

Project : - Gujarat University, at Ahmedabad.

Document:- Technical Specification for 1000KVA (TYPE-1) Compact Substation.

(A) Technical Particulars for Unitized Substation Enclosure :		
Sr. NO	Description	Details
1	General Description	
1.1	Manufacturer's Name	***
1.2	Rated maximum power of substation kVA	1000kVA
1.3	Rated Ingress protection class of Enclosure	IP 55
1.4	Installation	Outdoor type
2	Dimensions	
2.1	Total Overall dimensions	
A	Length	***
B	Width	***
C	Height	***
2.2	H. T . Switchgear Compartment	
A	Length	***
B	Width	***
C	Height	***
2.3	Transformer Compartment	
A	Length	***
B	Width	***
C	Height	***
2.4	L.T. Panel Compartment	
A	Length	***
B	Width	***
C	Height	***
2.5	Overall Weigh in KG	***
2.6	Painting	Powder Coating

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(B) Technical Particulars of 11kv Vaccume circuit breaker		
1	Make	ABB / SIEMENS / SCHNEIDER
2	Type	Vaccum circuit Breaker with 1 # 800A Incoming cum outgoing feeder
3	Capacity/ Rating	11 kv , 630/800A
4	Rated short time withstand current kA rms/ 1 sec	18.37kA rms
5	Voltage	11KV+/- 10%
6	Ambient Temp	45 deg. C
7	Atmosphere	Normal
8	Duty type	Contineous
9	Frequency	50Hz. +/- 3%
10	No of Phases	3
11	System fault level	350MVA
12	Max. system voltage	12KV
13	Making capacity	46 kA (peak)
14	Cable entry (I/C & O/G)	Bottom
15	Cable size	1#11kV, 3c x 300 sq.mm XLPE AL armoured cable (UE)
16	Close & spring charging arrangement	Motorised with Inbuilt BATTERY & BATTERY CHARGER
17	space heater with thermostate with switch	No any single phase AC power will be provided by client. All arrangemet to be provided by vendor through Single Phase Auxiliary Trasformer of 1KVA.
18	Self powered O/L & E/F relay with CT's	To be provided
19	Mechanical position indicator	
	ON	To be provided
	OFF	To be provided
	EARTHED	To be provided
20	Metering on HT side with CT-PT units	Load manager with RS 485 port (in incomer only)
21	Cubical lamp with Lamp in each compartment	CFL lamp with switch

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(C) Technical Particulars of Distribution Transformer		
Sr. No.	Description	Details
	IS to be followed	AS PER ECBC FOR DRY TYPE
1	Make	RAYCHEM / SCHNIEDER / ABB / VOLTAMP
2	Rated output in KVA	1000 KVA
3	Type	Cast Resin Dry Type
4	Rating / duty	Continuous
5	Vector group	DYN11
6	No of windings	2
7	Material of winding	Copper
8	% Impedence voltage	***
9	HV Insulation Level	***
10	Rated withstand voltage at power frequency of 50 Hz kV rms	28 kV
11	Rated Impulse withstand Voltage kV peak	75 kV
12	Insulator used for HV busbar support shall be of Creepage distance.	25mm/kV
13	Winding insulation	Class ' F '
14	Method of earthing	Solid
15	Tap changers & Tappings	OFF Load tap changers with tapping range of + 5% to - 10% in step of 2.5%.
16	Temperature rise At 45C ambient of wdg by resistance method.	55 degree C
17	Winding Temperature indicator with A & T contact	Required
	OTI with A & T Contact	NA
	Buchholze Realy Contact	NA
	MOLG with A & T Contact	NA
	OLTC & RTCC with AVR Panel	DRY TYPE - Required
	Marshalling box	Required
18	Rated Voltage (kV)	
	H.V.	11 kV
	L.V.	0.415kV
19	Rated Current (Amps)	
	H.V.	***
	L.V.	***
20	Transformer losses	
	Maximum Total Losses	Dry type:- as per ECBC
21	Maximum efficiency (%)	
	100 % Load	***
	75 % Load	***
	50 % Load	***
	% Load at which maximum efficiency occurs	

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22	Regulation at	
	Unity Power factor	***
	0.9 Power Factor	***
	0.85 Power factor	***
23	Maximum current density	
	HT Wdg Amp / Sq mm	***
	LT Wdg Amp / Sq mm	***
24	Maximum Flux Density	
	At rated voltage	***
	At 110% rated voltage	***
25	Magnetic current at Rated voltage & Frequency	
	When Excited From L.T side.	***
	When Excited from L.T side 110% Rated voltage	***
26	Noise level in DB at 1 mtr distance	***

(D) TECHNICAL SPECIFICATION FOR LT COMPARTMENT AS PER SINGLE LINE DIAGRAM

(E) Drawing approval, inspection & commissioning

1	Drawings & Approval	3 sets of Hard copy for approval & comments then 4 sets of final hard copy after approval.
2	Tests & inspection	Visual inspection with Routine tests (with photo copy of ready job and internal test reports) like HV, Megger, Tests For Losses, etc
3	Scope	The scope of work shall cover the Design, Manufacture, Supply, Testing and Pre-Commissioning tests at site & final commissioning of Compact substation suitable for outdoor installation meeting the requirements specified in the Technical data sheet.

IMPORTANT :-

- The vendor will depute their engineer at site at the time of installation, testing & commissioning for at least three times.
- **All precommissioning tests shall be done by supplier/vendor at site prior to commissioning.**
- **All the charges for inspection / testing shall be borne by the contractor including travel & hotel stay for Consultant & Client's engineers.**
- Minimum 750mm clear space to be provided from bottom of gland plate to spreader contact terminal of HT side & LT side at ACB/MCCB/MCB/terminal for outgoing/incoming Cable termination.

*** - Vendor to Specify

Project : - Gujarat University, at Ahmedabad.

Document:- Technical Specification for 1000KVA (TYPE-2) Compact Substation.

(A) Technical Particulars for Unitized Substation Enclosure :		
Sr. NO	Description	Details
1	General Description	
1.1	Manufacturer's Name	***
1.2	Rated maximum power of substation kVA	1000kVA
1.3	Rated Ingress protection class of Enclosure	IP 55
1.4	Installation	Outdoor type
2	Dimensions	
2.1	Total Overall dimensions	
A	Length	***
B	Width	***
C	Height	***
2.2	H. T . Switchgear Compartment	
A	Length	***
B	Width	***
C	Height	***
2.3	Transformer Compartment	
A	Length	***
B	Width	***
C	Height	***
2.4	L.T. Panel Compartment	
A	Length	***
B	Width	***
C	Height	***
2.5	Overall Weigh in KG	***
2.6	Painting	Powder Coating

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Document:- Technical Specification for 1000KVA (TYPE-2) Compact Substation.

(B) Technical Particulars of 11kv Vaccume circuit breaker		
1	Make	ABB / SIEMENS / SCHNEIDER
2	Type	RMU with 1 # Incoming 800A load brack switch and 2 # VCB out going feeder. (1#400A VCB & 1#800A VCB).
3	Capacity/ Rating	11 kv , 630/800A
4	Rated short time withstand current kA rms/ 1 sec	18.37kA rms
5	Voltage	11KV+/- 10%
6	Ambient Temp	45 deg. C
7	Atmosphere	Normal
8	Duty type	Contineous
9	Frequency	50Hz. +/- 3%
10	No of Phases	3
11	System fault level	350MVA
12	Max. system voltage	12KV
13	Making capacity	46 kA (peak)
14	Cable entry (I/C & O/G)	Bottom
15	Cable size	1#11kV, 3c x 300 sq.mm XLPE AL armoured cable (UE)
16	Close & spring charging arrangement	Motorised with Inbuilt BATTERY & BATTERY CHARGER
17	space heater with thermostate with switch	No any single phase AC power will be provided by client. All arrangemet to be provided by vendor through Single Phase Auxiliary Trasformer of 1KVA.
18	Self powered O/L & E/F relay with CT's	To be provided
19	Mechanical position indicator	
	ON	To be provided
	OFF	To be provided
	EARTHED	To be provided
20	Metering on HT side with CT-PT units	Load manager with RS 485 port (in incomer only)
21	Cubical lamp with Lamp in each compartment	CFL lamp with switch

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Document:- Technical Specification for 1000KVA (TYPE-2) Compact Substation.

(C) Technical Particulars of Distribution Transformer		
Sr. No.	Description	Details
	IS to be followed	AS PER ECBC FOR DRY TYPE
1	Make	RAYCHEM / SCHNIEDER / ABB / VOLTAMP
2	Rated output in KVA	1000 KVA
3	Type	Cast Resin Dry Type
4	Rating / duty	Continuous
5	Vector group	DYN11
6	No of windings	2
7	Material of winding	Copper
8	% Impedence voltage	***
9	HV Insulation Level	***
10	Rated withstand voltage at power frequency of 50 Hz kV rms	28 kV
11	Rated Impulse withstand Voltage kV peak	75 kV
12	Insulator used for HV busbar support shall be of Creepage distance.	25mm/kV
13	Winding insulation	Class ' F '
14	Method of earthing	Solid
15	Tap changers & Tappings	OFF Load tap changers with tapping range of + 5% to - 10% in step of 2.5%.
16	Temperature rise At 45C ambient of wdg by resistance method.	55 degree C
17	Winding Temperature indicator with A & T contact	Required
	OTI with A & T Contact	NA
	Buchholze Realy Contact	NA
	MOLG with A & T Contact	NA
	OLTC & RTCC with AVR Panel	DRY TYPE - Required
	Marshalling box	Required
18	Rated Voltage (kV)	
	H.V.	11 kV
	L.V.	0.415kV
19	Rated Current (Amps)	
	H.V.	***
	L.V.	***
20	Transformer losses	
	Maximum Total Losses	Dry type:- as per ECBC
21	Maximum efficiency (%)	
	100 % Load	***
	75 % Load	***
	50 % Load	***
	% Load at which maximum efficiency occurs	

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22	Regulation at	
	Unity Power factor	***
	0.9 Power Factor	***
	0.85 Power factor	***
23	Maximum current density	
	HT Wdg Amp / Sq mm	***
	LT Wdg Amp / Sq mm	***
24	Maximum Flux Density	
	At rated voltage	***
	At 110% rated voltage	***
25	Magnetic current at Rated voltage & Frequency	
	When Excited From L.T side.	***
	When Excited from L.T side 110% Rated voltage	***
26	Noise level in DB at 1 mtr distance	***

(D) TECHNICAL SPECIFICATION FOR LT COMPARTMENT AS PER SINGLE LINE DIAGRAM

(E) Drawing approval, inspection & commissioning

1	Drawings & Approval	3 sets of Hard copy for approval & comments then 4 sets of final hard copy after approval.
2	Tests & inspection	Visual inspection with Routine tests (with photo copy of ready job and internal test reports) like HV, Megger, Tests For Losses, etc
3	Scope	The scope of work shall cover the Design, Manufacture, Supply, Testing and Pre-Commissioning tests at site & final commissioning of Compact substation suitable for outdoor installation meeting the requirements specified in the Technical data sheet.

IMPORTANT :-

- The vendor will depute their engineer at site at the time of installation, testing & commissioning for at least three times.
- **All precommissioning tests shall be done by supplier/vendor at site prior to commissioning.**
- **All the charges for inspection / testing shall be borne by the contractor including travel & hotel stay for Consultant & Client's engineers.**
- Minimum 750mm clear space to be provided from bottom of gland plate to spreader contact terminal of HT side & LT side at ACB/MCCB/MCB/terminal for outgoing/incoming Cable termination.

*** - Vendor to Specify

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Document:- Technical Specification for 2000KVA(TYPE-1) Compact Substation.

(A) Technical Particulars for Unitized Substation Enclosure :		
Sr. NO	Description	Details
1	General Description	
1.1	Manufacturer's Name	***
1.2	Rated maximum power of substation kVA	2000kVA
1.3	Rated Ingress protection class of Enclosure	IP 55
1.4	Installation	Outdoor type
2	Dimensions	
2.1	Total Overall dimensions	
A	Length	***
B	Width	***
C	Height	***
2.2	H. T . Switchgear Compartment	
A	Length	***
B	Width	***
C	Height	***
2.3	Transformer Compartment	
A	Length	***
B	Width	***
C	Height	***
2.4	L.T. Panel Compartment	
A	Length	***
B	Width	***
C	Height	***
2.5	Overall Weigh in KG	***
2.6	Painting	Powder Coating

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(B) Technical Particulars of 11kv Vaccume circuit breaker		
1	Make	ABB / SIEMENS / SCHNEIDER
2	Type	Vaccum circuit Breaker with 1 # 800A Incoming cum outgoing feeder
3	Capacity/ Rating	11 kv , 630/800A
4	Rated short time withstand current kA rms/ 1 sec	18.37kA rms
5	Voltage	11KV+/- 10%
6	Ambient Temp	45 deg. C
7	Atmosphere	Normal
8	Duty type	Contineous
9	Frequency	50Hz. +/- 3%
10	No of Phases	3
11	System fault level	350MVA
12	Max. system voltage	12KV
13	Making capacity	46 kA (peak)
14	Cable entry (I/C & O/G)	Bottom
15	Cable size	1#11kV, 3c x 300 sq.mm XLPE AL armoured cable (UE)
16	Close & spring charging arrangement	Motorised with Inbuilt BATTERY & BATTERY CHARGER
17	space heater with thermostate with switch	No any single phase AC power will be provided by client. All arrangemet to be provided by vendor through Single Phase Auxiliary Trasformer of 1KVA.
18	Self powered O/L & E/F relay with CT's	To be provided
19	Mechanical position indicator	
	ON	To be provided
	OFF	To be provided
	EARTHED	To be provided
20	Metering on HT side with CT-PT units	Load manager with RS 485 port (in incomer only)
21	Cubical lamp with Lamp in each compartment	CFL lamp with switch

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Document:- Technical Specification for 2000KVA(TYPE-1) Compact Substation.

(C) Technical Particulars of Distribution Transformer		
Sr. No.	Description	Details
	IS to be followed	AS PER ECBC FOR DRY TYPE
1	Make	RAYCHEM / SCHNIEDER / ABB / VOLTAMP
2	Rated output in KVA	2000 KVA
3	Type	Cast Resin Dry Type
4	Rating / duty	Continuous
5	Vector group	DYN11
6	No of windings	2
7	Material of winding	Copper
8	% Impedence voltage	***
9	HV Insulation Level	***
10	Rated withstand voltage at power frequency of 50 Hz kV rms	28 kV
11	Rated Impulse withstand Voltage kV peak	75 kV
12	Insulator used for HV busbar support shall be of Creepage distance.	25mm/kV
13	Winding insulation	Class ' F '
14	Method of earthing	Solid
15	Tap changers & Tappings	OFF Load tap changers with tapping range of + 5% to - 10% in step of 2.5%.
16	Temperature rise At 45C ambient of wdg by resistance method.	55 degree C
17	Winding Temperature indicator with A & T contact	Required
	OTI with A & T Contact	NA
	Buchholze Realy Contact	NA
	MOLG with A & T Contact	NA
	OLTC & RTCC with AVR Panel	DRY TYPE - Required
	Marshalling box	Required
18	Rated Voltage (kV)	
	H.V.	11 kV
	L.V.	0.415kV
19	Rated Current (Amps)	
	H.V.	***
	L.V.	***
20	Transformer losses	
	Maximum Total Losses	Dry type:- as per ECBC
21	Maximum efficiency (%)	
	100 % Load	***
	75 % Load	***
	50 % Load	***
	% Load at which maximum efficiency occurs	

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22	Regulation at	
	Unity Power factor	***
	0.9 Power Factor	***
	0.85 Power factor	***
23	Maximum current density	
	HT Wdg Amp / Sq mm	***
	LT Wdg Amp / Sq mm	***
24	Maximum Flux Density	
	At rated voltage	***
	At 110% rated voltage	***
25	Magnetic current at Rated voltage & Frequency	
	When Excited From L.T side.	***
	When Excited from L.T side 110% Rated voltage	***
26	Noise level in DB at 1 mtr distance	***

(D) TECHNICAL SPECIFICATION FOR LT COMPARTMENT AS PER SINGLE LINE DIAGRAM

(E) Drawing approval, inspection & commissioning

1	Drawings & Approval	3 sets of Hard copy for approval & comments then 4 sets of final hard copy after approval.
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*** - Vendor to Specify

Project : - Gujarat University, at Ahmedabad.

Document:- Technical Specification for 2000KVA (TYPE-2) Compact Substation.

(A) Technical Particulars for Unitized Substation Enclosure :		
Sr. NO	Description	Details
1	General Description	
1.1	Manufacturer's Name	***
1.2	Rated maximum power of substation kVA	2000kVA
1.3	Rated Ingress protection class of Enclosure	IP 55
1.4	Installation	Outdoor type
2	Dimensions	
2.1	Total Overall dimensions	
A	Length	***
B	Width	***
C	Height	***
2.2	H. T . Switchgear Compartment	
A	Length	***
B	Width	***
C	Height	***
2.3	Transformer Compartment	
A	Length	***
B	Width	***
C	Height	***
2.4	L.T. Panel Compartment	
A	Length	***
B	Width	***
C	Height	***
2.5	Overall Weigh in KG	***
2.6	Painting	Powder Coating

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Document:- Technical Specification for 2000KVA (TYPE-2) Compact Substation.

(B) Technical Particulars of 11kv Vaccume circuit breaker		
1	Make	ABB / SIEMENS / SCHNEIDER
2	Type	RMU with 1 # Incoming 800A load brack switch and 2 # VCB out going feeder. (1#400A VCB & 1#800A VCB).
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19	Mechanical position indicator	
	ON	To be provided
	OFF	To be provided
	EARTHED	To be provided
20	Metering on HT side with CT-PT units	Load manager with RS 485 port (in incomer only)
21	Cubical lamp with Lamp in each compartment	CFL lamp with switch

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Document:- Technical Specification for 2000KVA (TYPE-2) Compact Substation.

(C) Technical Particulars of Distribution Transformer		
Sr. No.	Description	Details
	IS to be followed	AS PER ECBC FOR DRY TYPE
1	Make	RAYCHEM / SCHNIEDER / ABB / VOLTAMP
2	Rated output in KVA	2000 KVA
3	Type	Cast Resin Dry Type
4	Rating / duty	Continuous
5	Vector group	DYN11
6	No of windings	2
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	OLTC & RTCC with AVR Panel	DRY TYPE - Required
	Marshalling box	Required
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	H.V.	11 kV
	L.V.	0.415kV
19	Rated Current (Amps)	
	H.V.	***
	L.V.	***
20	Transformer losses	
	Maximum Total Losses	Dry type:- as per ECBC
21	Maximum efficiency (%)	
	100 % Load	***
	75 % Load	***
	50 % Load	***
	% Load at which maximum efficiency occurs	

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22	Regulation at	
	Unity Power factor	***
	0.9 Power Factor	***
	0.85 Power factor	***
23	Maximum current density	
	HT Wdg Amp / Sq mm	***
	LT Wdg Amp / Sq mm	***
24	Maximum Flux Density	
	At rated voltage	***
	At 110% rated voltage	***
25	Magnetic current at Rated voltage & Frequency	
	When Excited From L.T side.	***
	When Excited from L.T side 110% Rated voltage	***
26	Noise level in DB at 1 mtr distance	***

(D) TECHNICAL SPECIFICATION FOR LT COMPARTMENT AS PER SINGLE LINE DIAGRAM

(E) Drawing approval, inspection & commissioning

1	Drawings & Approval	3 sets of Hard copy for approval & comments then 4 sets of final hard copy after approval.
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*** - Vendor to Specify