

TD-201 Rev No. 00	Form No.	 	PRODUCT STANDARD PROJECT ENGINEERING & SYSTEMS DIVISION, HYDERABAD	ANNEXURE-1C to PY55294 Rev No. 00 Page 1 of 5
COPYRIGHT AND CONFIDENTIAL The information on this document is the property of BHARAT HEAVY ELECTRICALS LIMITED, It must not be used directly or indirectly in any way detrimental to the interest of the company. ANNEXURE-1 C TO PY55294 DATA SHEET FOR 33kV GAS INSULATED SWITCHGEAR (To be filled by the vendor and Submitted during detailed Engineering stage) PROJECT 75MW VISAKH REFINERY MODERNIZATION PROJECT (VRMP) CUSTOMER M/S HINDUSTAN PETROLEUM CORPORATION LIMITED,VIZAG,A.P CONSULTANT ENGINEERS INDIA LIMITED				

		HV GAS INSULATED SWITCHGEAR DATA SHEET		Document No. B016-606-16-50-DS-1005 Rev. No. A Page 1 of 4	
Project Project Management Consultancy (PMC) Services for execution of VRMP			Client M/s HPCL		
Unit CPP PACKAGE		Location Vizag		Job No. B016 Unit No. 606	
PURCHASER'S DATA					
A	Site Conditions				
1	Maximum Ambient Temperature	°C	45		
2	Minimum Ambient Temperature	°C	12.5		
3	Desian Ambient Temperature	°C	45		
4	Relative Humiditv	%	95		
5	Altitude Above MSL	mm	Less than 5.56		
6	Environment		Humid Highly corrosive		
B	Operating Conditions				
1	System Voltage		33 kV ± 10 %		
2	Frequency		50 Hz ± 3 %		
3	Number of Phases		Three		
4	System Fault Level	kA(for 1 sec)	40		
5	System Earthing		Solidly Earthed		
6	Auxilliary Power Supply				
i.	- for space heaters,cubicle lamps etc		240 V AC SPN ± 10		
ii	- for protection metering and control		110 V DC - 15/+ 10 %		
iii	- circuit breaker spring charging motor		110 V DC - 15/+ 10 %		
iv	- Motor drive for disconnectors and earth switches		110 V DC - 15/+ 10 %		
v	- gas handling and filling unit / cart		415 V AC TPN ± 10		
7	Installation		Airconditioned		
C	Electrical Data				
1	Bus Bar System		Single		
2	Bus bar rated current	A	2500 (min)		
3	1 sec short circuit withstand capacity	kA	Other		
4	Rated peak withstand current	kA	100		
5	Internal arc rating				
6	Circuit Breaker				
i	Type of circuit breaker		VCB		
ii	Duty cycle of Circuit Breaker		0-3 min-co-3 min-co		
iii	Breaking capacity	kA	40		
iv	Making capacity	kA	100		
v	CB Operating Mechanism		Stored energy (type Motorized)		
vi	Shunt trip coil-1	V DC	110		
	Shunt trip coil -2 (see note-1)	V DC	110		
vii	Mechanical indicator for breaker status		Required		
7	Dissconnector & Earthing Switch				
i	Operating Machanism		Motorised		
ii	Mechanical indicator for disconnector & earthswitch status		Required		
iii	Mechanical interlock for disconnector & earthswitch		Required		
iv	Electrical interlock with associated circuit breaker		Required		
D	Miscellaneous				
1	Interface with ECS		Required		
2	Paint Shade		Epoxy & RAL 7032		
3	Cable Entry		Bottom		
4	Gland Plate		Non-Magnetic		
5	SF6 Gas monitoring system		Required		
6	SF6 Gas Handling /filling unit		Required		
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Rev. No.	Date	Purpose	Prepared By	Reviewed By	Approved By

Project	Project Management Consultancy (PMC) Services for execution of VRMP			Client	M/s HPCL
Unit	CPP PACKAGE	Location	Vizag	Job No.	B016
				Unit No.	606
7	Spare SF6 gas			Required	
8	Quantity of spare gas		%	10 of total	
9	Mimic on LV compartment			Required	
10	Voltage Detectors			Required	
MANUFACTURER'S DATA					
A	General				
1	Name of manufacture				
2	Place of manufacture				
3	Type designation				
4	Degree of protection				
i	Gas compartment				
ii	LV compartment				
5	Enclosure material				
6	Number of gas compartment in a feeder and their details				
7	Whether CT and PT are in gas compartment				
8	Whether surge arrestor in gas compartment				
9	Rated Voltage				kV
10	1 min. power frequency withstand (rms)				kV
11	Lighting impulse withstand voltage				kV
12	Rated current				
i	Busbar				A
ii	Incomers and outgoing feeders				A
13	1 sec short ckt. withstand capacity				kA
14	Peak dynamic withstand capacity				kA
15	Bus bar material				
16	Main Busbar size				sqmm
17	Bus bar size for incomers and outgoing feeders				sqmm
18	Insulating material (busbar support)				
19	Eath busbar material / size				
20	Maz. size/no. of cables that can be terminated				
	- with rear extension				
	- without rear extension				
21	Size of rear extension pane				mm
B	SF6 Gas				
1	Average leakage rate of SF6 gas				% / year
2	Gas monitoring devices (density quages/pressure switch				
3	Gas handling and filling arrangement /cart				
	- maximum power requirement				kW
4	Whether GIS are dispatched filled with SF6 gas				
5	SF6 gas pressure for each gas compartment				
i	Design Pressure				
ii	Operating Pressure				
iii	Alarm Pressure				
iv	Lockout Pressure				
6	Pressure of relief device				
7	Spare gas (no. of cylinders,volume/pressure of cylinder)				
C	Circuit Breaker				
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Unit	CPP PACKAGE	Location	Vizag	Job No.	B016
				Unit No.	606

1	Type of circuit breaker	
2	Make	
3	Place of manufacture	
4	Type designation	
5	Number of poles per phase	
6	Number of trip coils	
7	Rated continuous current for I/C and O/G fdrs	
8	Duty cycle	
9	CB Operating mechanism	
10	Short circuit withstand capacity	kA
11	Breaking capacity	kA
12	Peak making capacity	kA
13	% DC component	
14	First pole to clear factor	
15	Power required for opening	W
16	Power required for closing	W
17	Power required for spring charging motor	W
18	Closing time	sec
19	Opening time	sec
20	Provision of manual spring charging	
21	Manual trip PB	
22	Mechanical ON/OFF indicator for breaker	
23	Mechanical indication for spring status	
24	Operation counter	
25	Number of auxiliary contacts and their rating	
26	Breaker is trip free	
D	Disconnecter / Earthing switch	
1	Make	
2	Place of manufacture	
3	Type designation	
4	Rated continuous current for I/C and O/G fdrs	
5	Short circuit withstand capacity	
6	Operating mechanism	
7	Type of motor drive	
8	Number of auxiliary contacts and their rating	
9	Mechanical ON/OFF indicator	
10	Manual operation handle	
11	Selector switch for disconnector & earthing switch	
E	Instrument Transformers	
1	Current Transformer	
i	Make	
ii	Place of manufacture	
iii	Type designation	
iv	CT ratio, accuracy & VA burden	
v	Knee point voltage / secondary voltage, accuracy & VA burden	

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Unit	CPP PACKAGE	Location	Vizag	Job No.	B016
				Unit No.	606
2	Voltage Transformer				
i	Make				
ii	Place of manufacture				
iii	Type designation				
iv	Primary Voltage / Secondary Voltage ,accuracy & VA burden				
F	Surge Arrestors				
1	Make				
2	Type designation				
3	Place of manufacture				
4	Rated Voltage		kV		
5	MCOV(Max. Continuous voltage, accuracy & VA burden		kV		
6	Line discharge class		kA		
7	Nominal discharge current		kA		
8	High current withstand capacity		kA		
9	Temporary overvoltage for 1 sec				
10	Temporary overvoltage for 10 sec				
G	Mechanical				
1	CB Panel/Feeder				
	Max. overall weight				
	overall Dimensions(Width X Depth X Height)				
2	Largest shipping section				
	Max overall weight				
	overall Dimensions(Width X Depth X Height)				
3	Recommended clearances				
	Front		mm		
	Rear		mm		
	Above		mm		
4.	Shock loading on foundation				
5	Gas handling & filling plant / service cart				
	Overall dimensions(Width X Depth X Height)				
H	Copies of following test certificates encls				
	For each type of offered feeder with circuit breaker, disconnector and earthswitch				
1	Short circuit tests(peak and 1 sec withstand)				
2	Making and breaking tests				
3	Temperature rise test				
4	Internal arc test				
5.	Dielectric tests				
6	Operation and mechanical endurance tests				

Eil Notes

- Offered switchboard shall be of type tested design and type test certificate of identical design shall be furnished alongwith the bid. In case any of the above tests have not been conducted on the offered design of switchboards or there has been a change in the design after the type tests the requisite tests shall be conducted by the successful bidder on the offered design of switchboards after order finalization without any extra cost and delivery impact.
- Complete plugs/socket for cable termination shall be part of GIS
- The degree of protection shall be at least IP65 for gas compartments and IP4X for the supporting frames, low voltage and other compartments.

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