

## PROJECT: 66 KV GIS system for CPP package for Visakh Refinery Modernization Project (VRMP), Vishakhapatnam.

## BOQ for Mandatory Spares

Document No: ETC/BOQ/GIS/Spares Rev00

This Bill of Quantity (BOQ) entails handing of maintenance equipment, mandatory spares etc. to PMC/ Customer after conducting functional tests etc.

Sl. No.	Type	Item Description	Unit	Qty		
<b>Primary System-Main Equipment</b>						
1	66kV Indoor GIS & its Accessories	<b>Mandatory Maintenance Equipment</b>				
1.1		Portable gas filling equipment/SF6 gas cart	Set	1		
1.2		Portable ladder with adjustable height	Set	1		
1.3		SF6 Gas Leak Detector	Set	1		
1.4		Breaker Operation Analyzer with Transducers	Set	1		
		<b>Mandatory Spares</b>				
1.5		Handle for disconnector switch drive	No	4		
1.6		Handle for earthing switch drive	No	4		
1.7		Pre selection key for three position switch, if applicable	No	1		
1.8		Tripping coil (Per Switchgear)	No	1		
1.9		Closing coil (Per Switchgear)	No	1		
1.10		Control fuses/MCB (1 Set= 1 No of each rating and type)	Set	10		
1.11		Density monitoring device (1 Set= 1 No of each type)	Set	2		
1.12		Pressure Gauge (1 Set= 1 No of each type)	Set	2		
		<b>Special Tools &amp; Tackles</b>				
1.13		Analogue & Digital multi meters (1 Set= 1 No of each rating and type)	Set	1		
1.14		Clip-on meters of different ranges (1 Set= 1 No of each rating and type)	Set	1		
1.15		Tong testers (1 Set= 1 No of each rating and type)	Set	1		
1.16		Allen Keys (1 Set= 1 No of each rating and type)	Set	1		
1.17		Hammers (1 Set= 1 No of each rating and type)	Set	1		
1.18		Illuminated SLD	Set	1		
1.19		Complete Tool kit for the Electrician-Complete tool kit for the Electrician comprising of screw drivers, testers, pliers spanners, cable cutter / stripper, adhesive tapes etc.	Set	1		
1.20		Battery and mains operated portable Megger (1 Set= 1 No of each rating and type)	Set	1		
2	66kV EHV Cable & its Accessories	<b>Mandatory Spares</b>				
2.1		66kV Indoor cable termination (plug/ socket type) kit suitable/ compatible for 1Cx500sqmm, 66kV XLPE, copper cable for GIS end	Set	1		
2.2		66kV Indoor cable termination (heat shrinkable/ cold shrinkable type) kit suitable/ compatible for 1Cx500sqmm copper cable for weatherproof cable box of transformer	Set	1		
4	220/66kV, 80/100MVA Transformer & its accessories	<b>Mandatory Spares</b>				
4.1		Complete set of gaskets	Set	1		
4.2		Sealing/ gauge glass of conservator (1 set= 1no of each type & rating)	Set	2		
4.3		Control fuses/ MCB for MB cubicles (1 lot=20% of each rating or 1no. (min.) of each rating, whichever is more)	Lot	1		
5	220/33kV, 80/100MVA Transformer & its accessories	<b>Mandatory Spares</b>				
5.1		Complete set of gaskets	Set	1		
5.2		Sealing/ gauge glass of conservator (1 set= 1no of each type & rating)	Set	2		
5.3		Control fuses/ MCB for MB cubicles (1 lot=20% of each rating or 1no. (min.) of each rating, whichever is more)	Lot	1		
<b>Secondary System</b>						
1	Control Relay Panels	<b>Mandatory Spares</b>				
1.1		Protection relays (1 set = 1 No. of each type)	Set	1		
1.2		Auxiliary relays (1 Set = 1 No. of each type)	Set	1		
1.3		Interposing relays ( 1 set = 5 Nos. of each type)	Set	1		
1.4		Transducers (1 set = 20% each type or 1 No. Minimum of each make & type, whichever is more)	Set	1		

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1.5		Indication lamp covers , if applicable	Set	5		
1.6		Indication Lamps ( 1 Set= 20% or 3 No.(min.) whichever is more)	Set	1		
1.7		All cards such as input & output cards, Power supply cards, processor cards etc. used in CRP ( 1 Set = 1 No. of each type)	Set	1		
1.8		Ethernet / Network Switches ( 1 Set= 1 No. of each type)	Set	1		
1.9		Control Fuses / MCB used in CRP ( 1 Set = 10 No. of each rating and type)	Set	1		
1.10		Operation & Maintenance Spares-CRP & BusBar Protection Panel	Lot	1		