

220KV GIS and Pothead yard of 186 MW Tato-I Hydro Electric Project, Arunachal Pradesh.		Technical Data Sheets Volume II Section-IV 220 kV GIS with GIB
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Guaranteed Technical Particulars				
Sl. No.	Description	Units	To be filled by the Bidder	Remarks (if any)
<b>1.0</b>	<b>220kV GIS System</b>			
<b>1</b>	<b>General</b>			
1.1	Manufacturer	-		
1.2	Place of Manufacturer	-		
1.3	Type designation	-		
1.4	Applicable Standards	-		
<b>2</b>	<b>Main data of Switchgear System</b>			
2.1	Nominal Voltage $U_n$	kV		
2.2	Highest Voltage for Equipment $U_m$	kV		
2.3	Rated Frequency			
	· Normal Condition	Hz		
	· Exceptional Condition	Hz		
2.4	Power Frequency withstand voltage, 1 minute	kV <sub>rms</sub>		
2.5	Power Frequency withstand voltage at atmospheric SF6 gas pressure			
	- continuously	kV <sub>rms</sub>		
	- for 1 minute	kV <sub>rms</sub>		
2.6	Lightning impulse withstand voltage			
	- against ground	kV <sub>peak</sub>		
	- over isolating distance of isolators	kV <sub>peak</sub>		
	- over isolating distance of circuit breakers	kV <sub>peak</sub>		
2.7	Switching impulse withstand voltage			
	- against ground	kV <sub>peak</sub>		
	over isolating distances of apparatus	kV <sub>peak</sub>		
2.8	Maximum partial discharge of switch gear assembly at highest voltage for equipment $U_m$			
		pC		
2.9	Rated Continuous Current			
	- busbars and bus tie	A		
	- feeder circuits	A		
	- generator – transformer bay	A		

220KV GIS and Pothead yard of 186 MW Tato-I Hydro Electric Project, Arunachal Pradesh.		Technical Data Sheets Volume II Section-IV 220 kV GIS with GIB
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Sl. No.	Description	Units	To be filled by the Bidder	Remarks (if any)
2.10	Minimum symmetrical short-time withstand current, 1 second	kArms		
2.11	Minimum dynamic short-circuits withstand current	kA <sub>peak</sub>		
2.12	Nominal insulating SF6 gas pressure at 20°C (minimum operating pressure)			
	- enclosures	kPa		
	- circuit breaker	kPa		
2.13	Filling SF6 gas pressure at 20°C			
	- enclosures	kPa		
	- circuit breaker	kPa		
2.14	Maximum leakage rate in percent of the respective volume, per year			
		%		
2.15	Temperature rise	°C		
2.16	Corona extinction voltage	kVrms		
<b>3</b>	<b>Circuit Breaker</b>			
3.1	· Rated continuous current	A		
	· Rated short time withstand current	kA <sub>peak</sub>		
3.2	Rated symmetrical short-circuit breaking current	kArms		
3.3	Rated asymmetrical short-circuit breaking current	kArms		
3.4	Rated short-circuit making current	kA <sub>peak</sub>		
3.5	Line charging current breaking capability	A		
3.6	Small inductive current breaking capability (without producing excessive over voltages)			
		A		
3.7	Number of quenching chambers	-		
3.8	Operating sequence			
	• Line breakers	-		
	• Generator feeder & tie breakers	-		
	• SST Breakers			

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Sl. No.	Description	Units	To be filled by the Bidder	Remarks (if any)
3.9	Mechanical opening time	ms		
3.1	Total breaking time	ms		
3.11	Total closing time	ms		
<b>4</b>	<b>Isolator</b>			
4.1	Rated continuous current	A		
4.2	Minimum make and break capability for capacitive and magnetising current	A		
4.3	Total operating time	s		
	(closing or opening cycle)			
4.4	Temperature rise	°C		
<b>5</b>	<b>Fast acting grounding switch</b>			
5.1	Rated short-circuit making current	kA <sub>peak</sub>		
5.2	Rated switching capacity			
	- inductive currents	A		
	- capacitive currents	A		
5.3	Operating times			
	- charging time of stored energy mechanism	s		
	- fast acting time	ms		
<b>6</b>	<b>Safety grounding switch</b>			
6.1	Rated short time withstand current, 1 s	kA		
6.2	Total operating time	s		
	(closing or opening cycle)			
<b>7</b>	<b>Current Transformers</b>			
7.1	Manufacturer	-		
7.2	Type designation	-		
7.3	Generator / transformer feeder CT's			
	- number of current transformers	-		
	- rated primary current / secondary current	A		
	- accuracy class/burden of core 1	-/VA		
	- accuracy class/burden of core 2	-/VA		

220KV GIS and Pothead yard of 186 MW Tato-I Hydro Electric Project, Arunachal Pradesh.		Technical Data Sheets Volume II Section-IV 220 kV GIS with GIB
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Guaranteed Technical Particulars				
Sl. No.	Description	Units	To be filled by the Bidder	Remarks (if any)
	- accuracy class/burden of core 3	-/VA		
	- accuracy class/burden of core 4	-/VA		
	- accuracy class/burden of core 5	-/VA		
	- accuracy class/burden of core 6	-/VA		
	- rated short-time thermal current, 1 s	kArms		
	- rated dynamic current	kA <sub>peak</sub>		
	- number of CT	no		
7.4	Line Feeder CT's			
	- number of current transformers	-		
	- rated primary current / secondary current	A		
	- accuracy class/burden of core 1	-/VA		
	- accuracy class/burden of core 2	-/VA		
	- accuracy class/burden of core 3	-/VA		
	- accuracy class/burden of core 4	-/VA		
	- accuracy class/burden of core 5	-/VA		
	- accuracy class/burden of core 6	-/VA		
	- rated short-time thermal current, 1 s	kArms		
	- rated dynamic current	kA <sub>peak</sub>		
7.5	Bus Coupler CT's			
	- Set-I ( 3 Nos.)	no		
	- rated primary current / secondary current	A		
	- accuracy class/burden of core 1	-/VA		
	- accuracy class/burden of core 2	-/VA		
	- accuracy class/burden of core 3	-/VA		
	- accuracy class/burden of core 4	-/VA		
	- accuracy class/burden of core 5	-/VA		
	- accuracy class/burden of core 6	-/VA		
7.6	SST CT's			
	- Set-I ( 3 Nos.)	no		
	- rated primary current / secondary current	A		
	- accuracy class/burden of core 1	-/VA		
	- accuracy class/burden of core 2	-/VA		
	- accuracy class/burden of core 3	-/VA		
	- accuracy class/burden of core 4	-/VA		

220KV GIS and Pothead yard of 186 MW Tato-I Hydro Electric Project, Arunachal Pradesh.		Technical Data Sheets
		Volume II Section-IV
		220 kV GIS with GIB

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Sl. No.	Description	Units	To be filled by the Bidder	Remarks (if any)
	- accuracy class/burden of core 5	-/VA		
	- accuracy class/burden of core 6	-/VA		
<b>8</b>	<b>Potential Transformers</b>			
8.1	Manufacturer	-		
8.2	Type designation	-		
8.3	Number of potential transformers	no		
8.4	Number of windings per Pt	no		
8.5	Rated transformation ratio			
	- for protection	KV/V		
	- for metering	KV/V		
8.6	Accuracy class/rated burden			
	- for protection	-/VA		
	- for metering	-/VA		
<b>9</b>	<b>Surge arrester</b>			
	- system voltage	kV		
	- rated arrestor voltage	kV		
	- rated nominal discharge	A		
	- minimum thermal capacity	-		
	- continuous operating voltage (COV)	kV		
	- MCOV as per ANSI test	kV		
	- Temporary over voltage (TOV)			
	· 1 sec	kV		
	· 10 sec			
	- One minute (dry) power frequency withstand voltage of arrestor housing	kV		
	- Impulse withstand voltage of arrestor housing with 1.2/50 ms wave	kV		
	Residual voltage with waveform 8/20 $\mu$ s at	kV		
	Discharge current of			
	1kA	kV		
	2kA	kV		
	3kA	kV		

220KV GIS and Pothead yard of 186 MW Tato-I Hydro Electric Project, Arunachal Pradesh.		Technical Data Sheets Volume II Section-IV 220 kV GIS with GIB
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Guaranteed Technical Particulars				
Sl. No.	Description	Units	To be filled by the Bidder	Remarks (if any)
	· Switching surge			
	5kA	kV		
	10kA	kV		
	20 kA	kV		
	40 kA	kV		
<b>10</b>	<b>Informative Data</b>			
<b>1</b>	<b>Gas system / General</b>			
1.1	SF6 gas pressure alarm level			
	- enclosures	kPa		
	- circuit breaker	kPa		
1.2	SF6 gas processing unit			
	- make	-		
	- type	-		
	- rated capacity	l/min		
	- power supply voltage	V		
	- power consumption	kW		
1.3	Total power consumption of heating elements			
	per feeder	W		
	at supply voltage	V		
<b>2</b>	<b>Circuit breaker</b>			
2.1	Number of poles	no		
2.2	Cable charging current breaking capability	A		
2.3	Rated opening time	s		
2.4	Difference in the instants of closing / opening of contacts			
	- within a pole	s		
	- between poles	s		
2.5	Corona extinction voltage	kV		
2.6	Rated transient recovery voltage for terminal faults	kV		
2.7	Maximum dynamic forces on foundation caused by circuit breaker (3 phases)			
	- at closing, vertical forces	kN		

220KV GIS and Pothead yard of 186 MW Tato-I Hydro Electric Project, Arunachal Pradesh.		Technical Data Sheets Volume II Section-IV 220 kV GIS with GIB
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Guaranteed Technical Particulars				
Sl. No.	Description	Units	To be filled by the Bidder	Remarks (if any)
	- at closing, horizontal forces	kN		
	- at opening, vertical forces	kN		
	- at opening, horizontal forces	kN		
2.8	Circuit breaker operating mechanism			
	- kind of stored energy mechanism	-		
	- power consumption of charging motor	W		
	- at supply voltage	V		
2.9	Closing coil			
	- number of coils	no		
	- power consumption	W		
	- at voltage	V		
2.1	Trip coil			
	- number of coils	no		
	- power consumption	W		
	- at voltage	V		
2.11	Operating mechanism	-		
<b>3</b>	<b>Isolator</b>			
3.1	Power consumption of			
	drive motor	W		
	at voltage	V		
3.2	Mechanical terminal load	KN		
3.3	No. / details of auxiliary contacts	no.		
<b>4</b>	<b>Fast acting grounding switch</b>			
4.1	Operating mechanism			
	- kind of stored energy mechanism	-		
	- power consumption of charging motor at Voltage V	W		
	Rated short Circuit Making current			
	Rated Switching Capacity			
	Inductive Currents			
	Capacitive Currents			
	Operating Time			
	Charging Time of stored Energy Mechanism			

220KV GIS and Pothead yard of 186 MW Tato-I Hydro Electric Project, Arunachal Pradesh.		Technical Data Sheets
		Volume II Section-IV
		220 kV GIS with GIB

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	Fast acting time			
<b>5</b>	<b>Safety grounding switch</b>			
5.1	Power consumption of driver motor at Voltage V	W		
	Rated short time withstand current (one) 1s			
	Total operating time (closing or opening cycle)			
<b>6</b>	<b>Weights</b>			
6.1	Approx. weight of one complete 3 phase feeder bay	kg		
6.2	Maximum transportation weight	kg		
<b>7</b>	<b>Dimensions</b>			
7.1	Overall dimensions of one 3-phase feeder bay			
	- length	mm		
	- width	mm		
	- height	mm		
7.2	Minimum space required for complete switchgear assembly considering requirements for testing and maintenance			
	- length	mm		
	- width	mm		
	- height	mm		