	Spares	Total qty	Makes
14	33 kV indoor switchgear: Incomer panel, 3150 A VCB	36 kV, 31.5 kA 3 s, bus 3150 A	nos	2	0	2	Siemens, Schneider Electric, ABB, CG Power
15	33 kV indoor switchgear: Feeder panel, 1250 A VCB	36 kV, 31.5 kA 3 s, bus 3150 A	nos	17	0	17	Siemens, Schneider Electric, ABB, CG Power
16	33 kV indoor switchgear: Bus PT panel	36 kV, 31.5 kA 3 s, bus 3150 A	nos	2	0	2	Siemens, Schneider Electric, ABB, CG Power
17	33 kV indoor switchgear: Bus-section panel set (CB + riser)	36 kV, 31.5 kA 3 s, bus 3150 A	nos	1	0	1	Siemens, Schneider Electric, ABB, CG Power

SVG and filters

S.No	Item	Specification	Unit	Qty	Spares	Total qty	Makes
18	Static var generator (STATCOM)	±31.25 Mvar, 33 kV, with coupling transformer / reactor	nos	2	0	2	Hitachi Energy, Siemens Energy, GE Vernova
19	Harmonic filter bank	33 kV, tuned C + L, rating per harmonic study	nos	2	0	2	Hitachi Energy, Siemens Energy, To be named by the owner

Structures

S.No	Item	Specification	Unit	Qty	Spares	Total qty	Makes
20	Line gantry (2 towers + beam)	galvanised lattice, beam 15.5 m, peaks 18.5 m	nos	1	0	1	KEC International, To be named by the owner
21	Shield-wire tower / gantry peak	galvanised lattice, 18.5 m	nos	10	0	10	KEC International, To be named by the owner
22	Equipment support structure	galvanised, for CT / CVT / LA (single phase)	nos	30	0	30	KEC International, To be named by the owner
23	Isolator support structure	galvanised, per pole	nos	39	0	39	KEC International, To be named by the owner
24	Bus post insulator support	galvanised, 6.7 m	nos	54	0	54	KEC International, To be named by the owner
25	Structural steel, galvanised (estimate)	IS 2062 E250, hot-dip galvanised	t	138	0	138	Tata Steel, JSW Steel

Earthing

S.No	Item	Specification	Unit	Qty	Spares	Total qty	Makes
26	Earth mat conductor, MS rod	40 mm diameter, buried at 0.6 m	m	10 761	0	10 761	Tata Steel, JSW Steel
27	Earth electrode, MS rod	40 mm × 3 m	nos	144	0	144	Tata Steel, JSW Steel
28	Earthing riser, GS flat	75 × 12 mm, 2 × 3 m per structure	m	546	0	546	Tata Steel, JSW Steel

Lightning protection

S.No	Item	Specification	Unit	Qty	Spares	Total qty	Makes
29	Shield wire, galvanised steel	7/3.66 mm GS earth wire with tension fittings	m	358	0	358	Tata Steel, JSW Steel
30	Lightning mast	25 m, galvanised, with spike	nos	14	0	14	KEC International, To be named by the owner

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Auxiliary supply

S.No	Item	Specification	Unit	Qty	Spares	Total qty	Makes
31	Auxiliary transformer	250 kVA, 33/0.433 kV, Dyn11	nos	2	0	2	CG Power, Schneider Electric, Siemens
32	DG set with AMF panel	250 kVA, 415 V, 0.8 pf	nos	1	0	1	Cummins India, Kirloskar Oil Engines, Mahindra Powerol
33	Battery bank, VRLA	200 Ah C10, 107 cells, 220 V	set	2	0	2	Exide Industries, HBL
34	Float-cum-boost charger	220 V DC, 40 A	nos	2	0	2	HBL, To be named by the owner
35	415 V ACDB, 2 sections with bus coupler	3 incomers (2 aux TR + DG), outgoing feeders per load group	nos	1	0	1	Schneider Electric, Siemens, ABB
36	220 V DCDB, 2 sections with bus coupler	2 chargers + 2 batteries, outgoing feeders	nos	1	0	1	Schneider Electric, Siemens, ABB

Civil

S.No	Item	Specification	Unit	Qty	Spares	Total qty	Makes
37	Roads (WBM / bituminous)	4 m internal and peripheral, 7 m ICT road	m²	2891	0	2891	To be named by the owner
38	Chain-link fence	2.4 m high with 6 m gate	m	565	0	565	To be named by the owner
39	Gravel (surface layer)	3000 Ω·m, 0.1 m thick	m³	2068	0	2068	To be named by the owner
40	Control and switchgear building	RCC, rooms per layout	m²	648	0	648	To be named by the owner

Shield wire: 358 m includes 3 % for sag and jumpers over the 348 m of shield wire in the lightning protection calculation.

SAMPLE

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