Programme of Assistance to the Palestinian People

برنامج الأمم المتحدة الإنمائي/ برنامج مساعدة الشعب الفلسطيني

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United Nations Development Programme

Addendum No. 1 dated 28 March 2017 [ITB-2017-075]

Pre-bid Meeting Minutes – Addendum No 1

PAL10-00099398 : ITB-2017-075 - Rehabilitate GIE Infrastructure / Package #1 - Transformer Rooms

Issue Date: 15 March 2017

Closing Date & time: 5 April 2017 @ 12.00 P.M.

Dear Bidders,

This correspondence pertaining to the above-mentioned project should be considered as an integral part of the tender documents. Below please find the UNDP/PAPP clarifications and an official reply to all inquires raised by participant bidders following the pre-bid meeting/site visit which was held on **23 March 2017.**

The following clarifications are considered as Addendum No. 1 to the Invitation to Bid, which shall be deemed to form and be read as part of the tender:

1. All participating Bidders shall provide all Evaluation Criteria Requirements as shown in the Invitation to Bid.
2. Unit rate in US$ not including VAT.
3. Unit prices shall include any Bank Charges due to payments transfer.
4. Contractors shall provide labor insurance with an amount of 15% of the contract value, all as per resulting contract terms and conditions. Also, the project insurance must include all materials (the steel and electrical material) with its values in US$.
5. The delay penalties will be deducted from each payment made to the contractor of an amount of US$ 700 for each day of delay in accordance to the approved time schedule for the project and updates. If the contractor doesn't comply to the approved time frame schedule UNDP is entitled to terminate the contract without any financial obligations resulting from termination of the contract process.
6. Payments to the contractors will be according to the submitted cash flow diagram.
7. All imported materials or equipment, submitted by the contractor as substitute to the specified, will be accepted and considered equally approved as long as they are:
   - equal in quality, durability and efficiency, all to UNDP engineer judgment.
   - represented in the country by a reputable, qualified and credible agent.
8. Winning Contractor will be responsible for the submission of safety procedure plan for approval. Safety measures are an important part of the project. All workers, engineers and visitors on site shall use safety tools and wear Safety uniforms, to be all in accordance with contract Safety requirements (Section 12 of the ITB) and UNDP' Engineer instructions. The bidders shall include in their prices the provision of the necessary insurances for the project in accordance with the general terms and condition of contract, and enough to cover the expected risk in the works. As per clause 23 of the general conditions, the contractor is obligated to furnish the insurance policies before commencing the Works.
9. Working hours in the project is from 8 a.m. to 3 p.m. Sunday through Thursday. Any extension of time will not be authorized unless presented in the work plan and approved by UNDP supervisor.

10. Bidders shall furnish actual price analysis for all items in the Bill of Quantities, cash flow and time schedule.
11. The Winning Contractor shall be responsible for installing and fixing two (2) signboards for each lot, of size 350x200cm to be located on places indicated by UNDP Site Engineer. At the end of project, the contractor will install one Karara marble board for each site location, of size 120x 100x 3 cm including all logos and necessary engraved text to be installed on each site.
12. The contractor shall consider gender equality when recruiting its technical staff.
13. **One fresh** engineer of three years' experience will be paid an amount of USD 600 per month. The engineer will be appointed by the supervision and report directly to the supervision team to manage the materials accessed through the UNDP mechanism.
14. A rented automatic car model 2015 at least is to be available along the project working day for the use of the supervision team only, including 800 NIS for fuel. In addition to 400 NIS for communication per month.
15. Mobilization period is seven days and works must start immediately.
16. The contractor must directly start the purchase of all materials in the bill of quantities within 10 days from receiving the approval of materials, and he must provide the UNDP with all the required documents which confirm the purchase of materials with invoices and LC of the bank. In case the contractor has delayed in issuance of purchase order for the materials, UNDP has the full right to terminate the contract without bearing financial implications.
17. In case UNDP imposes suspension longer than one (1) month on the project, only the following will be paid for:
    - Security guard for the project if needed.
    - Cost of extension of insurance policy and bank guarantees.
    - Salary of the project manager.

    All project equipment will not be compensated for, as well as any incurring costs related to staff or subcontractors. The maximum period of suspension will not be more than 60 days at maximum. When suspension is released, the Contractor will be allowed seven (7) days for re-mobilization and the period of contract will be extended accordingly.
18. UNDP has the right to exclude any bidder who has current workload that may put the implementation of the project under high risk.
19. UNDP confirms that the technical staff should be engaged on site on full time basis and have the sufficient experience and capabilities of carrying out their duties. UNDP will deduct the amount of US$ 25 for each day of the absence of any member of technical staff in the interim payments to the contractor and these discounts non-refundable.
20. The contractor shall take his precautions during the excavation for the foundation so that the existing infrastructure and facilities are not damaged. In case any damage occurred to the infrastructure and facilities, the contractor should remedy this damage on his own expense.
21. The contractor should take into his consideration the local market price for all construction materials (ABC row materials, Cement, Aggregate, Base Course…etc) & civil works with the same specification mentioned in the contract. And the winning contractor must secure all construction materials from the local markets within the mobilization period and store them in his stores or in stores at site.
22. Securing the construction materials such as aggregate, cement, bitumen, base course ...etc. is the contractor's responsibility from the local markets.

23. In case the contractor will supply dual use materials through the UNDP Access Coordination Unit. UNDP will calculate the differences on the materials and apply deductions based on the submitted price analysis by the contractor for all items.
24. In case of UNDP will facilitate the coordination of access to materials required for the project (dual-use materials such as cement, transformers, M.V switchgears, M.V and L.V cables, accessories or any other materials), the contractor will follow the procedures of the UNDP as following:
    A- The Wining Contractor shall secure all materials within the mobilization period and store them in UNDP stores. The quantities delivered to the site will not exceed the consumption of activities for one day. All relevant transport expenses are deemed included within the unit price of items.
    B-The Contractor shall provide an accurate inventory of the quantities of materials that need coordination and of dual-use previously mentioned to be reviewed and approved by the United Nations Development Programme UNDP.
    C- Before giving the order to commence work, a plan of action for the supply of materials in batches adequate with the implementation schedule of activities at the site. The time between the entry of materials and their use in the project work for should not exceed two weeks. The materials will be transferred under the supervision of UNDP to UNDP stores at Karni industrial zone where it will be stored and will be discharged according to the work plan and schedule only in the quantities needed for work. The coordination process of the materials will be done in stages such that not to exceed the time limit for the use of materials in two weeks. Cement will be stored specifically in UNDP stores in Karni industrial zone and is used as needed to work the quantity per day so as not to keep any amount of cement outside UNDP stores beyond the daily project work is completed. It is not allowed for any amount of cement to stay at the work site or factory after the completion of the daily works and the contractor shall transfer the remaining cement to the UNDP stores in Karni at his own costs.
    D- The contractor shall not be allowed to use the dual-use items without taking the written consent and under the clear and comprehensive control of UNDP engineers and UNDP team of coordination for materials. A comprehensive action coordination plan within the concrete factories and site with all approved documentation for the process of using the material will be prepared to constitute the allocated measures to be followed in that regards.
    E- In case of defected dual use materials, the contractor will prepare a plan for disposal. He will only implement the plan after authorized control, monitoring and documentation of UNDP access coordination team and after taking approvals on where and how to dispose of these materials.
    F-The Contractor is fully responsible for any costs related to materials' upload, download at the Israeli border crossings such as Karim Shalom and the UNDP stores in Karni industrial zone. In addition, he will be bearing all costs of the transport of materials from the warehouse at the Karni to different work sites in the project or to approve factories if necessary that are expected on daily basis at the time of utilizing dual use materials. The above-mentioned costs include expenses of equipment and labour used in the loading and unloading.
    G- UNDP access and supervision teams will be monitoring and examining the materials used in the manufacturing and job mixing ratios to ensure the quality of the mixture at the manufacturing factories and the Contractor will facilitate the task of the engineers inside theses factories.
25. The contractor shall submit commitment (stamp and signature) to preserve the material within the site or factories. In case of any violations or misuse of dual use materials accessed UNDP without prejudice will terminate the contract and the contractor will be excluded from involvement in projects of UNDP in the future.

26. The contractor will carry out different concrete Job mixes for each type of concrete within the project B350, B300, B250, B200 to achieve the requirements of the relevant technical specification. The contractor will include the costs for the tests within the different items prices. **In any case, if the cube results at 28 days is less the nominated strength of 350, 300, 250 and 200 Kg/cm2 respectively, the cast items will be removed then recast all on the sole expenses of the contractor**.
27. The Contractor is fully responsible for the protection and preservation of the quantities supplied materials, either on-site or factories. The Contractor shall bear all relevant costs in that regards.
28. In the items of excavation and backfilling, the contractor should consider the existing level of natural ground on site and the different levels in the buildings.
29. Contractor's previous and/or current performance with UNDP and any other organization one of the main criteria in the evaluation of the contractors and can be a strong basis for refusing the bid.
30. The site visit was conducted in the same day of pre-bid meeting with the presence of PIEFZA.
31. Any dismantled materials including poles, transformers, cables, tiles, Base Course and interlock must be carefully collected from the site and transfer it to the PIEFZA warehouses at his expense if these materials were required.
32. Any debris and unused materials resulted from activities should be transferred to dump site or any location is directed by the engineer.
33. The contractor should submit detailed work plan includes traffic plan, working hours, safety measures, materials storage area, method of disposal of rubble safely and concrete works in the trenches to take the approval of the supervisor engineer in coordination with the authorized partners & stakeholders.
34. After completion of the project, the contractor must submit as built drawings on computer CD (3No.s Auto Cad) and three copies of prints (A2).
    Also, the contractor should contract with one of the certified GIS (surveying) offices to survey all projects elements for each lot taking into consideration the following:
    - Surveying should be accomplished using accurate GPS receivers or Total station.
    - All project elements should have x,y,z coordinates along with attribute information.
    - The attribute information will be identified in coordination with Project Owner and UNDP.
    - The coordinates should be referenced to the coordinate system adopted by the relevant local authorities.
    - All surveying works should conform to the accuracy standards adopted by the relevant local authorities and UNDP.
    - Two formats of measurements should be submitted: one in AutoCAD format (*.dwg) and another in GIS format (ArcGIS Geodatabase *.gdb)
35. The contractors must coordinate and arrange with all responsible partiers such as PIEFZA, GEDCO, PENRA, PIEDCO, Authorities, ministries, Pal Tel, ...etc regarding to the daily work activities and the paths of the proposed electrical networks. Moreover, UNDP will not be held liable for any contractual claims arising out or in connection with sequences of land acquisition along the planned paths of the electrical network as well as the problem with factories owners and investors or PIEFZA. the contractor is responsible to perform the required tasks and must abide to local rules and norms at his expenses. UNDP will not bear any responsibility to such arrangements. The focal person contacts from PIEFZA is Mr. BaJes Al Dalow , Phone / 0599712371.
36. The contractor is responsible to make all the arrangements and coordination's with PIEFZA & GEDCO in regards to the schedule hours of the disconnect and reconnect the electricity and must be considered in the time frame schedule. UNDP will not bear any responsibility to such arrangements.

37. The contractors must conduct all the investigations such as bore holes along the overhead or underground paths at his expense during the implementation in order to avoid any damage to the existing facilities and public utilities.
38. The contractor must carefully collect the Base Course that resulted from the excavation from the site and transfer it to the PIEFZA warehouses at his expense.
39. There is a possibility to change the track or location of the networks in some areas, but the new locations of the proposed electricity networks will be determined before signing of the contract. Accordingly, the Offerors must take this into their consideration while pricing all the items and no claims will be accepted in this regard.
40. The contractor is prevented to hire any employee of the electricity distribution company GEDCO or the energy authority PENRA within his technical crews or work with him as a part time after office hours.
41. All technical staff from the contactor side will be adopted and approved by the supervision team before starting the works, and the contractor shall provide a project engineer (Civil) with experience from 7 years , Electrical site engineer 5 years, and civil site engineer 5 years and all of them have previous experience in underground medium voltage electricity networks. Also, the technicians must be capable of implementing and connecting end termination kits and joints for all types of underground cables.
42. The Contractor must provide a full analysis of cost of materials and should be presented in a separate line for each item separately and submit the schedule for the amounts of concrete used in the project.
43. The Contractor must provide work plan explaining all the work activities (supplying & installation) in parallel so that he can finish in the specified time frame of the project.
44. The Contractor shall take the written approval from the supervisor engineer when he wants to start the works for each activity in the project. In case that the contractor is uncommitted, the supervisor has right to reject all the works according to the instructions.
45. The Contractor shall comply with the specifications for all technical civil and electrical works and the preservation of the environment and public safety of the closure of work sites during the drilling and the extension and put up signs to clarify the drilling areas to avoid falls and accidents.
46. After receipt of materials from UNDP warehouse, the materials were under the contractor's responsibility, and need to be stored and secured in the stores and thus the contractor will bear any damage that may occur to the material in the stores or on-site.
47. For the Underground cables, the contractor will receive complete rolls of cables after making all necessary inspections from GEDCO in the UNDP warehouse, then it will move to the site or to the contractor's store. The contractor is responsible to make the inspections on the underground cables after the installation.
48. In emergency cases or in temporary stop of the work or when the project has canceled, the contractor will move all the remaining materials to UNDP stores without claiming and without any additional cost.
49. If the contractor cannot hire a specialist technician or engineer to connect the termination kits or straight joints for the underground cables, GEDCO will provide price offer to the contractor to make the job by its staff. In case the technician fails to make the termination kits to the satisfaction of the engineer, it will be totally removed on the contractor's expenses.

50. The contractor should include in the pricing the cost for making inspections and must do all tests for all existing underground cables and equipment in the presence of GEDCO, UNDP & PENRA before starting works using the required tools for inspection. In case these tools are not available, GEDCO will make the inspection using its tools and the contractor will cover all cost.
51. The Contractor shall take the written approval from the supervision engineers from UNDP, GEDCO and UNDP for the site work for the project and make sure that all the materials for the project were received. In case that the contractor is uncommitted, he will be fully responsible on it. The contractor shall coordinate with PIEFZA representative to have the required permits to work on the GIE.
52. The winning contractor is responsible for obtaining at his own risk and expense any export/import licenses or other official authorization and carry out all customs formalities necessary for the export/import of the goods. **UNDP will be only responsible for obtaining the approvals on VAT exemption from the relevant authorities.**
53. The Contractor must provide all attached tender documents for the technical evaluation, such as (technical guarantees), Drawings, Original Catalogues for the equipment's and materials indicating the proposed type in Catalogues with reference tag number and must be stamped by the manufacturer and the supplier.
54. The contractor must provide all required Routine and Type Test Reports with new dates not less than 5 years for all the materials , equipment and stamped by manufacturer and supplier.
55. The contractor must provide hot stamping for all cables and metal plate for all equipment such transformers, CTC's, LV panels, and others with the name of the beneficiary UNDP/PIEFZA.
56. The contractor should include in the price an inspection visit for the manufacturing factories including the attendance of (3) Engineers from UNDP to witness and carry on Routine and Factory Acceptance Tests for all major Electrical equipment (Transformers, Cables, M.V Disconnectors CTC's, CTCC, CCCCC), before shipping into Gaza, the cost will cover all travelling, visas, transportation, accommodations and all other logistics.
57. In case of the traveling of the committee is impossible, the contractor shall include in his price the cost of recruiting an expert third party for inspection and cover all travelling, visas, transportation and other logistics for one UNDP engineer to witness and certify the tests. The third party must be approved by the UNDP.
58. The contractor should include in the price Dismantling and removal of any damaged external Lantern, poles, wires, surplus materials, etc or any equipment or material such as MV Disconnectors, RMU, transformer, then transport to locations nominated by engineer.
59. **Item no (9.4)/ Metal Glad Switchgear / Supply, install connect and commission metal glad (M.V switchboard) made of three sections 3 (In/Out) Feeders, the system includes 3 vacuum circuit breakers, drawable types, with internal arc proof, with motor operator, rated voltage is 24 KV, Rated short-circuit current is 20 KA, rated normal current of bus bar is 630A. The metal-enclosure, is SF6-insulated switchgear for double-bus bars applications and indoor installation. This system is suitable used for industrial energy systems of the Medium Voltage distribution level. (Type is Siemens, ABB or equivalent)**
    The price includes the followings:
    - **All needed measuring and Metering devices (including but not limited Current & Voltage transformers of suitable ratings to measure the voltage, current, active power, reactive power, Hz,...,etc) one for each incoming feeder and two numbers for the outcoming feeder . All metering devices must be Bidirectional type.**
    - **Full control system to connect and comply with SCADA system with all communication interface type Modbus/Tcp or dnp3/ top with five mangers 1139.**

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- **All needed protection and safety devices such as over current, earth fault relays, shunt release, under voltage release, operating counter, pressure switches, antidumping devices, closing solenoid, mechanical and electrical interlock, mcb's, terminal blocks with all needed materials, accessories and workmanship for proper installation. The contractor should provide full technical specification and catalogues for approval before supplying the system.**

60. Item no (11.1)/ XLPE Copper Conductor Cable 150 mm2 / attached technical guarantee for the item will be available in UNDP website.
61. Item no (11.2)/ XLPE Aluminum Conductor Cable 400 mm2 / attached technical guarantee for the item will be available in UNDP website.
62. Item no (11.7)/ Indoor Termination Kit for XLPE Cable 1x150/25 mm2/ attached technical guarantee for the item will be available in UNDP website.
63. Item no (11.9)/ Straight Joint for XLPE Cable 1x150/25 mm2 / attached technical guarantee for the item will be available in UNDP website.

Interested bidders shall acknowledge receipt of this addendum/pre-bid minutes by returning/including it, signed and stamped, with their bids.

For your kind attention and reference,

Sincerely Yours,

Khaled Shahwan
Deputy Special Representative (Operations)

UNITED NATIONS DEVELOPMENT PROGRAMME

Technical Guarantees For Electrical Materials & Equipments

Technical Guarantees No. IDT_1600

22/0.4 KV Low Losses , 3 phase , Indoor Distribution Transformer 1600 KVA Rating

No	Description	Unit	Requirements	Offered Data	Notes, Remarks , Ref to Documentation	Evaluation Committee Comments
1	Name of Manufacturer					
2	Country of Origin					
3	Reference Manufacturing Standards		IEC 60076 or DIN42500			
4	Type		3 phase oil-immersed Hermetically Sealed			
5	Continuous Maximum Rating (C.M.R)	KVA	1600			
6	Rated Frequency	Hz	50			
7	Cooling method		ONAN			
8	**Normal Voltage Between Phases at No Load**					
	a) H.V	Volts	22000			
	b) L.V	Volts	400			
9	**Connection and Vector Group**					
	a) H.V Winding		Delta			
	b) L.V Winding		Star			
	c) Vector Group		Dyn11			
10	**Tapping Range on H.V Side**					
	a) Rating of the Tap change		**+1x2.5% -3x2.5%**			
	b) Type of Tap Changer		Off Load			
11	**Losses (Low Losses Type)**					
	a) No-load losses	Watts	1700 (Zero Tolerance)			
	b) Load losses at 75C^{o}	Watts	14000 (Zero Tolerance)			
12	Max. Impedance Voltage of Short Circuit at 75 ^{o}C	%	6			

Technical Guarantees No. IDT_1600

22/0.4 KV Low Losses , 3 phase , Indoor Distribution Transformer 1600 KVA Rating

No	Description	Unit	Requirements	Offered Data	Notes, Remarks , Ref to Documentation	Evaluation Committee Comments
13	**Voltage Drop at Full Load**					
	a) at unity Power Factor (Cosφ = 1)	%	1.095			
	b) at 0.8 Power Factor (Cosφ = 0.8)	%	4.38			
14	**Efficiency at full load**					
	a)at unity Power Factor (Cosφ = 1)	%	98.99			
	b)at 0.8 Power Factor (Cosφ = 0.8)	%	98.74			
15	**Max Temperature rise at C.M.R**					
	a) Top Oil by Thermometer	^{o}C	45			
	b) Average Winding by Resistance	^{o}C	50			
	c) Hot Spot Corresponding to (b)	^{o}C	98			
16	**Insulating Voltage Level**					
	a) Rated lighting – Impulse withstand Voltage 1.2/50 µs (Peak Value)	kV	125			
	b) Rated Duration Power Frequency withstand Voltage 1 min (r.m.s Value)	kV	50			
17	Material thermal class insulation (According IEC 60085)		Class A			
18	**Overloading**					
	a) Minimum Duration of %133 Overloading at 30C^{o} Ambient Temperature and Preload 75% F.L	Min.	240			
	b) Minimum Duration of %150 Overloading at 30C^{o} Ambient Temperature and Preload 75% F.L	Min.	98			
19	**Winding Conductor Material**					
	a) H.V winding		high conductivity electrolytic copper			
	b) L.V winding		high conductivity electrolytic copper			

Technical Guarantees No. IDT_1600

22/0.4 KV Low Losses , 3 phase , Indoor Distribution Transformer 1600 KVA Rating

No	Description	Unit	Requirements	Offered Data	Notes, Remarks , Ref to Documentation	Evaluation Committee Comments
20	**Type of insulation**					
	a) H.V winding		Diamond pattern Kraft paper			
	b) L.V winding		Diamond pattern epoxy coated Kraft paper			
21	**Type of Bushing**					
	a) H.V Plug in Bushing		Euromold K180-AR3			
	b) L.V Bushing (with drilled hole 4x Ø14 mm Brass Flag)		DT3150			
22	Installation		Indoor			
23	Noise level at 0.3 m (Lwa)	dB	≤ 66			
24	**Transformer Oil (as Standard IEC60296:3.0)**					
	a) Kinematic Viscosity , at 40 ^{o}C	mm^2/s	8			
	b) Density, at 20 ^{o}C	kg/dm^3	≤ 0.895			
	c) Breaking Voltage before Treatment	KV	≥30			
	d) Breaking Voltage After Treatment	KV	>60			
	e) Environmental Requirements		Polychlorinated biphenyls (PCBs) Free			
	f) Type		Nytro 10XN or Equivalent			
25	Oil weight	Kg	shall be filled by manufacturer			
26	Total weight	Kg	shall be filled by manufacturer			

Technical Guarantees No. IDT_1600

22/0.4 KV Low Losses , 3 phase , Indoor Distribution Transformer 1600 KVA Rating

No	Description	Unit	Requirements	Offered Data	Notes, Remarks , Ref to Documentation	Evaluation Committee Comments
27	**Internal Dimensions**					
	a) Winding Length and shape of the windings	mm	shall be filled by manufacturer			
	b) Space Between the Windings	mm	Bigger than 20 mm			
	c) Space between Windings and Transformer Top Body	mm	Bigger than 40 mm			
	e) Space between Windings and Transformer Side Body	mm	shall be filled by manufacturer			
28	**Overall Dimensions**					
	a) Height	mm	shall be filled by manufacturer			
	b) Length	mm	shall be filled by manufacturer			
	c) Width	mm	shall be filled by manufacturer			
	e) Space Between Wheel Centers	mm	shall be filled by manufacturer			
29	**Accessories**					
	a) Oil Filling Opening		Required			
	b) Manual Ball Oil Drain Valve with Sampling Devices		Required			
	c) Grounding Terminals		Required			
	d) Diagram and Name Plate		Required			
	e) Thermometer Pocket		Required			
	f) Lifting lugs		Required			
	g) Safety Valve (over Pressure Relief Device)		Required			
	h) Wheels		Required			
	i) DGPT (Combined Gas-Pressure Temperature Relay) or R.I.S. (Integrated Safety detector) Including Oil Level Indicator		Required			
30	Short Circuit withstand ability test Certificates/Reports from internationally reputed testing agency		Required			

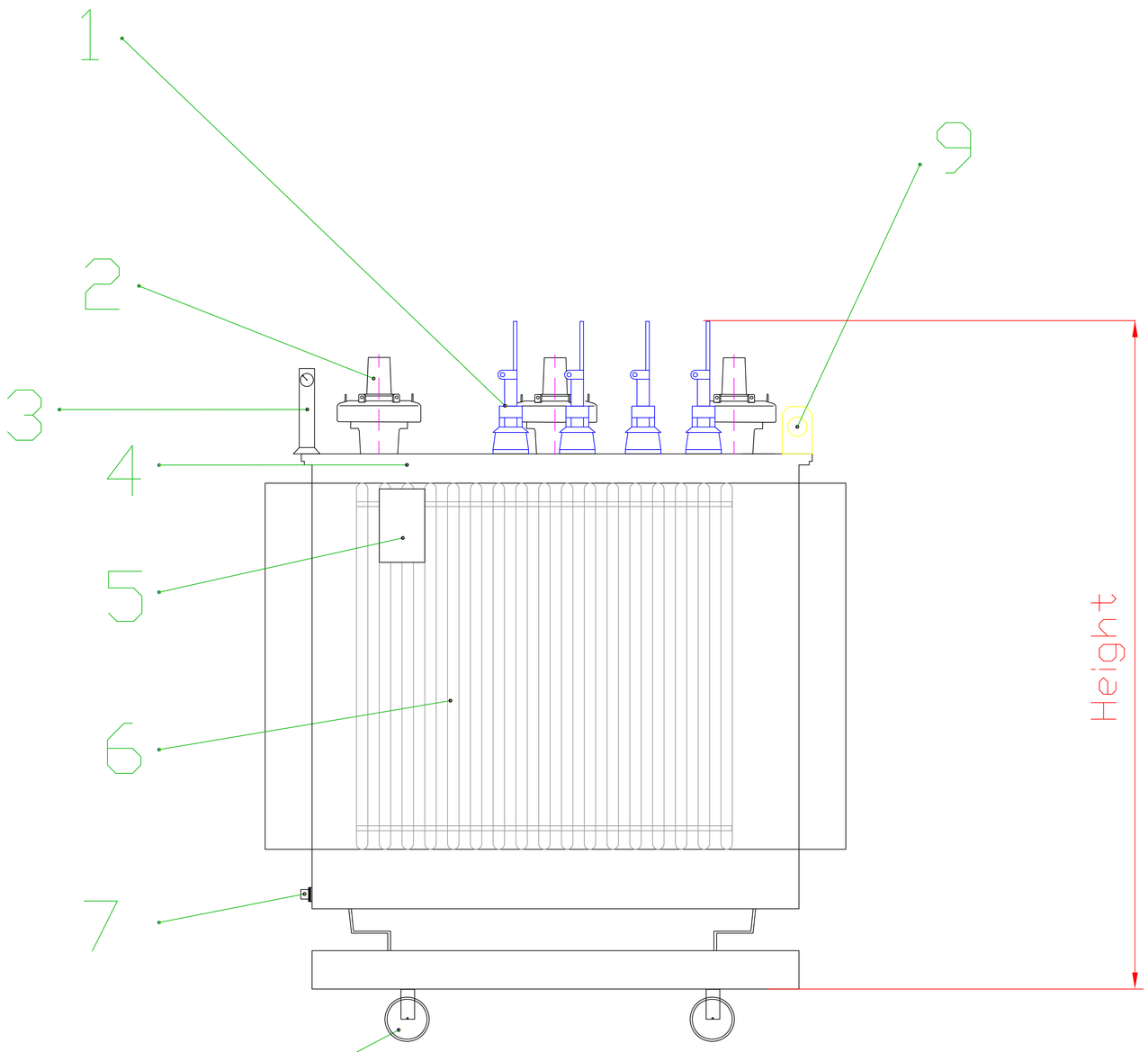
Technical Guarantees No. IDT_1600

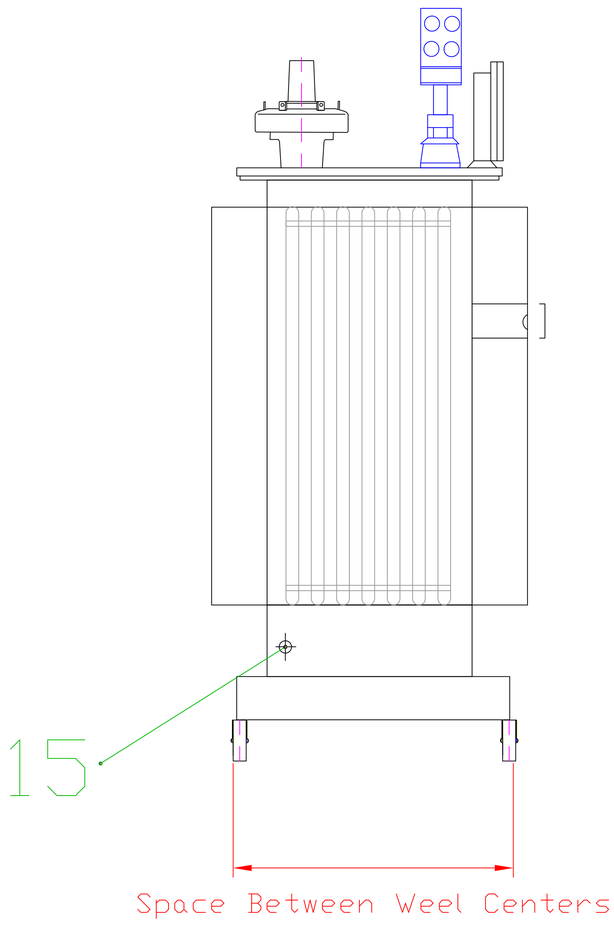
22/0.4 KV Low Losses , 3 phase , Indoor Distribution Transformer 1600 KVA Rating

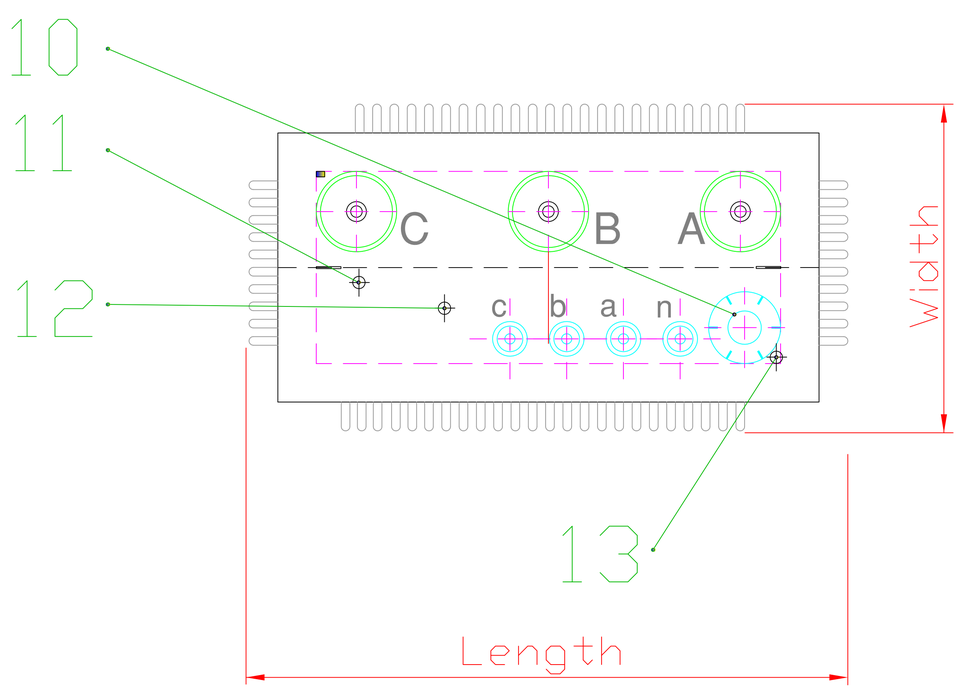
No	Description	Unit	Requirements	Offered Data	Notes, Remarks , Ref to Documentation	Evaluation Committee Comments
31	Type, Acceptance, Overload capacity & Routine tests witnessed by Beneficiary		Required			
32	Attached Drawing		Drawing No IDT_1600			

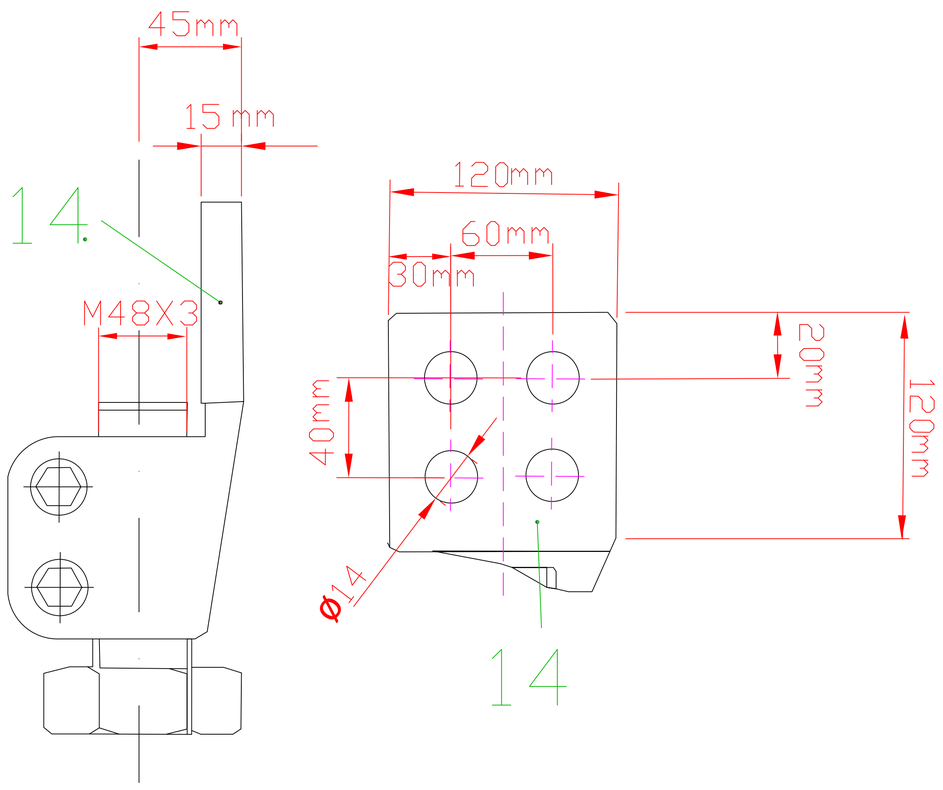
Tenderer's Signature : ……..... Date: ……

IDT_1600	22/0.4 KV Low Losses , 3 phase , Indoor Distribution Transformer 1600 KVA Rating









1 L.V Bushing

2 H.V Plug in Bushing

3 R.I.S

4 Cover

5 Rating Plate

6 Tank

7 1" Drain Valve

8 Wheels

9 Lifting Lugs

10 Safety Valve

11 Tap Changer

12 Thermometer Pocket

13 Oil Filling Opening

14 Brass Flag for L.V Bushing

15 Grounding Terminal

Prepared by: Eng. Wael Ahmed Ismail Elhefni

Technical Guarantees No. LV1C_240

0.6/1 kV Single Core Cable with XLPE Insulation and Circular Stranded Compacted Copper Conductor 1x240 mm^2

No	Description	Unit	Requirements	Offered Data	Notes, Remarks , Ref to Documentation	Evaluation Committee Comments
1	Name of Manufacturer					
2	Country of Origin					
3	Design Standards		IEC60502-1 & IEC60228			
4	Test Standards		IEC60230 & IEC60502-1 & IEC60811			
5	Code & Designation		N2X2Y FR1 , L.V Cable with Copper Conductors and XLPE Insulation			
6	Climatic Design		- 5^oC to 55^oC			
7- Rated Voltage						
7.1	Between Conductor and Sheath (U_o)	kV	0.6			
7.2	Between any Two Conductors (U)	kV	1			
7.3	Max. Service Voltage (U_m)	kV	1.2			
7.4	Rated Frequency	HZ	50			
8- Cable Design						
8.1	Cross Section	mm^2	240			
8.2	Core No.	No	1			
8.3	Material		Copper			
8.4	Class and Form		Class2 - Circular Stranded			
8.5	Minimum No. of wires	No	34			
8.6	Conductor Minimum / Maximum Diameter	mm	17.5 / 19.2			

Technical Guarantees No. LV1C_240

0.6/1 kV Single Core Cable with XLPE Insulation and Circular Stranded Compacted Copper Conductor 1x240 mm^2

No	Description	Unit	Requirements	Offered Data	Notes, Remarks , Ref to Documentation	Evaluation Committee Comments
8.7	Insulation Material		Cross Linked Polyethylene (XLPE)			
8.8	Nominal Insulation Thickness	mm	1.7			
8.9	Insulation Max Service Temperature	°C	90			
8.10	Outer Sheath Material		LDPE ST7 with Chemical Additives			
8.11	Nominal Sheath Thickness	mm	1.8			
8.12	Overall Diameter of the Cable	mm	shall be filled by manufacturer			
8.13	Max. Rated Temperature for Permanent Load	°C	90			
8.14	Max. Rated Temperature for Emergency Loads	°C	105			
8.15	Max. Rated Conductor Temperature at Short Circuit (1 sec. max. duration)	°C	250			
8.16	Total Weight of the Cable	kg/km	shall be filled by manufacturer			
8.17	DC Resistance (R_{dc})	ohm/km	shall be filled by manufacturer			
8.18	Minimum Bending Radius	mm	shall be filled by manufacturer			
8.19	Continuous Current Carrying Capacity Single Cable Laid Buried in 0.7 m Deep in Soil at 20 ^{o}C with 1 k.m/w Thermal Resistivity and Load Factor 0.7	A	521			
8.20	Short circuit rating (1 sec) based on an initial conductor temperature of 90 °C and a final temperature of 250 °C	KA	34.3			

Technical Guarantees No. LV1C_240

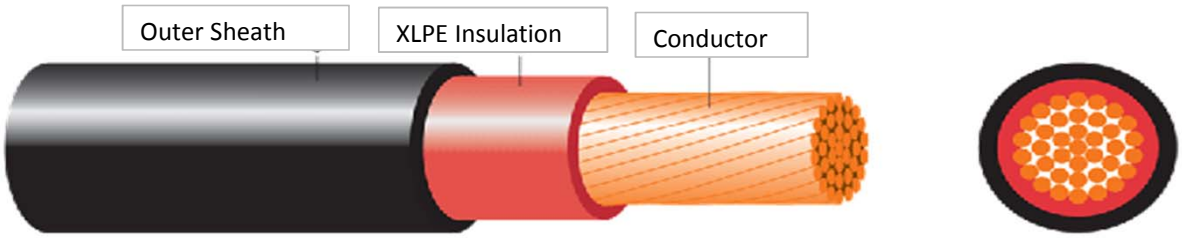
0.6/1 kV Single Core Cable with XLPE Insulation and Circular Stranded Compacted Copper Conductor 1x240 mm^2

No	Description	Unit	Requirements	Offered Data	Notes, Remarks , Ref to Documentation	Evaluation Committee Comments
9- Drum :						
9.1	Method of Cable Delivery		on Drums			
9.2	Length of Cable on Drum	m	500			
9.3	Drum Material		New Wood			
9.4	Cable Protection on Drum		Wooden Batten			
9.5	Max. Gross Weight of Drum with Cable	kg	shall be filled by manufacturer			
9.6	Dimension of Drum	mm	shall be filled by manufacturer			
10	Permissible Pulling Forces	N				
11- Tests :						
11.1	Type Test Certificates /Reports from internationally reputed testing agency		Required			
11.2	Acceptance & Routine tests witnessed by Beneficiary		Required			
12	Marking		***Embedded print, giving :*** 1- Type of cable 2- Cross-section 3- Manufacturer name 4- Nominal voltage 5- Length for Each Meter 6- Production year			

Technical Guarantees No. LV1C_240

0.6/1 kV Single Core Cable with XLPE Insulation and Circular Stranded Compacted Copper Conductor 1x240 mm^2

No	Description	Unit	Requirements	Offered Data	Notes, Remarks , Ref to Documentation	Evaluation Committee Comments



Tenderer's Signature : ……..... Date: ……

Technical Guarantees No. LVB_2500

Low Voltage Distribution Board 2500A with Main C.B. IZM 2500A and 10 Feeder

No	Description	Unit	Requirements	Offered Data	Notes, Remarks , Ref to Documentation	Evaluation Committee Comments
1	Name of Manufacturer					
2	Country of Origin					
3	Standard		IEC 60439			
4	Rated Insulation Voltage	V	1000			
5	Rated Operational Voltage	V	690			
6	Rated Frequency	HZ	50			
7	Safe Operating Zone Temperature	^{o}C	-10 to +55			
8	Network System		TT			
9	Design		Metal-Enclosed			
10	Type		Indoor			

11- Busbars

11.1	Reference Standards		BS 159			
11.2	Material		made of rectangular high grade electrolytic copper with insulation covering			
11.3	Dimensions		2(100*10mm)+N+E 100*10mm			
11.4	Rated Current at 45 °C	A	3000			
11.5	Rated Peak withstand Current	KA	176			

Technical Guarantees No. LVB_2500

Low Voltage Distribution Board 2500A with Main C.B. IZM 2500A and 10 Feeder

No	Description	Unit	Requirements	Offered Data	Notes, Remarks , Ref to Documentation	Evaluation Committee Comments
11.6	Rated Short Time withstand Current	KA	80			
11.7	Main Cable Entry		Bottom			
11.8	Main Busbar		3-phase			
11.9	Earthing Busbar		Required			

12-Main Air Circuit Breaker

12.1	Name of Manufacturer		shall be filled			
12.2	Country of Origin		shall be filled			
12.3	Reference Standards		IEC 60947			
12.4	Continuous current rating	A	2500			
12.5	Sensor Rating	A	2500			
12.6	Opening Type		Electronic			
12.7	Pole No		3			
12.8	Ultimate Breaking Capacity (kA)	KA	65			
12.9	Rated Short Time withstand Current (1 sec.)	KA	Minimum 55			
12.10	max. Break time	msec	30			
12.11	max. Closing time	msec	50			
12.12	Terminals Material		Tinned copper			

Technical Guarantees No. LVB_2500

Low Voltage Distribution Board 2500A with Main C.B. IZM 2500A and 10 Feeder

No	Description	Unit	Requirements	Offered Data	Notes, Remarks , Ref to Documentation	Evaluation Committee Comments
12.13	Mechanical Endurance with maintenance	C/O	10,000			
12.14	Electrical Endurance without maintenance	C/O	5,000			
12.15	Type tests report		Required			

13- Vertical Low Voltage Disconnector Switch

13.1	Name of Manufacturer		shall be filled			
13.2	Country of Origin		shall be filled			
13.3	Reference Manufacturing Standards		IEC 60947-3, DIN0636-2			
13.4	Number		10 each			
13.5	Rated insulation voltage (Ui)	V	800-1000			
13.6	Rated operational voltage	V	690			
13.7	Conventional free air thermal current	A	400			
13.8	Rated Conventional Free Air Thermal Current With Solid Link	A	shall be filled by manufacturer			
13.9	Pole No		3			
13.10	Switching Type		Three Pole			
13.11	Rated impulse withstand voltage (Uimp)	Kv	8			
13.12	Short circuit making capacity (peak)	KA	shall be filled by manufacturer			
13.13	Short time withstand current capability (for 1 second)	KA	shall be filled by manufacturer			

Technical Guarantees No. LVB_2500

Low Voltage Distribution Board 2500A with Main C.B. IZM 2500A and 10 Feeder

No	Description	Unit	Requirements	Offered Data	Notes, Remarks , Ref to Documentation	Evaluation Committee Comments
13.14	Mechanical Operations	Operation	≥1000			
13.15	Rated conditional short-circuit current (with fuses)	KA	50			
13.16	HRC fuselink No.		30			
13.17	HRC fuselink Rating Current	A	250			
13.18	HRC fuselink Type		„gG“ / Blade Contact fuse-links, NH2			
13.19	Space between the switches	cm	2-3			
	14-Street Lighting					
14.1	Name of Manufacturer		shall be filled			
14.2	Country of Origin		shall be filled			
14.3	Reference Manufacturing Standards		IEC 60947-3, DIN0636-2			
14.4	Number		1 each			
14.5	Rated insulation voltage (Ui)	V	800-1000			
14.6	Rated operational voltage	V	500			
14.7	Conventional free air thermal current	A	160			
14.8	Rated Conventional Free Air Thermal Current With Solid Link	A	shall be filled by manufacturer			
14.9	Pole No		3			

Technical Guarantees No. LVB_2500

Low Voltage Distribution Board 2500A with Main C.B. IZM 2500A and 10 Feeder

No	Description	Unit	Requirements	Offered Data	Notes, Remarks , Ref to Documentation	Evaluation Committee Comments
14.10	Switching Type		Three Pole			
14.11	Rated impulse withstand voltage (Uimp)	Kv	8			
14.12	Short circuit making capacity (peak)	KA	shall be filled by manufacturer			
14.13	Short time withstand current capability (for 1 second)	KA	shall be filled by manufacturer			
14.14	mechanical operations	Operation	≥1000			
14.15	Rated conditional short-circuit current (with fuses)	KA	50			
14.16	HRC fuselink No.		3			
14.17	HRC fuselink Rating Current	A	100			
14.18	HRC fuselink Type		„gG“ / Blade Contact fuse-links, NH2			
	15-Panel configuration					
15.1	Frame parts		2 mm – Galvanized chromed sheet steel			
15.2	Surface		Powder-Coated Paint -finish			
15.3	Design		hermetically tight welded, without any sealings			
15.4	Degree of protection		IP3XD			
15.5	Colour		slightly embossed RAL 7035 powder-paint			
	16-Accessories					
16.1	Lock System		Interlocking			
	Current Transformer					

Technical Guarantees No. LVB_2500

Low Voltage Distribution Board 2500A with Main C.B. IZM 2500A and 10 Feeder

No	Description	Unit	Requirements	Offered Data	Notes, Remarks , Ref to Documentation	Evaluation Committee Comments
16.2	Specification : According IEC- CT rating on incoming busbars: 3000/5A Error Co-efficient: Less than 5 Insulation Class: class E,120ºC Rated Burden: 10 VA		Required			
16.3	Three Maximum demand ammeters :Scale range 0 –		Required			
16.4	One 3Φ voltmeter: Scale range 0 - 500 V, Class 1.5 with a selector switch		Required			
16.5	Three indicating lamps		Required			
16.6	One three-phase 32 A circuit-breaker , Circuit Breaker nominal breaking current not less than 6 KA at 380 V with thermal and instantaneous short-circuit		Required			
16.7	One single-phase, 32 A, 220 V C.B for control circuits with thermal and inst. short-circuit releases. The nominal breaking current of the circuit-breaker shall not be less than 6 KA at 380 V		Required			
16.8	Another Accessories		as Drawing			
17	Safety		The Busbars Should including Separation Covers			
18	Internal Wiring		made of flexible copper cables			
19	Ventilation		Natural			
20	Width	m	shall be filled by manufacturer			
21	Height	m	shall be filled by manufacturer			
22	Depth	m	shall be filled by manufacturer			

Technical Guarantees No. LVB_2500

Low Voltage Distribution Board 2500A with Main C.B. IZM 2500A and 10 Feeder

No	Description	Unit	Requirements	Offered Data	Notes, Remarks , Ref to Documentation	Evaluation Committee Comments
23	Total Weight	kg	shall be filled by manufacturer			
24	Quality Certificate		Required			
25	Dimensions		as Drawing			

Technical Guarantees No. LVB_2500

Low Voltage Distribution Board 2500A with Main C.B. IZM 2500A and 10 Feeder

No	Description	Unit	Requirements	Offered Data	Notes, Remarks , Ref to Documentation	Evaluation Committee Comments

اللوحة مصنوعة من الصاج المجلفن بسمك ٢ ملم مدهونة بدهان الكتروستاتيكي
مطلوب تحديد نوعية السكينة الرئيسية IZM
ونوعية الساكين الفرعية

Tenderer's Signature : ……..… Date: ……

Technical Guarantees No. RMU_1T2C

24 kV, 630 A Switchgear, and 16 kA Short Circuit Current Ring Main Unit SF6, Two Incoming Switch Disconnectors, one Transformer Protection Fuse Switch Combination (CTC)

No	Description	Unit	Requirements	Offered Data	Notes, Remarks , Ref to Documentation	Evaluation Committee Comments
1	Name of Manufacturer					
2	Country of Origin					
3	**Reference Manufacturing Standards**					
	a) Service Condition		IEC60694			
	b) Switch Fuse Combination		IEC62271-105			
	c) Switch endurance & Short time & Peak withstand for Switch		IEC60265-1			
	d) Short time & Peak withstand for Earth Switch /Disconnector		IEC60129 / IEC62271-102			
	e) Temperature Rise Test & Dielectric Test & Internal Arc Test		IEC60298 / IEC62271-200			
	f) Safety Interlocking		IEC60298/ IEC60640			
	g)Enclosure Degree of Protection		IEC60529			
4	Insulation Medium , Interruption medium		SF6 Gas			
5	Design		Metal-Enclosed			
6	Type		Indoor			
7	Component		Two Incoming Switch Disconnectors, one Transformer Protection Fuse Switch Combination (CTC)			
8	Rated voltage	kV	24			

Technical Guarantees No. RMU_1T2C

24 kV, 630 A Switchgear, and 16 kA Short Circuit Current Ring Main Unit SF6, Two Incoming Switch Disconnectors, one Transformer Protection Fuse Switch Combination (CTC)

No	Description	Unit	Requirements	Offered Data	Notes, Remarks , Ref to Documentation	Evaluation Committee Comments
9	Rated Frequency	HZ	50			
10	Safe Operating Zone Temperature	^{o}C	-10 to +55			
11	**Rated insulation level**					
	a) Rated short-duration power-frequency withstand voltage	KV	50			
	b) Rated lightning impulse withstand voltage	KV	125			
12	**Rated Normal Current**					
	a) for ring-main feeders	A	630			
	b) for transformer feeders depending on the HV HRC fuse link	A	200			
	c) for Busbar	A	630			
13	**Rated short-time withstand current**					
	a) for 1 sec	kA	20			
	b) for 3 sec	kA	16			
14	**Rated short-circuit making current**					
	a) for ring-main feeder	kA	50			
	b) for transformer feeder	kA	25			
15	Rated Peak withstand Current	kA	50			
16	Pressure values for insulation (Rated filling pressure)	hPa (absolute)	1500			
	Panel configuration					

Technical Guarantees No. RMU_1T2C

24 kV, 630 A Switchgear, and 16 kA Short Circuit Current Ring Main Unit SF6, Two Incoming Switch Disconnectors, one Transformer Protection Fuse Switch Combination (CTC)

No	Description	Unit	Requirements	Offered Data	Notes, Remarks , Ref to Documentation	Evaluation Committee Comments
17	Switchgear container Design		hermetically tight welded, without any sealings			
	Degree of protection for all high-voltage sections		IP65			
	Degree of protection for switchgear enclosure		IP3XD			
	Position for isolating/grounding via the Switch Disconnector		three Position			
	Position of switch-disconnector		three Position			
18	Bolted Electrical Joints Design		secured by fasteners of corrosion-proof materials			
19	Clearance between clamp and bushing		Suitable for all type of terminations			
20	Cable Connections in Ring Main Unit Feeders		Interface C , Screw Type , Suitable for RSTI Screened, separable connection system 630 A up to 630 mm2			
21	Cable Connections in Transformer Feeders		24kv interface A, Pin Type , Suitable for Screened Separable Elbow Termination Kit 250A			
	Operating Manually Indicate the Following Positions					

Technical Guarantees No. RMU_1T2C

24 kV, 630 A Switchgear, and 16 kA Short Circuit Current Ring Main Unit SF6, Two Incoming Switch Disconnectors, one Transformer Protection Fuse Switch Combination (CTC)

No	Description	Unit	Requirements	Offered Data	Notes, Remarks , Ref to Documentation	Evaluation Committee Comments
22	a) Switch Disconnector		ON and OFF			
	b) Off-Load Isolator		ON and OFF			
	c) Earthing		ON and OFF			
23	**Accessories**					
	a) Voltage indicator lamps		Required			
	b) Gas Pressure Indicator		Required			
	c) M.V Porcelain Fuses		Required			
	d) Operating Lever		Required			
24	Width	mm	Shall be filled by manufacturer			
25	Height	mm	Shall be filled by manufacturer			
26	Depth	mm	Shall be filled by manufacturer			
27	Total Weight	kg	Shall be filled by manufacturer			
28	Type Test Certificates /Reports from internationally reputed testing agency		Required			
29	Acceptance & Routine tests witnessed by Beneficiary		Required			

Tenderer's Signature : ……..… Date: ……

Technical Guarantees No. RMU_1T3C

24 kV , 630 A Switchgear, and 16 kA Short Circuit Current Ring Main Unit SF6 , Three Incoming Switch Disconnectors, One Transformer Protection Fuse Switch combination (CTCC)

No	Description	Unit	Requirements	Offered Data	Notes, Remarks , Ref to Documentation	Evaluation Committee Comments
1	Name of Manufacturer					
2	Country of Origin					
3	**Reference Manufacturing Standards**					
	a) Service Condition		IEC60694			
	b) Switch Fuse Combination		IEC62271-105			
	c) Switch endurance & Short time & Peak withstand for Switch		IEC60265-1			
	d) Short time & Peak withstand for Earth Switch /Disconnector		IEC60129 / IEC62271-102			
	e) Temperature Rise Test & Dielectric Test & Internal Arc Test		IEC60298 / IEC62271-200			
	f) Safety Interlocking		IEC60298/ IEC60640			
	g)Enclosure Degree of Protection		IEC60529			
4	Insulation Medium , Interruption medium		SF6 Gas			
5	Design		Metal-Enclosed			
6	Type		Indoor			
7	Component		Three Incoming Switch Disconnectors, One Transformer Protection Fuse Switch combination (CTCC)			
8	Rated voltage	kV	24			

Technical Guarantees No. RMU_1T3C

24 kV , 630 A Switchgear, and 16 kA Short Circuit Current Ring Main Unit SF6 , Three Incoming Switch Disconnectors, One Transformer Protection Fuse Switch combination (CTCC)

No	Description	Unit	Requirements	Offered Data	Notes, Remarks , Ref to Documentation	Evaluation Committee Comments
9	Rated Frequency	Hz	50			
10	Safe Operating Zone Temperature	^{o}C	-10 to +55			
11	**Rated insulation level**					
	a) Rated short-duration power-frequency withstand voltage	KV	50			
	b) Rated lightning impulse withstand voltage	KV	125			
12	**Rated Normal Current**					
	a) for ring-main feeders	A	630			
	b) for transformer feeders depending on the HV HRC fuse link	A	200			
	c) for Busbar	A	630			
13	**Rated short-time withstand current**					
	a) for 1 sec	kA	20			
	b) for 3 sec	kA	16			
14	**Rated short-circuit making current**					
	a) for ring-main feeder	kA	50			
	b) for transformer feeder	kA	25			
15	Rated Peak withstand Current	kA	50			
16	Pressure values for insulation (Rated filling pressure)	hPa (absolute)	1500			
	Panel configuration					

Technical Guarantees No. RMU_1T3C

24 kV , 630 A Switchgear, and 16 kA Short Circuit Current Ring Main Unit SF6 , Three Incoming Switch Disconnectors, One Transformer Protection Fuse Switch combination (CTCC)

No	Description	Unit	Requirements	Offered Data	Notes, Remarks , Ref to Documentation	Evaluation Committee Comments
17	Switchgear container Design		hermetically tight welded, without any sealings			
	Degree of protection for all high-voltage sections		IP65			
	Degree of protection for switchgear enclosure		IP3XD			
	Position for isolating/grounding via the Switch Disconnector		three Position			
	Position of switch-disconnector		three Position			
18	Bolted Electrical Joints Design		secured by fasteners of corrosion-proof materials			
19	Clearance between clamp and bushing		Suitable for all type of terminations			
20	Cable Connections in Ring Main Unit Feeders		Interface C , Screw Type , Suitable for RSTI Screened, separable connection system 630 A up to 630 mm2			
21	Cable Connections in Transformer Feeders		24kv interface A, Pin Type , Suitable for Screened Separable Elbow Termination Kit 250A			
	Operating Manually Indicate the Following Positions					

Technical Guarantees No. RMU_1T3C

24 kV , 630 A Switchgear, and 16 kA Short Circuit Current Ring Main Unit SF6 , Three Incoming Switch Disconnectors, One Transformer Protection Fuse Switch combination (CTCC)

No	Description	Unit	Requirements	Offered Data	Notes, Remarks , Ref to Documentation	Evaluation Committee Comments
22	a) Switch Disconnector		ON and OFF			
	b) Off-Load Isolator		ON and OFF			
	c) Earthing		ON and OFF			
23	**Accessories**					
	a) Voltage indicator lamps		Required			
	b) Gas Pressure Indicator		Required			
	c) M.V Porcelain Fuses		Required			
	d) Operating Lever		Required			
24	Width	mm	Shall be filled by manufacturer			
25	Height	mm	Shall be filled by manufacturer			
26	Depth	mm	Shall be filled by manufacturer			
27	Total Weight	kg	Shall be filled by manufacturer			
28	Type Test Certificates /Reports from internationally reputed testing agency		Required			
29	Acceptance & Routine tests witnessed by Beneficiary		Required			

Tenderer's Signature : ……..… Date: ……

Technical Guarantees No. RMU_5C

24 kV , 630 A Switchgear, and 16 kA Short Circuit Current Ring Main Unit SF6, Three Incoming Switch Disconnectors (CCCCC)

No	Description	Unit	Requirements	Offered Data	Notes, Remarks , Ref to Documentation	Evaluation Committee Comments
1	Name of Manufacturer					
2	Country of Origin					
3	**Reference Manufacturing Standards**					
	a) Service Condition		IEC60694			
	b) Switch Fuse Combination		IEC62271-105			
	c) Switch endurance & Short time & Peak withstand for Switch		IEC60265-1			
	d) Short time & Peak withstand for Earth Switch /Disconnector		IEC60129 / IEC62271-102			
	e) Temperature Rise Test & Dielectric Test & Internal Arc Test		IEC60298 / IEC62271-200			
	f) Safety Interlocking		IEC60298/ IEC60640			
	g)Enclosure Degree of Protection		IEC60529			
4	Insulation Medium , Interruption medium		SF6 Gas			
5	Design		Metal-Enclosed			
6	Type		Indoor			
7	Component		Five Incoming Switch Disconnectors ((5 ring-main feeders))			

Technical Guarantees No. RMU_5C

24 kV , 630 A Switchgear, and 16 kA Short Circuit Current Ring Main Unit SF6, Three Incoming Switch Disconnectors (CCCCC)

No	Description	Unit	Requirements	Offered Data	Notes, Remarks , Ref to Documentation	Evaluation Committee Comments
8	Rated voltage	kV	24			
9	Rated Frequency	Hz	50			
10	Safe Operating Zone Temperature	^{o}C	-10 to +55			
11	**Rated insulation level**					
	a) Rated short-duration power-frequency withstand voltage	KV	50			
	b) Rated lightning impulse withstand voltage	KV	125			
12	**Rated Normal Current**					
	a) for ring-main feeders	A	630			
	b) for Busbar	A	630			
13	**Rated short-time withstand current**					
	a) for 1 sec	kA	20			
	b) for 3 sec	kA	16			
14	Rated short-circuit making current for ring-main feeder	kA	50			
15	Rated Peak withstand Current	kA	50			
16	Pressure values for insulation (Rated filling pressure)	hPa (absolute)	1500			

Technical Guarantees No. RMU_5C

24 kV , 630 A Switchgear, and 16 kA Short Circuit Current Ring Main Unit SF6, Three Incoming Switch Disconnectors (CCCCC)

No	Description	Unit	Requirements	Offered Data	Notes, Remarks , Ref to Documentation	Evaluation Committee Comments
17	**Panel configuration**					
	Switchgear container Design		hermetically tight welded, without any sealings			
	Degree of protection for all high-voltage sections		IP65			
	Degree of protection for switchgear enclosure		IP3XD			
	Position for isolating/grounding via the switch disconnector		three Position			
	Position of switch-disconnector		three Position			
18	Bolted Electrical Joints Design		secured by fasteners of corrosion-proof materials			
19	Clearance between clamp and bushing		Suitable for all type of terminations			

Technical Guarantees No. RMU_5C

24 kV , 630 A Switchgear, and 16 kA Short Circuit Current Ring Main Unit SF6, Three Incoming Switch Disconnectors (CCCCC)

No	Description	Unit	Requirements	Offered Data	Notes, Remarks , Ref to Documentation	Evaluation Committee Comments
20	Cable Connections in Ring Main Unit Feeders		Interface C , Screw Type , Suitable for RSTI Screened, separable connection system 630 A up to 630 mm2			
21	**Operating Manually Indicate the Following Positions**					
	a) Switch Disconnector		ON and OFF			
	b) Off-Load Isolator		ON and OFF			
	c) Earthing		ON and OFF			
22	**Accessories**					
	a) Voltage indicator lamps		Required			
	b) Gas Pressure Indicator		Required			
	c) Operating Lever		Required			
23	Width	mm	Shall be filled by manufacturer			
24	Height	mm	Shall be filled by manufacturer			
25	Depth	mm	Shall be filled by manufacturer			
26	Total Weight	kg	Shall be filled by manufacturer			

Technical Guarantees No. RMU_5C

24 kV , 630 A Switchgear, and 16 kA Short Circuit Current Ring Main Unit SF6, Three Incoming Switch Disconnectors (CCCCC)

No	Description	Unit	Requirements	Offered Data	Notes, Remarks , Ref to Documentation	Evaluation Committee Comments
27	Type Test Certificates /Reports from internationally reputed testing agency		Required			
28	Acceptance & Routine tests witnessed by Beneficiary		Required			

Tenderer's Signature : ……..… Date: ……

Technical Guarantees No. LV1C_240

0.6/1 kV Single Core Cable with XLPE Insulation and Circular Stranded Compacted Copper Conductor 1x240 mm^2

No	Description	Unit	Requirements	Offered Data	Notes, Remarks , Ref to Documentation	Evaluation Committee Comments
1	Name of Manufacturer					
2	Country of Origin					
3	Design Standards		IEC60502-1 & IEC60228			
4	Test Standards		IEC60230 & IEC60502-1 & IEC60811			
5	Code & Designation		N2X2Y FR1 , L.V Cable with Copper Conductors and XLPE Insulation			
6	Climatic Design		- 5^oC to 55^oC			
7- Rated Voltage						
7.1	Between Conductor and Sheath (U_o)	kV	0.6			
7.2	Between any Two Conductors (U)	kV	1			
7.3	Max. Service Voltage (U_m)	kV	1.2			
7.4	Rated Frequency	HZ	50			
8- Cable Design						
8.1	Cross Section	mm^2	240			
8.2	Core No.	No	1			
8.3	Material		Copper			
8.4	Class and Form		Class2 - Circular Stranded			
8.5	Minimum No. of wires	No	34			
8.6	Conductor Minimum / Maximum Diameter	mm	17.5 / 19.2			

Technical Guarantees No. LV1C_240

0.6/1 kV Single Core Cable with XLPE Insulation and Circular Stranded Compacted Copper Conductor 1x240 mm^2

No	Description	Unit	Requirements	Offered Data	Notes, Remarks , Ref to Documentation	Evaluation Committee Comments
8.7	Insulation Material		Cross Linked Polyethylene (XLPE)			
8.8	Nominal Insulation Thickness	mm	1.7			
8.9	Insulation Max Service Temperature	°C	90			
8.10	Outer Sheath Material		LDPE ST7 with Chemical Additives			
8.11	Nominal Sheath Thickness	mm	1.8			
8.12	Overall Diameter of the Cable	mm	shall be filled by manufacturer			
8.13	Max. Rated Temperature for Permanent Load	°C	90			
8.14	Max. Rated Temperature for Emergency Loads	°C	105			
8.15	Max. Rated Conductor Temperature at Short Circuit (1 sec. max. duration)	°C	250			
8.16	Total Weight of the Cable	kg/km	shall be filled by manufacturer			
8.17	DC Resistance (R_{dc})	ohm/km	shall be filled by manufacturer			
8.18	Minimum Bending Radius	mm	shall be filled by manufacturer			
8.19	Continuous Current Carrying Capacity Single Cable Laid Buried in 0.7 m Deep in Soil at 20 ^{o}C with 1 k.m/w Thermal Resistivity and Load Factor 0.7	A	521			
8.20	Short circuit rating (1 sec) based on an initial conductor temperature of 90 °C and a final temperature of 250 °C	KA	34.3			

Technical Guarantees No. LV1C_240

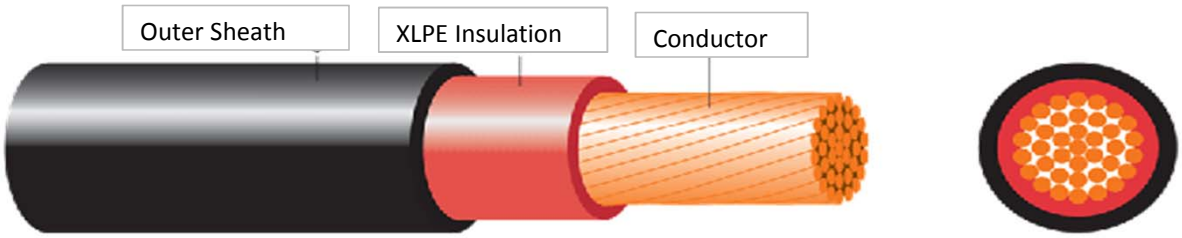
0.6/1 kV Single Core Cable with XLPE Insulation and Circular Stranded Compacted Copper Conductor 1x240 mm^2

No	Description	Unit	Requirements	Offered Data	Notes, Remarks , Ref to Documentation	Evaluation Committee Comments
9- Drum :						
9.1	Method of Cable Delivery		on Drums			
9.2	Length of Cable on Drum	m	500			
9.3	Drum Material		New Wood			
9.4	Cable Protection on Drum		Wooden Batten			
9.5	Max. Gross Weight of Drum with Cable	kg	shall be filled by manufacturer			
9.6	Dimension of Drum	mm	shall be filled by manufacturer			
10	Permissible Pulling Forces	N				
11- Tests :						
11.1	Type Test Certificates /Reports from internationally reputed testing agency		Required			
11.2	Acceptance & Routine tests witnessed by Beneficiary		Required			
12	Marking		***Embedded print, giving :*** 1- Type of cable 2- Cross-section 3- Manufacturer name 4- Nominal voltage 5- Length for Each Meter 6- Production year			

Technical Guarantees No. LV1C_240

0.6/1 kV Single Core Cable with XLPE Insulation and Circular Stranded Compacted Copper Conductor 1x240 mm^2

No	Description	Unit	Requirements	Offered Data	Notes, Remarks , Ref to Documentation	Evaluation Committee Comments



Tenderer's Signature : ……..... Date: ……

Technical Guarantees No. XLPEA_400

12/20 kV Single Core Cable with XLPE Insulation and Aluminium Circular Stranded Conductor 1x400 mm^2

No	Description	Unit	Requirements	Offered Data	Notes, Remarks , Ref to Documentation	Evaluation Committee Comments
1	Name of Manufacturer					
2	Country of Origin					
3	Design Standards		IEC60502-2 & IEC60228			
4	Test Standards		IEC60230 & IEC60502-2 & IEC60811			
5	Code & Designation		NA2XS(F)2Y , Power Cable with Aluminum Conductors and XLPE Insulation			
6	Climatic Design		- 5°C to 55°C			
7- Rated Voltage						
7.1	Between Conductor and Sheath (U_o)	kV	12			
7.2	Between any Two Conductors (U)	kV	20			
7.3	Max. Service Voltage (U_m)	kV	24			
7.4	System Nominal Voltage	kV	22			
8	Rated Frequency	HZ	50			
9	Impulse withstand Voltage 1,2/50 µs	kV	125			
10- Cable Design						
10.1 Conductor :						
10.1.1	Cross Section	mm^2	400			
10.1.2	Material		Aluminum			
10.1.3	Class and Form		Class2 - Stranded Compacted Circular (filled with swelling powder)			
10.1.4	Minimum / Maximum Diameter	mm	23.1 / 24.6			

Technical Guarantees No. XLPEA_400

12/20 kV Single Core Cable with XLPE Insulation and Aluminium Circular Stranded Conductor 1x400 mm^2

No	Description	Unit	Requirements	Offered Data	Notes, Remarks , Ref to Documentation	Evaluation Committee Comments
10.1.5	Minimum Number of Strands	No	53			
10.1.6	Weight of Conductor Per Meter	Kg/Km	shall be filled by manufacturer			
10.1.7	Maximum DC Resistance of Conductor at 20°C	Ω/km	0.0778			
10.1.8	Max. Rated Temperature for Permanent Load	°C	90			
10.1.9	Max. Rated Temperature for Emergency Loads	°C	105			
10.1.10	Max. Rated Conductor Temperature at Short Circuit (1 sec. max. duration)	°C	250			
10.2 Inner Semi Conductive Layer (Conductor Screen) :						
10.2.1	Material		Triple Extruded Bonded Thermosetting Semi-Conductive Layer			
10.2.2	Thickness at Any Point	mm	0.3			
10.2.3	Max Service Temperature	°C	90			
10.3- XLPE Insulation :						
10.3.1	Material		Triple Extruded Dry Cured (XLPE)			
10.3.2	Nominal Thickness	mm	5.5			
10.3.3	Minimum Thickness at Any Point	mm	4.85			
10.3.4	Diameter Over Insulation	mm	shall be filled by manufacturer			
10.3.5	Max Service Temperature	°C	90			
10.3.6	Weight	Kg/Km	shall be filled by manufacturer			
10.4- Outer Semi Conductive Layer (Insulation Screen) :						

Technical Guarantees No. XLPEA_400

12/20 kV Single Core Cable with XLPE Insulation and Aluminium Circular Stranded Conductor 1x400 mm^2

No	Description	Unit	Requirements	Offered Data	Notes, Remarks , Ref to Documentation	Evaluation Committee Comments
10.4.1	Material		Triple Extruded Bonded Thermosetting Semi-Conductive Layer			
10.4.2	Thickness at Any Point	mm	0.3			
10.4.3	Max Service Temperature	°C	90			
10.5- Semi-Conductive Water Swelling Tape :						
10.5.1	Material		Semi Conductive Tape			
10.5.2	Thickness at Any Point	mm	0.3			
10.5.3	Max Service Temperature	°C	90			
10.6- Copper Wire Screen (including Equalizing Tape) :						
10.6.1	Material of Wire and Equalizing Tape		Copper			
10.6.2	Minimum Wires Number		shall be filled by manufacturer			
10.6.3	Wire Geometrical Cross Section	mm^2	35			
10.6.4	Equalizing Tape Width	mm	20			
10.6.5	Equalizing Tape Thickness	mm	0.1			
10.7- Separation Sheath (Binder Tape) :						
10.7.1	Material		Water Blocking Tape Non-Conductive			
10.7.2	Thickness	mm	0.2 - 0.3			
10.7.3	Max Service Temperature	°C	90			
10.8- Outer Sheath :						
10.8.1	Material	mm	LDPE ST7 with Chemical Additives			
10.8.2	Nominal Thickness	mm	2.5			

Technical Guarantees No. XLPEA_400

12/20 kV Single Core Cable with XLPE Insulation and Aluminium Circular Stranded Conductor 1x400 mm^2

No	Description	Unit	Requirements	Offered Data	Notes, Remarks , Ref to Documentation	Evaluation Committee Comments
10.8.3	Minimum Thickness at Any Point	mm	shall be filled by manufacturer			
10.8.4	Max Service Temperature	°C	90			
10.8.5	Color		Black			
10.8.6	Weight	Kg/Km	shall be filled by manufacturer			
10.9- Completed Cable :						
10.9.1	Overall Diameter of the Cable	mm	shall be filled by manufacturer			
10.9.2	Total Weight of the Cable	kg/km	shall be filled by manufacturer			
10.9.3	Minimum Bending Radius	mm	shall be filled by manufacturer			
10.9.4	**Sustained Current Rating in Underground Under Below Conditions :**					
10.9.4.1	At **Flat** Laying Arrangement (Buried in 0.7 m Deep in Soil at 20 ^{o}C with 1 k.m/w Thermal Resistivity and Load Factor 0.7)	A	564			
10.9.4.2	At **Trefoil** Laying Arrangement (Buried in 0.7 m Deep in Soil at 20 ^{o}C with 1 k.m/w Thermal Resistivity and Load Factor 0.7)	A	535			
11	Maximum Short-Circuit Current of Conductor During 1 sec.	KA	≥37.6			
12- Drum :						
12.1	Method of Cable Delivery		on Drums			
12.2	Length of Cable on Drum	m	500			
12.3	Drum Material		New Wood			

Technical Guarantees No. XLPEA_400

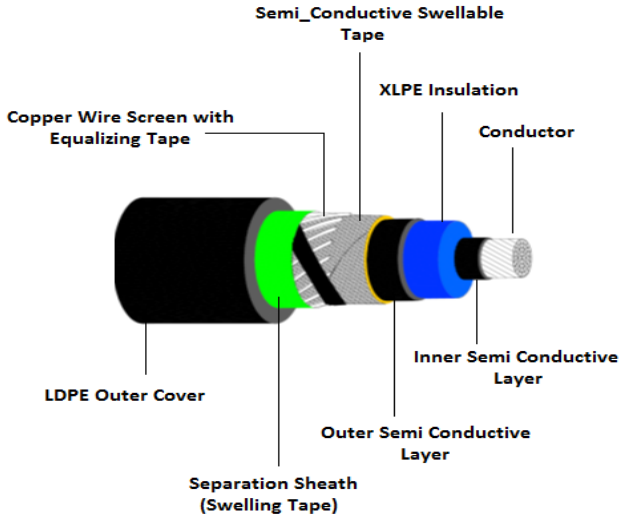
12/20 kV Single Core Cable with XLPE Insulation and Aluminium Circular Stranded Conductor 1x400 mm^2

No	Description	Unit	Requirements	Offered Data	Notes, Remarks , Ref to Documentation	Evaluation Committee Comments
12.4	Cable Protection on Drum		Wooden Batten			
12.5	Max. Gross Weight of Drum with Cable	kg	shall be filled by manufacturer			
12.6	Dimension of Drum	mm	shall be filled by manufacturer			
13	Permissible Pulling Forces	N	shall be filled by manufacturer			
14- Test :						
14.1	Type Test Certificates /Reports from internationally reputed testing agency		Required			
14.2	ptance & Routine tests witnessed by three Engineers		Required			
15	Marking		***Hot Stamping, giving :*** 1- Type of cable 2- Conductor Cross-section area 3- Beneficiary Name **(Gedco)** 4- Manufacturer name 5- Nominal voltage 6- Length for Each Meter 7- Production year			

Technical Guarantees No. XLPEA_400

12/20 kV Single Core Cable with XLPE Insulation and Aluminium Circular Stranded Conductor 1x400 mm^2

No	Description	Unit	Requirements	Offered Data	Notes, Remarks , Ref to Documentation	Evaluation Committee Comments



Tenderer's Signature : ……..… Date: ……

Technical Guarantees No. XLPEC_50

12/20 kV Single Core Cable with XLPE Insulation and Copper Circular Stranded Conductor 1x50 mm^2

No	Description	Unit	Requirements	Offered Data	Notes, Remarks , Ref to Documentation	Evaluation Committee Comments
1	Name of Manufacturer					
2	Country of Origin					
3	Design Standards		IEC60502-2 & IEC60228			
4	Test Standards		IEC60230 & IEC60502-2 & IEC60811			
5	Code & Designation		N2XS(F)2Y , Power Cable with Copper Conductors and XLPE Insulation			
6	Climatic Design		.-.5^{o}C to 55^{o}C			
7- Rated Voltage						
7.1	Between Conductor and Sheath (U_o)	kV	12			
7.2	Between any Two Conductors (U)	kV	20			
7.3	Max. Service Voltage (U_m)	kV	24			
7.4	System Nominal Voltage	kV	22			
8	Rated Frequency	HZ	50			
9	Impulse withstand Voltage 1,2/50 µs	kV	125			
10- Cable Design						
10.1 Conductor :						
10.1.1	Cross Section	mm^2	50			
10.1.2	Material		Copper			
10.1.3	Class and Form		Class2 - Stranded Compacted Circular (filled with swelling powder)			
10.1.4	Minimum / Maximum Diameter	mm	8.1 / 8.8			

Technical Guarantees No. XLPEC_50

12/20 kV Single Core Cable with XLPE Insulation and Copper Circular Stranded Conductor 1x50 mm^2

No	Description	Unit	Requirements	Offered Data	Notes, Remarks , Ref to Documentation	Evaluation Committee Comments
10.1.5	Minimum Number of Strands	No	6			
10.1.6	Weight of Conductor Per Meter	Kg/Km	shall be filled by manufacturer			
10.1.7	Maximum DC Resistance of Conductor at 20°C	Ω/km	0.387			
10.1.8	Max. Rated Temperature for Permanent Load	°C	90			
10.1.9	Max. Rated Temperature for Emergency Loads	°C	105			
10.1.10	Max. Rated Conductor Temperature at Short Circuit (1 sec. max. duration)	°C	250			
10.2 Inner Semi Conductive Layer (Conductor Screen) :						
10.2.1	Material		Triple Extruded Bonded Thermosetting Semi-Conductive Layer			
10.2.2	Thickness at Any Point	mm	0.3			
10.2.3	Max Service Temperature	°C	90			
10.3- XLPE Insulation :						
10.3.1	Material		Triple Extruded Dry Cured (XLPE)			
10.3.2	Nominal Thickness	mm	5.5			
10.3.3	Minimum Thickness at Any Point	mm	4.85			
10.3.4	Diameter Over Insulation	mm	shall be filled by manufacturer			
10.3.5	Max Service Temperature	°C	90			
10.3.6	Weight	Kg/Km	shall be filled by manufacturer			
10.4- Outer Semi Conductive Layer (Insulation Screen) :						

Technical Guarantees No. XLPEC_50

12/20 kV Single Core Cable with XLPE Insulation and Copper Circular Stranded Conductor 1x50 mm^2

No	Description	Unit	Requirements	Offered Data	Notes, Remarks , Ref to Documentation	Evaluation Committee Comments
10.4.1	Material		Triple Extruded Bonded Thermosetting Semi-Conductive			
10.4.2	Thickness at Any Point	mm	0.3			
10.4.3	Max Service Temperature	°C	90			
10.5- Semi-Conductive Water Swelling Tape :						
10.5.1	Material		Semi Conductive			
10.5.2	Thickness at Any Point	mm	0.3			
10.5.3	Max Service Temperature	°C	90			
10.6- Copper Wire Screen (including Equalizing Tape) :						
10.6.1	Material of Wire and Equalizing Tape		Copper			
10.6.2	Minimum Wires Number		shall be filled by manufacturer			
10.6.3	Wire Geometrical Cross Section	mm^2	16			
10.6.4	Equalizing Tape Width	mm	10			
10.6.5	Equalizing Tape Thickness	mm	0.1			
10.7- Separation Sheath (Binder Tape) :						
10.7.1	Material		Water Blocking Tape Non-Conductive			
10.7.2	Thickness	mm	0.2 - 0.3			
10.7.3	Max Service Temperature	°C	90			
10.8- Outer Sheath :						
10.8.1	Material	mm	LDPE ST7 with Chemical Additives			
10.8.2	Nominal Thickness	mm	1.9			
10.8.3	Minimum Thickness at Any Point	mm	shall be filled by manufacturer			

Technical Guarantees No. XLPEC_50

12/20 kV Single Core Cable with XLPE Insulation and Copper Circular Stranded Conductor 1x50 mm^2

No	Description	Unit	Requirements	Offered Data	Notes, Remarks , Ref to Documentation	Evaluation Committee Comments
10.8.4	Max Service Temperature	°C	90			
10.8.5	Color		Red			
10.8.6	Weight	Kg/Km	shall be filled by manufacturer			
10.9- Completed Cable :						
10.9.1	Overall Diameter of the Cable	mm	shall be filled by manufacturer			
10.9.2	Total Weight of the Cable	kg/km	shall be filled by manufacturer			
10.9.3	Minimum Bending Radius	mm	shall be filled by manufacturer			
10.9.4	**Sustained Current Rating in Underground Under Below Conditions :**					
10.9.4.1	At **Flat** Laying Arrangement (Buried in 0.7 m Deep in Soil at 20 °C with 1 k.m/w Thermal Resistivity and Load Factor 0.7)	A	250			
10.9.4.2	At **Trefoil** Laying Arrangement (Buried in 0.7 m Deep in Soil at 20 °C with 1 k.m/w Thermal Resistivity and Load Factor 0.7)	A	222			
11	Maximum Short-Circuit Current of Conductor During 1 sec.	KA	≥7.2			
12- Drum :						
12.1	Method of Cable Delivery		on Drums			
12.2	Length of Cable on Drum	m	500			
12.3	Drum Material		New Wood			
12.4	Cable Protection on Drum		Wooden Batten			

Technical Guarantees No. XLPEC_50

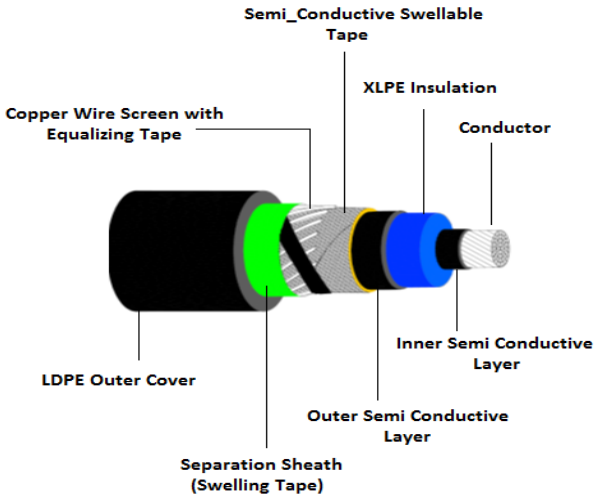
12/20 kV Single Core Cable with XLPE Insulation and Copper Circular Stranded Conductor 1x50 mm^2

No	Description	Unit	Requirements	Offered Data	Notes, Remarks , Ref to Documentation	Evaluation Committee Comments
12.5	Max. Gross Weight of Drum with Cable	kg	shall be filled by manufacturer			
12.6	Dimension of Drum	mm	shall be filled by manufacturer			
13	Permissible Pulling Forces	N	shall be filled by manufacturer			
14- Test :						
14.1	Type Test Certificates /Reports from internationally reputed testing agency		Required			
14.2	ptance & Routine tests witnessed by three Engineers		Required			
15	Marking		***Hot Stamping, giving :*** 1- Type of cable 2- Conductor Cross-section area 3- Beneficiary Name **(Gedco)** 4- Manufacturer name 5- Nominal voltage 6- Length for Each Meter 7- Production year			

Technical Guarantees No. XLPEC_50

12/20 kV Single Core Cable with XLPE Insulation and Copper Circular Stranded Conductor 1x50 mm^2

No	Description	Unit	Requirements	Offered Data	Notes, Remarks , Ref to Documentation	Evaluation Committee Comments



Tenderer's Signature : ……..… Date: ……

Technical Guarantees No. XLPEA18_150

18/30 kV Single Core Cable with XLPE Insulation and Aluminium Circular Stranded Conductor 1x150 mm^2

No	Description	Unit	Requirements	Offered Data	Notes, Remarks , Ref to Documentation	Evaluation Committee Comments
1	Name of Manufacturer					
2	Country of Origin					
3	Design Standards		IEC60502-2 & IEC60228			
4	Test Standards		IEC60230 & IEC60502-2 & IEC60811 & IEC 60885			
5	Code & Designation		NA2XS(F)2Y , Power Cable with Aluminum Conductors and XLPE Insulation			
6	Climatic Design		- 5°C to 55°C			
7-	**Rated Voltage**					
7.1	Between Conductor and Sheath (U_o)	kV	18			
7.2	Between any Two Conductors (U)	kV	30			
7.3	Max. Service Voltage (U_m)	kV	36			
8	Rated Frequency	HZ	50			
9	Impulse withstand Voltage 1,2/50 µs	kV	170			
10- Cable Design						
10.1 Conductor :						
10.1.1	Cross Section	mm^2	150			
10.1.2	Material		Copper			
10.1.3	Class and Form		Class2 - Stranded Compacted Circular			
10.1.4	Approximatly Minimum / Maximum Diameter	mm	14.3/14.8			

Technical Guarantees No. XLPEA18_150

18/30 kV Single Core Cable with XLPE Insulation and Aluminium Circular Stranded Conductor 1x150 mm^2

No	Description	Unit	Requirements	Offered Data	Notes, Remarks , Ref to Documentation	Evaluation Committee Comments
10.1.5	Minimum Number of Strands	No	shall be filled by manufacturer			
10.1.6	Weight of Conductor Per Meter	Kg/km	shall be filled by manufacturer			
10.1.7	Maximum DC Resistance of Conductor at 20°C	Ω/km	0.124			
10.1.8	Max. Rated Temperature for Permanent Load	°C	90			
10.1.9	Max. Rated Temperature for Emergency Loads	°C	105			
10.1.10	Max. Rated Conductor Temperature at Short Circuit (1 sec. max. duration)	°C	250			
10.2 Inner Semi Conductive Layer (Conductor Screen) :						
10.2.1	Material		Triple Extruded Bonded Thermosetting Semi-Conductive Layer			
10.2.2	Thickness at Any Point	mm	0.3			
10.2.3	Max Service Temperature	°C	90			
10.3- XLPE Insulation :						
10.3.1	Material		Triple Extruded Dry Cured (XLPE)			
10.3.2	Nominal Thickness	mm	8			
10.3.3	Minimum Thickness at Any Point	mm	7.1			
10.3.4	Diameter Over Insulation	mm	shall be filled by manufacturer			
10.3.5	Max Service Temperature	°C	90			
10.3.6	Weight	Kg/km	shall be filled by manufacturer			

Technical Guarantees No. XLPEA18_150

18/30 kV Single Core Cable with XLPE Insulation and Aluminium Circular Stranded Conductor 1x150 mm^2

No	Description	Unit	Requirements	Offered Data	Notes, Remarks , Ref to Documentation	Evaluation Committee Comments
10.4- Outer Semi Conductive Layer (Insulation Screen) :						
10.4.1	Material		Triple Extruded Bonded Thermosetting Semi-Conductive Layer			
10.4.2	Thickness at Any Point	mm	0.3			
10.4.3	Max Service Temperature	°C	90			
10.5- Semi-Conductive Water Swelling Tape :						
10.5.1	Material		Semi Conductive Tape			
10.5.2	Thickness at Any Point	mm	0.3			
10.5.3	Max Service Temperature	°C	90			
10.6- Copper Wire Screen (including Equalizing Tape) :						
10.6.1	Material of Wire and Equalizing Tape		Copper			
10.6.2	Minimum Wires Number		shall be filled by manufacturer			
10.6.3	Wire Geometrical Cross Section	mm^2	25			
10.6.4	Equalizing Tape Width	mm	15			
10.6.5	Equalizing Tape Thickness	mm	0.1			
10.7- Separation Sheath (Binder Tape) :						
10.7.1	Material		Water Blocking Tape Non-Conductive			
10.7.2	Thickness	mm	0.2 - 0.3			
10.7.3	Max Service Temperature	°C	90			
10.8- Outer Sheath :						

Technical Guarantees No. XLPEA18_150

18/30 kV Single Core Cable with XLPE Insulation and Aluminium Circular Stranded Conductor 1x150 mm^2

No	Description	Unit	Requirements	Offered Data	Notes, Remarks , Ref to Documentation	Evaluation Committee Comments
10.8.1	Material	mm	LDPE ST7 with Chemical Additives			
10.8.2	Nominal Thickness	mm	2.2			
10.8.3	Minimum Thickness at Any Point	mm	shall be filled by manufacturer			
10.8.4	Max Service Temperature	°C	90			
10.8.5	Color		Red			
10.8.6	Weight	Kg/km	shall be filled by manufacturer			
10.9- Completed Cable :						
10.9.1	Overall Diameter of the Cable	mm	shall be filled by manufacturer			
10.9.2	Total Weight of the Cable	kg/km	shall be filled by manufacturer			
10.9.3	Minimum Bending Radius	mm	shall be filled by manufacturer			
10.9.4	**Sustained Current Rating in Underground Under Below Conditions :**					
10.9.4.1	At **Flat** Laying Arrangement (Buried in 0.7 m Deep in Soil at 20 °C with 1 k.m/w Thermal Resistivity and Load Factor 0.7)	A	430			
10.9.4.2	At **Trefoil** Laying Arrangement (Buried in 0.7 m Deep in Soil at 20 °C with 1 k.m/w Thermal Resistivity and Load Factor 0.7)	A	410			
11	Maximum Short-Circuit Current of Conductor During 1 sec.	KA	≥21			
12- Drum :						

Technical Guarantees No. XLPEA18_150

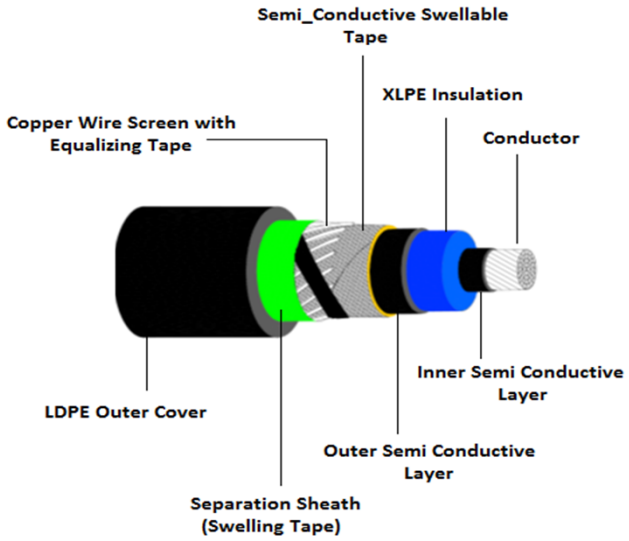
18/30 kV Single Core Cable with XLPE Insulation and Aluminium Circular Stranded Conductor 1x150 mm^2

No	Description	Unit	Requirements	Offered Data	Notes, Remarks , Ref to Documentation	Evaluation Committee Comments
12.1	Method of Cable Delivery		on Drums			
12.2	Length of Cable on Drum	m	shall be filled by manufacturer			
12.3	Drum Material		New Wood			
12.4	Cable Protection on Drum		Wooden Batten			
12.5	Max. Gross Weight of Drum with Cable	kg	shall be filled by manufacturer			
12.6	Dimension of Drum	mm	shall be filled by manufacturer			
13	Permissible Pulling Forces	N	shall be filled by manufacturer			
14- Test :						
14.1	Type Test Certificates /Reports from internationally reputed testing agency		Required			
14.2	Acceptance & Routine tests witnessed by Beneficiary		Required			
			Hot Stamping, giving :			
			1- Type of cable			
			2- Conductor Cross-section area			

Technical Guarantees No. XLPEA18_150

18/30 kV Single Core Cable with XLPE Insulation and Aluminium Circular Stranded Conductor 1x150 mm^2

No	Description	Unit	Requirements	Offered Data	Notes, Remarks , Ref to Documentation	Evaluation Committee Comments
15	Marking		3- Beneficiary Name **(Gedco)**			
			4- Manufacturer name			
			5- Nominal voltage			
			6- Length for Each Meter			
			7- Production year			



Tenderer's Signature : ……..… Date: ……

Technical Guarantees No. IT24_50

250A , 24 kv Indoor Screened Separable Elbow Termination Kit for 12/20 kv XLPE Cable 1x50/16 mm^2

No	Description	Unit	Requirements	Offered Data	Notes, Remarks , Ref to Documentation	Evaluation Committee Comments
1	Name of Manufacturer					
2	Country of Origin					
3	Standards		ANSI/IEEE386 , IEC540, VDE0278 , VDE0220			
4	Max. Service Voltage (Um)	kV	24			
5	Termination Design		Separable Elbow Connector			
6	Termination Material		Cross linked EPDM			
7	Cable and Conductor Type		Single Core Cable with Copper Wire Shield			
8	Cable Insulation Type / Thickness		XLPE / 5.5mm			
9	Conductor Cross Sectional Area	mm^2	50			
10	Application		to Connect with SF6 Switchgear Transformer Side and Transformer H.V Side			
11	Current Carrying Capacity	A	250			
12	Basic Impulse Level	kV	125			
13	AC Dry withstand Voltage Test (1 minute without Flashover and No Breakdown)	Kv	57			

Technical Guarantees No. IT24_50

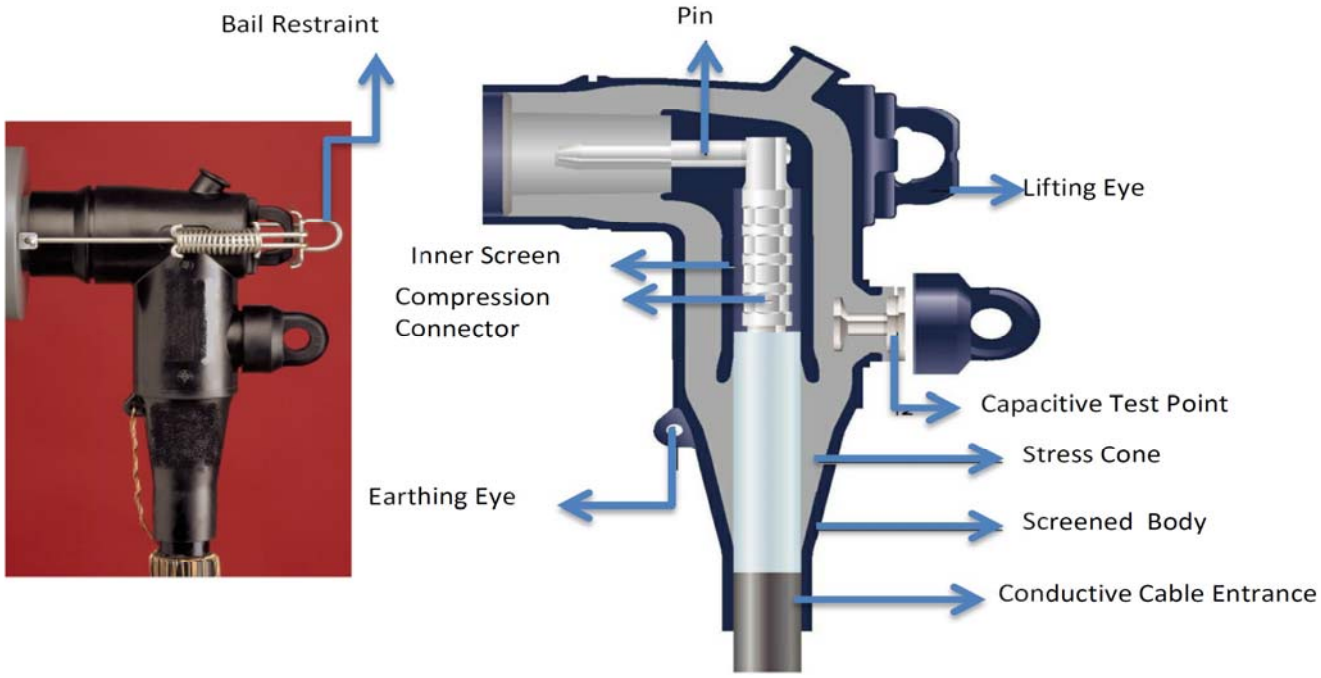
250A , 24 kv Indoor Screened Separable Elbow Termination Kit for 12/20 kv XLPE Cable 1x50/16 mm^2

No	Description	Unit	Requirements	Offered Data	Notes, Remarks , Ref to Documentation	Evaluation Committee Comments
14	DC withstand Voltage Test (30 minute without Flashover and No Breakdown)	Kv	96			
15	**Termination Kit Parts**					
	a) Screened Body		Required			
	b) Capacitive Test Point		Required			
	c) Stress Cone		Required			
	d) Conductive Cable Entrance		Required			
	e) Earthing eye and Ground Lead		Required			
	f) Inner Screen		Required			
	g) Lifting Eye		Required			
	h) Pin (Tin Plated Copper Electrode , Tested to carry 250 A Continuous Current)		Required			
	i) Bimetallic Compression Pin-Connector Designed with Locking Ring, to Connect Both Aluminium and Copper Conductor Cables		Required			
	j) Bail Restraint		Required			
16	Type Tests and Routine Tests reports by qualified laboratory according to the international specifications (e.g. ANSI/IEEE 386, IEC 540, VDE 0278,VDE 0220)		Required			

Technical Guarantees No. IT24_50

250A , 24 kv Indoor Screened Separable Elbow Termination Kit for 12/20 kv XLPE Cable 1x50/16 mm^2

No	Description	Unit	Requirements	Offered Data	Notes, Remarks , Ref to Documentation	Evaluation Committee Comments



Tenderer's Signature : ……..... Date: ……

Technical Guarantees No. IT24_400

630A , 24 kv Indoor Screened Separable Termination Kit for 12/20 kv XLPE Cable 1x400/35 mm^2

No	Description	Unit	Requirements	Offered Data	Notes, Remarks , Ref to Documentation	Evaluation Committee Comments
1	Name of Manufacturer					
2	Country of Origin					
3	Reference Manufacturing Standards		CENELEC HD629.1 S2, HD506 S1 , DIN47636, EN50180 and EN50181			
4	Max. Service Voltage (Um)	kV	24			
5	Design		Separable Tee Shape Connector			
6	Material		Cross linked EPDM			
7	Cable and Conductor Type		Single Core Conductor Cable with Copper Wire Shield			
8	Cable Insulation Type / Thickness		XLPE/5.5mm			
9	Conductor Cross Sectional Area	mm^2	400			
10	Current Carrying Capacity	A	630			
11	Basic Impulse Level	kV	170			
12	Partial discharge at 2 U0		< 10 Pc			

Technical Guarantees No. IT24_400

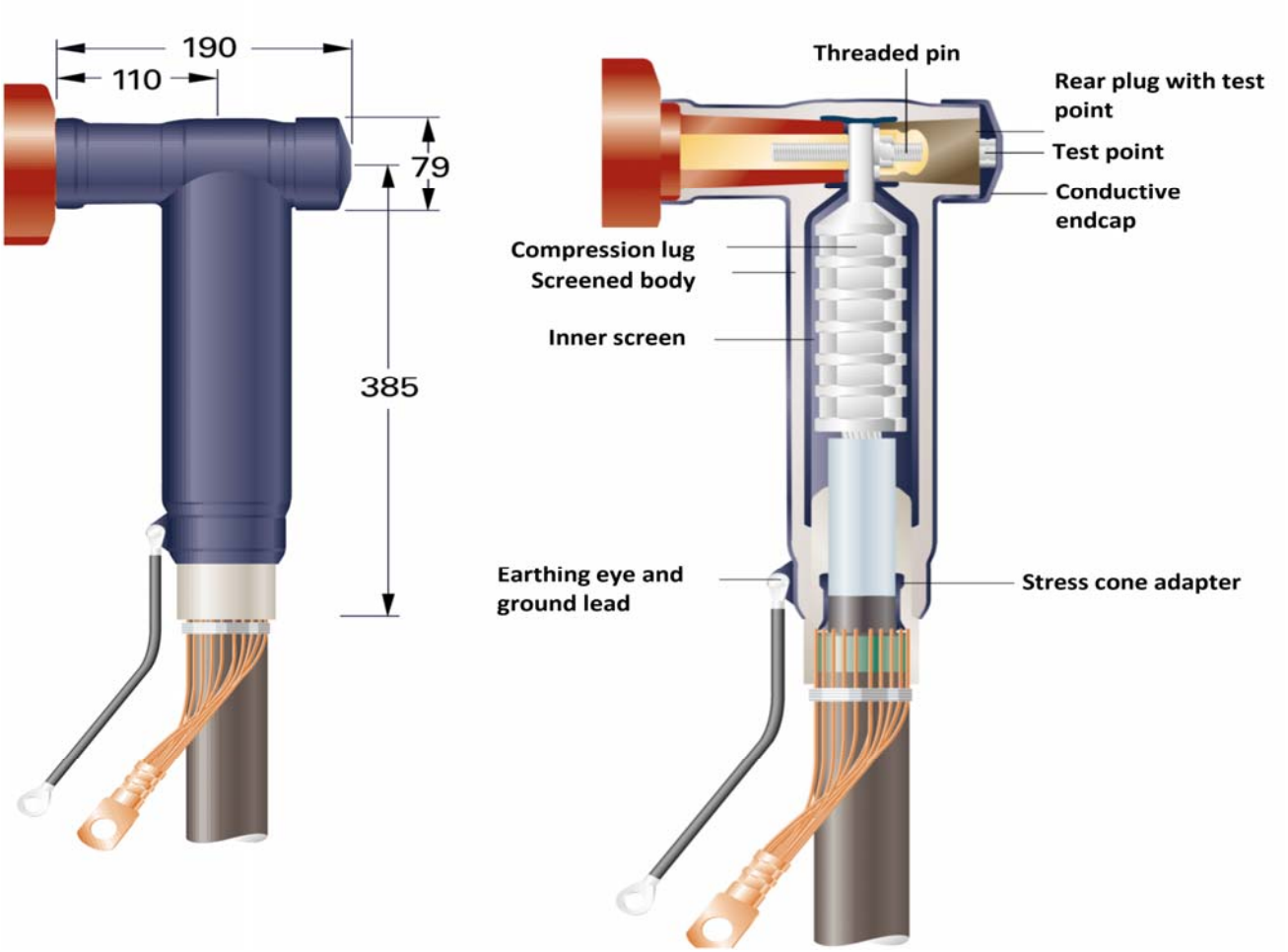
630A , 24 kv Indoor Screened Separable Termination Kit for 12/20 kv XLPE Cable 1x400/35 mm^2

No	Description	Unit	Requirements	Offered Data	Notes, Remarks , Ref to Documentation	Evaluation Committee Comments
13	AC Dry withstand Voltage Test (5 minute without Flashover and No Breakdown)	Kv	81			
14	DC withstand Voltage Test (15 minute without Flashover and No Breakdown)	Kv	108			
15	Thermal Short Circuit (1 second)	KA	33			
16	Dynamic short circuit	KA	84			
17	**Termination Kit Parts**					
	a) Screened Body		Required			
	b) Inner Screen		Required			
	c) DIN Compression Lug for AL or CU Conductors (400 mm2)		Required			
	d) Stress Cone Adaptor		Required			
	e) Earthing eye and Ground Lead		Required			
	f) Threaded Pin Together with a Spring Washer and Hex Nut		Required			
	g) Removable Rear Plug with Capacitive Test Point		Required			
	h) Test Point		Required			
	i) Conductive End cap		Required			
18	Type Tests and Routine Tests reports by qualified laboratory according to the international specifications		Required			

Technical Guarantees No. IT24_400

630A , 24 kv Indoor Screened Separable Termination Kit for 12/20 kv XLPE Cable 1x400/35 mm^2

No	Description	Unit	Requirements	Offered Data	Notes, Remarks , Ref to Documentation	Evaluation Committee Comments



Tenderer's Signature : ……..... Date: ……

Technical Guarantees No. IT24_150

630A , 24 kv Indoor Screened Separable Termination Kit for 18/30 kv XLPE Cable 1x150/25 mm^2

No	Description	Unit	Requirements	Offered Data	Notes, Remarks , Ref to Documentation	Evaluation Committee Comments
1	Name of Manufacturer					
2	Country of Origin					
3	Reference Manufacturing Standards		CENELEC HD629.1 S2, HD506 S1 , DIN47636, EN50180 and EN50181			
4	Max. Service Voltage (Um)	kV	24			
5	Design		Separable Tee Shape Connector			
6	Material		Cross linked EPDM			
7	Cable and Conductor Type		Single Core Cable with Copper Wire Shield			
8	Cable Insulation Type / Thickness		XLPE/8 mm			
9	Conductor Cross Sectional Area	mm^2	150			
10	Current Carrying Capacity	A	630			
11	Basic Impulse Level	kV	125			
12	Partial discharge at 2 U_0		< 6 Pc			

Technical Guarantees No. IT24_150

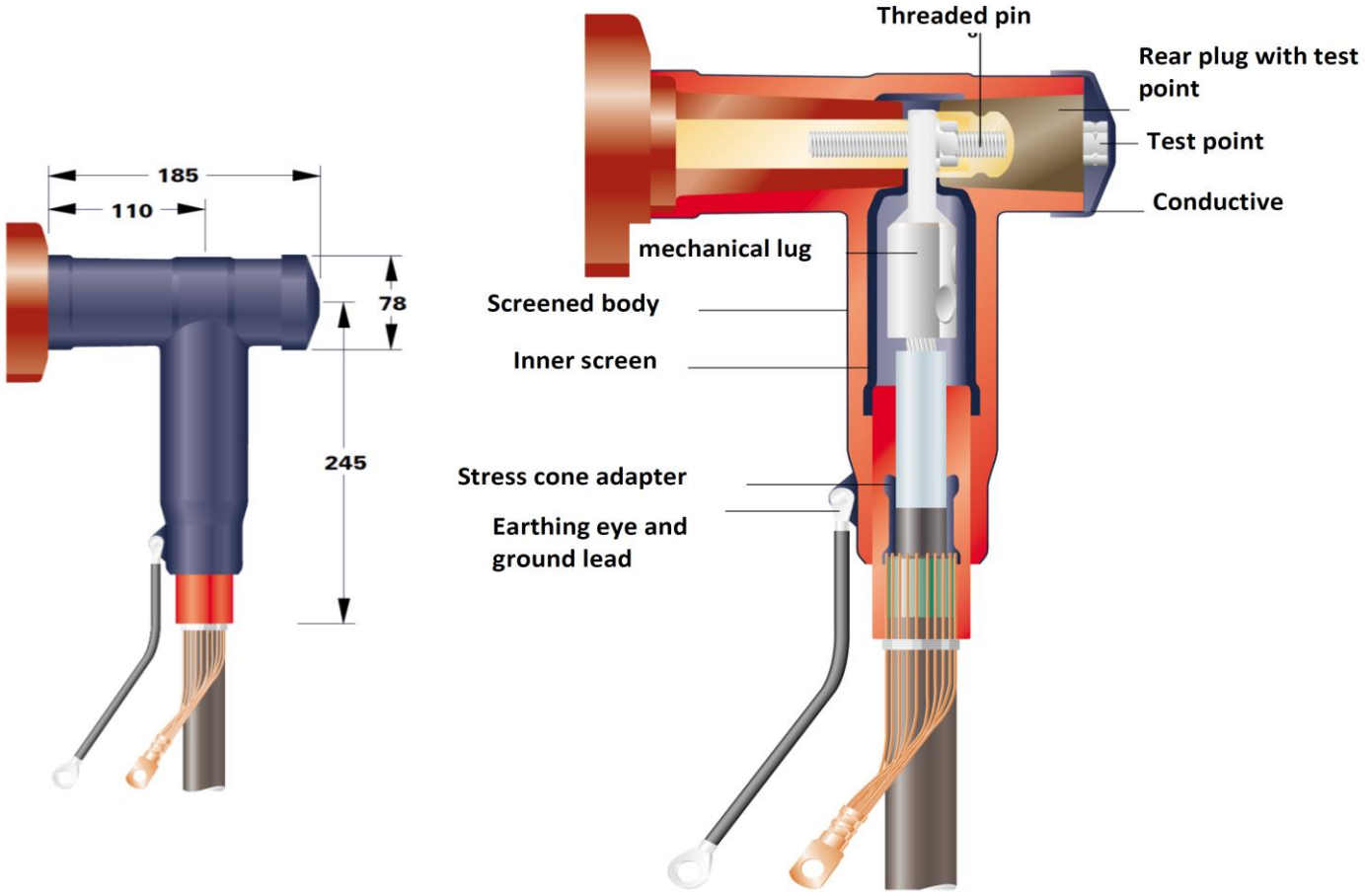
630A , 24 kv Indoor Screened Separable Termination Kit for 18/30 kv XLPE Cable 1x150/25 mm^2

No	Description	Unit	Requirements	Offered Data	Notes, Remarks , Ref to Documentation	Evaluation Committee Comments
13	AC Dry withstand Voltage Test (1 minute without Flashover and No Breakdown)	Kv	57			
14	DC withstand Voltage Test (15 minute without Flashover and No Breakdown)	Kv	76			
15	Thermal Short Circuit (1 second)	KA	33			
16	Dynamic short circuit	KA	84			
17	**Termination Kit Parts**					
	a) Screened Body		Required			
	b) Inner Screen		Required			
	c) Mechanical Lug with Shear-Head Bolts and Central Barrier for CU Conductors (150 mm2)		Required			
	d) Stress Cone Adaptor		Required			
	e) Earthing eye and Ground Lead		Required			
	f) Threaded Pin Together with a Spring Washer and Hex Nut		Required			
	g) Removable Rear Plug with Capacitive Test Point		Required			
	h) Test Point		Required			

Technical Guarantees No. IT24_150

630A , 24 kv Indoor Screened Separable Termination Kit for 18/30 kv XLPE Cable 1x150/25 mm^2

No	Description	Unit	Requirements	Offered Data	Notes, Remarks , Ref to Documentation	Evaluation Committee Comments
	i) Conductive End cap		Required			
18	Type Tests and Routine Tests reports by qualified laboratory according to the international specifications		Required			



Tenderer's Signature : ……..… Date: ……

Technical Guarantees No. OT36_400

36 kv Heat Shrinkable Outdoor Termination Kit for XLPE Cable 1x400/35 mm^2

No	Description	Unit	Requirements	Offered Data	Notes, Remarks , Ref to Documentation	Evaluation Committee Comments
1	Name of Manufacturer					
2	Country of Origin					
3	Standards		IEC60502 & CENELEC HD629.1 S1			
4	Max. Service Voltage (Um)	kV	36			
5	Outdoor Termination Material , form , Designation		Heat Shrink Tubing and Molded Parts Shall be Flexible, Made from Specially Formulated Cross-Lined Polymeric			
6	Cable and Conductor Type		Single Core Conductor Cable with Copper Wire Shield			
7	Cable Insulation Type / Thickness		XLPE / 5.5 mm			
8	Conductor Cross Sectional Area	mm^2	400			
9	Wire Screen Cross Sectional Area	mm^2	35			
10	Termination Length	mm	550			

Technical Guarantees No. OT36_400

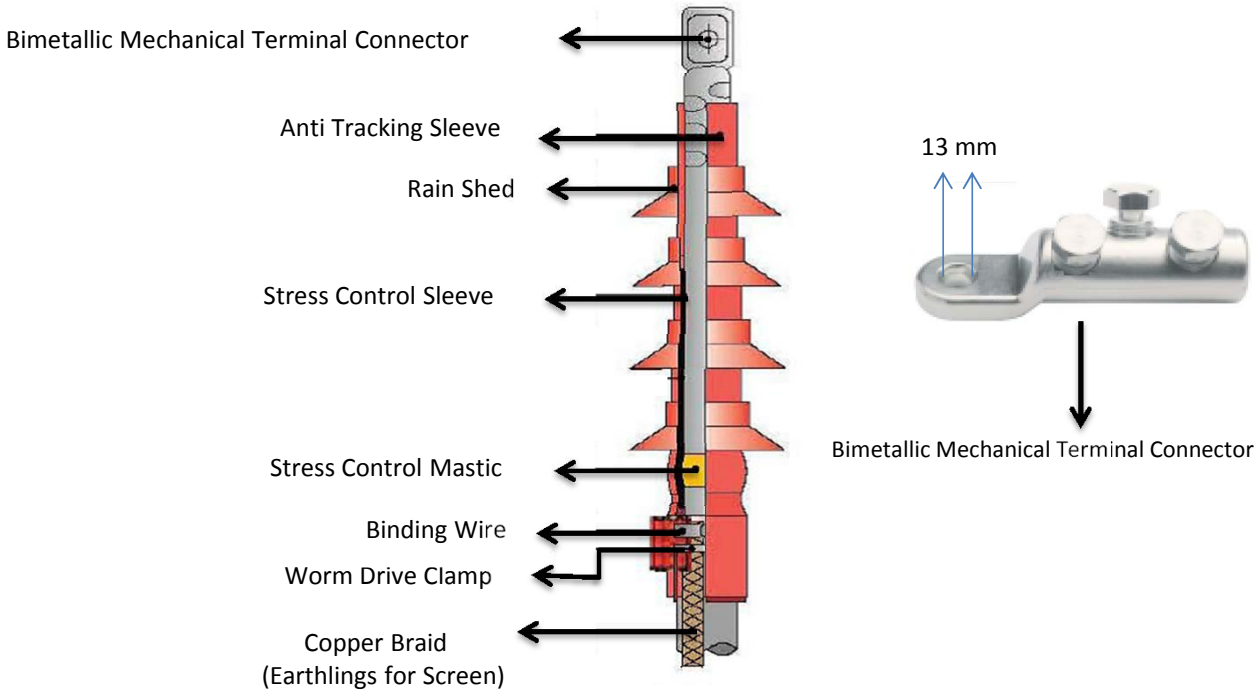
36 kv Heat Shrinkable Outdoor Termination Kit for XLPE Cable 1x400/35 mm^2

No	Description	Unit	Requirements	Offered Data	Notes, Remarks , Ref to Documentation	Evaluation Committee Comments
11	Rain Shed Diameter	mm	135			
12	Number of Rain Sheds	No	4			
13	Insulating , Electrical Material and Rain Shed Brittle Temperature	^oC	<-40			
14	Impulse withstand Voltage Test 1.2 Micro Second Between Conductor & Screen Grounded	kV	170			
15- Test :						
15.1	All Type tests reports by qualified laboratory according to CENELEC HD 629.1 S1		Required			
15.2	Routine test report		Required			
16	**Heat Shrinkable Outdoor Termination Kit Parts**					
	Bimetallic Terminal Mechanical Lug with 13 mm Hole and 3 each Shear_Head Bolts (for Aluminium or Copper Conductors)		Required			
	Anti-Tracking Sleeve		Required			
	Rain-Sheds (4each)		Required			
	Stress Control Sleeve		Required			

Technical Guarantees No. OT36_400

36 kv Heat Shrinkable Outdoor Termination Kit for XLPE Cable 1x400/35 mm^2

No	Description	Unit	Requirements	Offered Data	Notes, Remarks , Ref to Documentation	Evaluation Committee Comments
	Stress Control Mastic		Required			
	Binding Wire		Required			
	Worm Drive Clamp		Required			
	Copper Braid (Earthlings)		Required			
17	Installation Instruction Documents		Required			



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Technical Guarantees No. SJ24_400

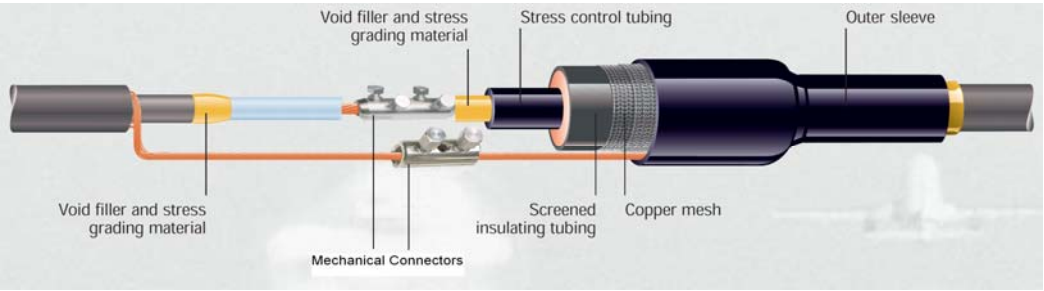
24 kv Heat Shrinkable Straight Joint for Single Core XLPE Cable 1x400/35 mm^2

No	Description	Unit	Requirements	Offered Data	Notes, Remarks , Ref to Documentation	Evaluation Committee Comments
1	Name of Manufacturer					
2	Country of Origin					
3	Standards		HD 629.1 S1 , VDE0276 , VDE0620			
4	Max. Service Voltage (Um)	kV	24			
5	Cable and Conductor Type		12/20 kv Single Core Cable with Copper Wire Shield			
6	Cable Insulation Type		XLPE			
7	Conductor Cross Sectional Area	mm^2	400			
8	Copper Shield Cross Sectional Area	mm^2	35			
9- Test :						
9.1	Below Type tests reports by qualified laboratory according to CENELEC HD 629.1 S1 or IEC 60502-4 :- AC Voltage Withstand Partial Discharge Impulse Voltage Withstand Short Time Current Cyclic Aging DC Voltage Withstand High Voltage Time Shielding		Required			
9.2	Mechanical connectors Test used in joints should pass the requirements in accordance with IEC 61238-1 class A.		Required			
10	Routine test report		Required			
11	Installation Instruction Documents		Required			
	Heat Shrinkable Straight Joint Parts					
	Stress Control Tubing		Required			
	Screened insulating Sleeve		Required			

Technical Guarantees No. SJ24_400

24 kv Heat Shrinkable Straight Joint for Single Core XLPE Cable 1x400/35 mm^2

No	Description	Unit	Requirements	Offered Data	Notes, Remarks , Ref to Documentation	Evaluation Committee Comments
12	Outer Sleeve (Heat Shrink able Conductive Material)		Required			
	Screened Insulating Tubing		Required			
	Filling Mastic		Required			
	24kv Mechanical Connector with Shear-Head Bolts and Central Barrier for AL or CU Conductors (400 mm2)		Required			
	Mechanical Connector with Shear-Head Bolts and Central Barrier for Copper Shield (35 mm2)		Required			
	Mastic Wrap		Required			
	Copper Mesh		Required			



Tenderer's Signature : …….. Date: ……

Technical Guarantees No. SJ36_150

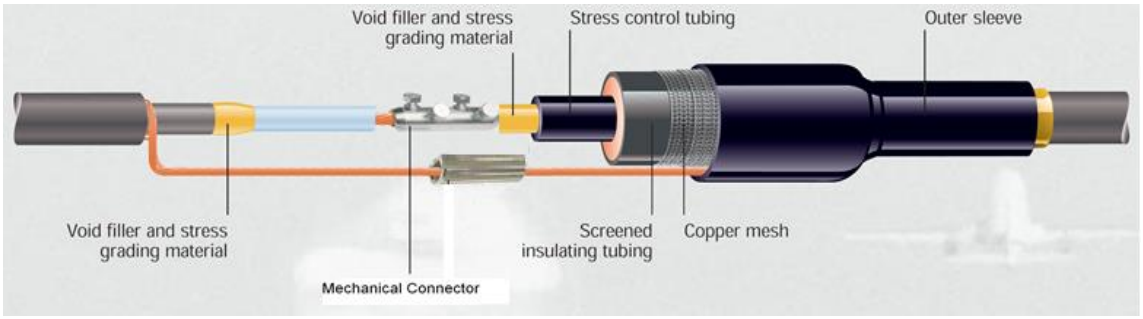
36 kv Heat Shrinkable Straight Joint for Single Core XLPE Cable 1x150/25 mm^2

No	Description	Unit	Requirements	Offered Data	Notes, Remarks , Ref to Documentation	Evaluation Committee Comments
1	Name of Manufacturer					
2	Country of Origin					
3	Standards		HD 629.1 S1 , VDE0276 , VDE0620			
4	Max. Service Voltage (Um)	kV	36			
5	Cable and Conductor Type		18/30 kv Single Core Cable with Copper Wire Shield			
6	Cable Insulation Type		XLPE			
7	Conductor Cross Sectional Area	mm^2	150			
8	Copper Shield Cross Sectional Area	mm^2	25			
9- Test :						
9.1	Below Type tests reports by qualified laboratory according to CENELEC HD 629.1 S1 or IEC 60502-4 :- AC Voltage Withstand Partial Discharge Impulse Voltage Withstand Short Time Current Cyclic Aging DC Voltage Withstand High Voltage Time Shielding		Required			
9.2	Mechanical connectors Test used in joints should pass the requirements in accordance with IEC 61238-1 class A.		Required			
10	Routine test report		Required			
11	Installation Instruction Documents		Required			
	Heat Shrinkable Straight Joint Parts					
	Stress Control Tubing		Required			
	Screened insulating Sleeve		Required			

Technical Guarantees No. SJ36_150

36 kv Heat Shrinkable Straight Joint for Single Core XLPE Cable 1x150/25 mm^2

No	Description	Unit	Requirements	Offered Data	Notes, Remarks , Ref to Documentation	Evaluation Committee Comments
12	Outer Sleeve (Heat Shrink able Conductive Material)		Required			
	Screened Insulating Tubing		Required			
	Filling Mastic		Required			
	24kv Mechanical Connector with Shear-Head Bolts and Central Barrier for AL or CU Conductors (150 mm2)		Required			
	Compression Connector for Copper Shield (25 mm2)		Required			
	Mastic Wrap		Required			
	Copper Mesh		Required			



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