



## Information Sheet for supply of HV Panel

### Section A

#### a) Information

#	Description	Quantity
1	HV Panel	01 Nos
	<b>Total</b>	<b>01 Nos</b>

Quotation shall indicate the following;

#### a) **Price**

- The bidder shall submit quotation on CIF basis to Male' port
- All items shall be quoted in the quotation, please refer section (b) specifications
- Price shall include travel/ accommodation charges for factory testing.
- Quotation shall indicate the unit price, total price for each item and total price of the quotation and the quoted currency shall be clearly specified. The quotation shall separately indicate additional charges such as freight charges, insurance, etc.
- The unit rates and prices shall be quoted.

#### b) **Delivery Period**

- The delivery period shall be stated in 'calendar days'.
- If the delivery period indicates 'ex-stock', or if the duration is not specified, it shall be taken same as the party offering the longest delivery period.



**c) Payment Terms**

- The payment terms shall be stated in ‘days or months’, and the payments will be released in equal monthly instalments.
- No points will be given for payment terms if the supplier requests for Letter of Credit (LC).
- A maximum of 15% of the entire project can be provided as an advance if requested in the bid, however, it cannot be tied to the project starting date.
- For 15% advance bid awarded party shall submit a bank guarantee letter along with a pro-forma invoice.

**d) Technical Specifications**

- All the relevant information including the brand shall be given to enable technical evaluation of the items quoted.
- Technical compliance letter will be required to enable technical evaluation.
- Feeder Panel should comply with the attached requirements, otherwise the quotation shall be rejected.

**e) Quotation validity** should be a minimum of 60 days from the date of quotation opening.

**f) Bid Security validity** is valid for Twenty (20) days beyond the validity of the bid.

**g) Clarification Time:** Please send your Queries to [tender@fenaka.com.mv](mailto:tender@fenaka.com.mv) from 26th August 2019 until 1<sup>st</sup> September 2019.

**Note:** It is in FENAKA Corporation Limited’s discretion to reject/cancel any quotation which does not fulfil or comply the above terms.

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**Section B**

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# Specifications

a) Specification of HV Panel

## Hdh. Kulhuduffushi - 11kV Medium Voltage Panel Specification

### General Specifications

This specification covers design, supply, delivery, installation, commissioning and testing of 11kV Distribution Panel.

The medium voltage, 11kV Distribution Panel shall consist of:

- 1 unit of 2500A, 12kV Bus Coupler
- 6 units of 400A, 12kV Incoming (each on either side of Bus Coupler)
- 7 units of 400A, 12kV Outgoing (each on either side of Bus Coupler)

The systems as a whole must be designed to operate within the most extreme environmental conditions that can reasonably be expected at the site over the system life. The following environmental design conditions apply:

- Ambient temperature: +15°C to +35°C
- Relative humidity: 10% up to 100% (rainy season)
- Wind speed: gusts up to 100km/hr.
- Salty sea air conditions sites within 100m of coastline

The individual components and the installation as a whole shall be resistant to corrosion and light industrial pollution, water, ultraviolet radiation, and general wear. No visible signs of corrosion shall be evident for a period of five (5) years.

All equipment is to be protected from damage by any other agent relevant to the location.

### Scope of Supply

- This specification covers design, manufacture, shop testing, inspection, packing, testing and commissioning of 11 kV Distribution Panel, fully type tested according to IEC 60298 standards.
- This panel shall be complete with all components necessary for its effective and trouble free operation along with associated equipment etc. such components should be deemed to be within the scope of supplier's supply.
- The design of the switchgear shall be exclusive and specific responsibility of supplier and should be comply with current good engineering practice, the relevant codes and recommendation, the project specific requirements.
- Each breaker shall be withdraw able type VCB, with O/C & E/F protection.

### Standards and Codes

The switchgear shall comply with the relevant IEC standards and specifications applicable at the time of implementation.

		IEC Standard
Switch Gear		IEC 62271-1
		IEC 62271-200
Devices	Circuit-breakers	IEC 62271-100
	Vacuum contactors	IEC 62271-106
	Disconnectors and earthing switches	IEC 62271-102
	Switch-disconnectors	IEC 62271-103
	Switch-disconnector/fuse combination	IEC 62271-105
	HV HRC fuses	IEC 60282-1
	Voltage detecting systems	IEC 61243-5
Degree of protection		IEC 60529
Insulation		IEC 60071
Instrument transformers	Instrument transformers	IEC 61869-1
	Current transformers	IEC 61869-2
	Voltage transformers	IEC 61869-3
Installation, erection		IEC 61936-1

Any other codes recognized in the country of origin of equipment might be considered provided that they fully comply with IEC standards.

The design of the switchgear shall be based on safety to personnel and equipment during operation and maintenance, reliability of service, ease of maintenance, mechanical protection of equipment, interchangeability of equipment and ready addition of future loads.

General Requirement:

- Rated Operating voltage: 11 kV
- Maximum operating Voltage: 12kV
- Rated power frequency stand voltage: 28kV
- Rated Frequency: 50Hz
- Rated Busbar current: 2500 A
- Rated Short-time thermal current: 50 kA
- Duration of short-time current: 3s
- Rated peak withstand current: 130 kA
- Conductor type: Copper

## Technical Specification of 11kV Distribution Panel

11kV Distribution Panel shall consist of cubicle comprising of

- 6 x 400A 12kV Motorized Vacuum Circuit Breaker Incoming,
- 7 x 400A 12kV Motorized Circuit Breaker Outgoing, and
- 1 x 2500A 12kV Bus coupler

The panel shall have following features:

- Factory-assembled, type-tested switchgear according to IEC 62271-200 or VDE 0671-200
- Shall use standard components available worldwide which meets the relevant international standards.
- Each section shall be separated with Pressure-resistant partitions. Partition class PM (metal-clad in pressure-resistant design)
- Quality assurance in accordance with DIN EN ISO 9001.
- All operations shall be possible only with closed high-voltage door
- Shall be a Metallic enclosure with earthed shutters and partitions
- Internal arc classified switchgear according to IAC A FLR; front, lateral and rear accessibility; for all short-circuit currents and an arc duration of 1 s, optionally 0.1 s
- Unambiguous position indicators and control elements on the high-voltage door
- Positively driven shutters (separately lockable)
- Incoming and outgoing feeders shall be evenly arranged on either side of Bus coupler.
- Cable entry gland plates shall be fixed at the bottom of each feeder panel

### Main Components

#### Circuit Breaker

Motorized Vacuum circuit breaker and earthing Switch with making capacity

- Mechanical tripped on fault indicator
- Auxiliary contacts 1NO and 1NC
- Anti-reflex operating handle
- Shunt Trip circuit for external trip signal
- Mechanical ON/OFF/EARTH Indication

The Vacuum Circuit breakers should be Maintenance-free and type tested.

## **Busbars**

Three phase copper busbar of capacity 2500A, 12kV shall be provided. The bus bar shall be integrated in the cubicle, busbars shall be rated to withstand all dynamic and thermal stresses for the full length of the switchgear. The busbar shall be air insulated.

## **Earthing Switch**

Earthing switches shall be rated equal to the switchgear rating. Earthing switches shall be make-proof and quick make type capable of making Rated Fault Current. Earthing switch shall be operated from the front of the cubicle by means of a removable handle.

## **Protection and Metering**

The front panel shall display the mimic diagram of the main circuit with the position indicators for the switching devices. The voltage indicators shall be situated on the front panels. Multifunction Power Meter shall be fixed on the front door for each feeder cubicle, displaying at least Voltage, Current and Power. Over Current and Earth fault relays shall be fixed on front door with trip indicators and alarms.

Incoming and Outgoing Circuit Breakers shall be protected with Self Powered Over Current and Earth Fault Relays.

The position indicators of VCB shall be visible through the front cover and indicating lights shall be wired to auxiliary contact of the VCB to indicate the status of VCB.

The voltage indicators shall be situated on the front door, one for each module, and indicate the voltage condition of each incoming/outgoing cable. Identification of the phases is achieved with labels L1, L2 and L3 on the front of the voltage indicators. The voltage indicator shall satisfy the requirements of IEC61243.

## **Cable compartment**

Cable Compartment shall have room to terminate up to a maximum of two single core HV cables per phase. Removable steel covers bolted to the mainframe shall close the cable compartment and access to the compartment shall be by removing these cable covers.

Each module has a separate cable compartment that is segregated from each other by means of a partition wall. In case of an arc inside the tank.

A pressure relief valve shall be fitted, such that in case of an arc inside the tank, by opening of the pressure relief the partition wall prevents the hot gases flowing out from the pressure relief to enter the cable compartments.

The ground continuity is achieved when the covers are in place by means of bolted connections. The cable terminals shall be suitable for 3C x 70sq mm XLPE Cable with straight Cable Termination Protectors.



## Interlocking

The interlocking mechanism for the cable switch shall have a built in logical mechanical interlocking system to prevent operation of the switch when the earthing switch is closed, and to prevent operation of the earthing switch when the switch is in the closed position. The mechanism for the T-off switch shall have a built in interlocking system to prevent operation of the switch when the earthing switch is closed, and to prevent operation of the earthing switch when the switch is in the closed position. In addition an interlocking device shall allow access to the fuses only when the earthing switch is in the earthed position and opening of the earthing switch is only possible when the fuse cover is closed and secured.

The mechanism for the VCB and the disconnecter-earthing switch shall be have a built in mechanical interlocking system to prevent operation of the disconnecter-earthing switch when the VCB is in the closed position.

## Current Transformers

All current transformers should be comply with IEC 60185. Current transformers should be of dry type, with ratings and ratios as required. Shall use standardized block-type current transformers

## Auxiliaries

The switchgear should be prepared for options like motor operation, auxiliary contacts and short-circuit indicators. Necessary terminal blocks and wiring etc. should be placed behind the front cover of each module.

## Testing and Certification

Units should be type tested in accordance with IEC standards 60056, 60129, 60265, 60298, 60420, 60529 and 60694. The following type tests must performed and available if required

- Short time and peak withstand current test
- Temperature rise tests.
- Dielectric tests.
- Test of apparatus i.e. circuit breaker and earthing switch
- Arc fault test
- Measurement of resistance of main circuit.
- Mechanical endurance test.
- Duty cycle test.
- Internal arc test for HT chamber.
- Degree of protection for IP2X.

Type test reports for above type shall be submitted with the offer.



### **Routine Tests**

Routine tests shall be carried out in accordance with IEC 60298 standards. These tests shall be done to ensure the reliability of the unit. Below listed test shall be performed as routine tests before the delivery of units;

- Withstand voltage at power frequency
- Measurement of the resistance of the main circuit
- Withstand voltage on the auxiliary circuits
- Operation of functional locks, interlocks, signaling devices and auxiliary devices
- Suitability and correct operation of protections, control instruments and electrical connections of the circuit breaker operating mechanism
- Verification of wiring
- Visual inspection

### **Documentation**

An instruction manual should be provided with necessary information for receiving, handling, storage, installation, operation and maintenance.

Routine test certificate should be follow each unit, and standard schematic drawings should be delivered for 11kV Distribution Panel. Compact Switchgear shall have drawings that consist of system single line drawings, general arrangement and schematic drawings for order specific units.

All drawings shall confirm to International Standards. All dimensions and data shall be in S.I. Units.

### **List of drawings and Documents.**

All drawings provided by the Supplier shall be annotated in English.

All drawing symbols shall be standardized according to *IEC 60617, (Graphical Symbols for Diagrams)*, and be consistently used.

The bidder shall furnish four sets of relevant descriptive and illustrative published literature, pamphlets and the following drawings for preliminary study along with offer.

- General outline drawings showing dimensions and shipping weights, quantity of insulating media.
- Sectional views showing the general constructional features of the circuit breaker including operating mechanism, arcing chambers, contacts with lifting dimensions for maintenance.
- Drawings showing control cabinets and circuit diagrams for operating mechanism.



- Schematic diagrams of breaker offered for control, supervision and auto reclosing.
- Structural drawings and loading data for support structures.
- Foundation plan and loading data and foundation design.
- Drawings showing the complete operation cycle of the 11kV Distribution Panel with description.

### **Operating and Maintenance Booklet**

The Supplier shall provide a comprehensive Operating and Maintenance booklet. The O&M booklets shall be written in English and shall be graphically illustrated for unambiguous interpretation and understanding by maintenance staff.

The manual shall include the specific details on installation, operation and maintenance such as;

- A detailed technical description of the system.
- A complete list of all system components, with associated manufacturers literature, specifications, and warranties.
- A recommended annual maintenance schedule, with complete maintenance instructions.
- A detailed troubleshooting guides referencing all the system components. This shall include repairs and diagnostic procedures that can be done by the supplier or a qualified third party.
- Emergency shutdown procedures.

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Section C

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## Required Documents



### Required Documents

- Quotation (inclusive of the delivery period and the payment terms)
- 1 compact disc (CD), along with 2 sets of the bid documents (One Original and 1 copy set) separately packed and sealed with company stamp. All the pages in bid documents should be stamped and Bind properly.
- Specification of the offered product
- Single line diagram of engine panel system
- Related Completion Letter of past 5 years (If available)
- Details of the company
  - Company profile
  - Company registration certificate
  - GST registration certificate (For local suppliers only)
  - Tax Clearance Report (last 6 months)
  - Contact details (Name, Designation, Mobile number and Email)

### **Important Note:**

- Bids lacking the documents above are subjected to be rejected during bid opening, Except “Related Completion Letter of past 5 years”. Also it is in FENAKA’s discretion to cancel this invitation to bid at any time.
- Bidders can submit maximum of 2 options.

### Evaluation Criteria

- **Proposal Cost:** 40 points
  - $(\text{Lowest proposed price} / \text{proposed price}) \times 40$  points
- **Delivery:** 30 Point
  - $(\text{Shortest Delivery Period}) / (\text{Quoted Delivery Period}) \times 30$
- **Payment Terms:** 20 points for the maximum days given for payment
  - $(\text{Proposed credit period} / \text{longest credit period}) \times 20$
- **Experience:** 10 points (Point will be given by analyzing Related completion letters of past 5 years depending on the value of the project)

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Please submit your bids addressed to:

Managing Director  
Fenaka Corporation Ltd  
Port Complex Building, 7<sup>th</sup> Floor  
Hilaalee Magu, Maafannu  
K. Male'

The proposal and the envelope must bear the reference number of the tender. All envelopes must be duly sealed and stamped. Fenaka Corporation will not be liable for the misplacement or premature opening of unlabeled sealed proposals. The bids will be opened on 31<sup>st</sup> October 2019, Thursday 01:00pm in the presence of the bidders.

The bids received after the stated time, and the bids received via email will not be accepted.

For more information and clarifications, please email us at [tender@fenaka.com.my](mailto:tender@fenaka.com.my)