

# ENERGY FIJI LTD



Tender MR 168/2025

**THE SUPPLY OF 1.5MVA 11/0.415kV, Dyn11, 3PhaseTRANSFORMER  
(Replace Somosomo Generating transformer)**

## **SPECIFICATION**

### **3. SCOPE OF SUPPLY**

The scope is for the Supply of:

- a) 1.5MVA, 11/0.415kV and Dyn11 ground mounted step up transformer with enclosed terminal box on both LV and HV sides. Also the angle termination kit and bushing boot must be supplied. The LV and HV terminations must be on opposite sides of the transformer.

The contract also includes:

- (i) One soft copy of Operating, Servicing and Maintenance Instructions, Dimensions of the transformer and Spare Parts Manuals
- (ii) Any necessary erection materials including a complete set of special tools and equipment necessary to erect, operate, service and maintain the transformers.
- (iii) A list and price of spare parts for operating and maintaining the Plant to include but not limited to the following:
  - Spares parts for the transformers
  - General and special tools
  - Installation and Service Manuals
- (iv) Detailed design calculations, specifications and drawings used in the contract.

### **3.1 INFORMATION WITH TENDER**

Tenders must fill in all Schedules and give all particulars pertaining to the Transformer Plant offered.

In particular, they shall supply the following in their tender:

- a) Drawings showing all dimensions of the complete Transformer Plant.
- b) Drawings or Schedules showing the shipping dimensions and weights.
- c) One copy in the English Language of the Design Codes to which the tenderer elects to design the transformers [on request].
- d) A list of recommended spares

### **3.2 DRAWING AND INFORMATION TO BE SUPPLIED BY BIDDER**

### **3.3 The following must be submitted with the tender;**

General arrangements for the plant, giving dimensions, weights and basic specifications of transformer.

Illustrations and printed matter showing constructional details and details of instrumentation, protection and accessories.

**3.4 The following drawings are to be submitted with the contract, in printed and electronic/AutoCAD formats:**

- (i) Certified general arrangement drawings showing all fittings and accessories provided and including dimensions and weights and the specifications for the transformers and accessories.
- (ii) Combined Instrumentation with operational parameters
- (iii) Certification of all the final design calculations, drawings and evidence of compliance to such design parameters.

**3.5 Submission of Drawing**

All drawings submitted pursuant to this clause, shall form part of the contract, after approval by the Engineer. The sequence of submission of all drawings shall be such that all information is available for checking each drawing when it is received. Notation on drawings shall be in the English language.

**3.6 DESIGN AND STANDARDISATION**

The equipment specification shall covers the design, manufacturing, testing, supply, delivery and performance requirements of the three phase outdoor type transformers. The equipment shall comply with the latest international standards listed below as a minimum.

**AS Australia Standard:**

AS 60076 Power transformer

AS 2312 : Guide to the protection of structural steel against atmospheric corrosion by the use of protective coatings

AS 2374.1 : Minimum Energy Performance Standard (MEPS) requirements for distribution transformers.

**IEC International Electrotechnical Commission**

IEC 60071 : Insulation co-ordination

IEC 60076 : Power transformer

IEC 60137 : Bushing for alternating voltages above 1,000V

IEC 60156 : Methods for the determination of the electric strength of insulating oils.

IEC 60296 : Specification for unused mineral insulating oils for transformer and switchgear.

IEC 60354 : Loading guide for oil-immersed power transformer

IEC 60437 : Radio interference test on high-voltage insulators

IEC 60551 : Determination of transformer and reactor sound levels

IEC 60616 : Terminal and tapping marking for power transformers

IEC 50722 : Guide to the lightning and switching impulse testing of power transformers and reactors.

**ISO International Organization for Standardization**

ISO 1459 : Metallic coating – Protection against Corrosion by Hot Dip Galvanizing

ISO 1460 : Metallic coating, Hot dip galvanized coating on ferrous materials.

ISO 2178 : Non-magnetic coating on magnetic substrates, Measurements of coating thickness, Magnetic method

ISO 9000 : Quality management and quality assurance standards.

**ASTM American Society for Testing and Materials**

D 202 : Methods of sampling and testing unheated paper used for electrical insulation

Where any provision of this specification differs from those of the standards listed above, the provision of this specification shall apply. In case of conflict, the order of precedence shall be this specification below:

AS standards

IEC standards

ISO standards

Other standards

Type tests results are to be submitted in the Tender Bids.

### 3.7 DESIGN REQUIREMENTS

Coils are to be manufactured with layer windings with diamond dotted thermosetting resin coated presspaper interlayer insulation and pressboard interwinding insulation. The coils are to be rectangular in cross-section to match the core shape and are sized and cured to make a solid homogeneous finished coil. Both the HV and LV windings on most transformers (100kVA and above use sheet Aluminium) are wound with PEI Grade 2 enamel covered Aluminium winding wire.

All cores are to be distributed gap wound type cores, with a rectangular shaped cross-section enabling a single slit width of raw material. The core raw material is Grain Oriented Silicon Electrical steel, chosen for Low Loss qualities and high Quality.

### 3.8 SURFACE TREATMENT SYSTEM

Mild Steel are to be used for the construction material of these transformer tanks. To further enhance the surface protection system a 100%, hot zinc spray primer will be used, along with the following Anti-Graffiti system to AS/NZS 2312:2002.

Primer Zinc Coating	Hot Zinc Spray - 75 microns:
Primer	High Build Epoxy - 200 microns:
Finish Coating	Polyurethane Gloss - 50 microns:
Finish Colour	G15 Rain Forest Green

### 3.9 PERFORMANCE:

The transformers offered are to meet the guaranteed (where applicable) performance values in accordance with the latest edition of **AS2374**. All transformers are to be fully routine tested in accordance with the latest edition of **AS2374** and each unit is supplied with a test certificate.

Type tests results are to be submitted in the Tender Bids.

### 3.10 TRANSFORMER DETAILS

#### 1.5 MVA 3Phase 11/0.415kV Dyn11

- Transformer Voltage ratios: 11000/415volts
- Off circuit tap changer, with tapings of +3 / -1 in 2.5% step
- Vector group – Dny11.
- Oil filled and hermetically sealed transformer tank with dry air for long life.
- HV Connections – 11kV DIN Bolted 630A Bushings\*
- Stainless steel transformer-rating plate.
- 25 NB Drain & Filler Valves
- Oil sight Glass with 15 degree C mark
- HV and LV Cable boxes welded to the tank, with aluminum gland plates
- Pressure Relief Device
- Oil Temperature Indicator
- Zinc spray with Underseal paint system
- Side LV and HV terminations
- Oil temperature indicator must include alarm and trip contact for protection
- The thickness of the HV and LV Gland plates must be made of an easily penetrable metal such as Aluminum.
- The thickness of the HV and LV Gland plates must be no greater than 5millimeters
- Dimensions provided by bidder must also include the radiator fins.
- LV bus thickness(length, width and height) must be provided in the drawings
- Number of terminations (holes) on the LV bus must be provided in the drawings.

### **Dimensions of the transformer**

- The preferred dimensions of the transformer supplied by the bidder must be able to fit the dimensions of the transformer bund shown below: Length and width (2.8meter x 2.6 meters). Dimensions provided by bidder must also include the radiator fins.



#### **3.11 HV and LV cable terminations:**

Bidders must specify the length, width and number of holes on the LV bus bar. Each phase should at least have 6 holes

#### **3.12 OIL TYPE:**

All Transformers are filled with Standard Mineral oil to BS148 (1998) or AS1767.

#### **3.13 INTERLAYER INSULATION:**

Diamond dotted epoxy coated calendared press paper to Grade 3.

#### **3.14 INTERWINDING INSULATION:**

Calendered transformer pressboard to Grade 3

#### **3.15 CONDUCTORS HV AND LV**

6.6kV, 11kV, 22kV, 33kV, winding: Polyesterimide Grade 2 enamel covered winding wire. 240V, 250V, 415V, 433V, 690V winding Sheet aluminium, Electrical grade 1350 or better.

### 3.16 TEMPERATURE RISES:

Maximum average winding temperature rise:	65°C
Maximum top oil temperature rise:	60°C
Maximum Ambient Temperature:	40°C

### 3.17 REFERENCE CONDITIONS

The following environmental conditions are applicable to this site.

- (i) Environment Type – Tropical Climate
- (ii) Elevation above mean sea level (800 meters)
- (ii) Ambient air temperature
  - Design Temperature 45 °C
  - Minimum 15 °C
- (iii) Relative Humidity
  - Maximum relative humidity 95%
  - Minimum relative humidity 70%
- (iv) Seismic Condition
  - All equipment shall be capable of withstanding an acceleration of 3.3m/sec<sup>2</sup> in any direction without sustaining any damage.

### 3.18 TAP CHANGER

The tap changer shall be OFF Load Type and lockable with tapping of +3/-1 in 2.5% step

**3.19 Transformer Details to be supplied by Bidders****TRANSFORMER DATA (Separate for each Transformer)**

Symbol	DATA DESCRIPTION	UNITS	VALUES
	Name of manufacturer		
	Transformer Make		
	Transformer Serial Number		
	Year of Manufacture		
	HV Winding Voltage (nominal)	kV	
	LV Winding Voltage (nominal)	kV	
	Frequency	Hz	
	Vector Group		
	Phase Shift Angle	Degrees	
	Rating 1	MVA	
	Rating 2	MVA	
	Rating 3	MVA	
	No of Phases	Number	
	Positive Sequence Impedance (Per unit on transformer rating)	Per unit	
	Positive Sequence X to R ratio	Ratio	
	Zero Sequence Impedance (Per unit on transformer rating)	Per unit	
	Zero Sequence X to R ratio	Ratio	
	Primary Grounding Resistance	Ohms	
	Secondary grounding resistance	Ohms	
	Primary Grounding Reactance	Ohms	
	Secondary Grounding Reactance	Ohms	
	% Imp Volts	%	
	Expected Inrush Current if Energized from HV side	Amps	
	Expected duration of Inrush Current	Amps	
<b>Insulation Class</b>			
	Insulation Level – Winding 1		
	Insulation Level – Winding 2		
	Insulation Level – Winding 3		
	Minimum Tap Number	Tap Position	
	Minimum Tap Voltage	kV	
	Maximum Tap Number	Tap Position	
	Maximum Tap Voltage	kV	
	Nominal tap position	Tap position	
	No load loss	kW	
	Copper loss	kW	
	Primary winding configuration	Text	
	Secondary winding configuration	Text	
	Phase displacement	Degrees	
	Thermal Curve	Diagram	
	Magnetization curve (in per unit on the transformer rating)	Diagram	
	Tap Changer control block diagram	Diagram	
	On Load or Off Load Tap Changer		



Symbol	DATA DESCRIPTION	UNITS	VALUES
<b>Documentation</b>			
	Electrical, Mechanical and Seismic design reports	Report	
	Factory Acceptance Test Reports	Report/Manuals	
	Transformer Electrical and Mechanical Drawings	Drawing	
	Transformer Nameplate Drawing	Drawing/Text	
Symbol	Data Description	Units	Value
	Details of various mechanical protection devices showing principles of operation, trigger levels, recommended level settings from manufacturer	Text and Diagram	
	Mechanical Protection Device Manuals	Manual	

## **PRICE SCHEDULE**

The Supply of 1.5MVA 11/0.415kV, Dyn11, 3Phase transformer

Item	Item Description	Quantity	Unit Price	Total Price Currency: _____
1	The Supply of 1.5MVA 11/0.415kV, Dyn11, 3Phase transformer	1		
2	Freight charges (Cost, Insurance and Freight (CIF) basis, delivered to Energy Fiji Limited's Kinoya Depot, Suva, Fiji			
	Total (VEP)			
<b>TOTAL (VIP)</b>				

### **Notes:**

1. Technical;
  - a. The bids must as per the Technical Specifications in the Tender Documents. Bids that do not conform to the technical Specification will be disqualified
  - b. Documentary evidence to prove that the items offered comply with the Technical Specification must be provided.
  - c. The Supplier/ Contractor shall provide a warrants for Goods or services for provided unless stated otherwise.
  - d. The Goods supplied under this Contract shall conform to the standards mentioned in the Technical Specifications
2. Financial;
  - a. In case of discrepancy between unit and total cost, the unit cost shall prevail
  - b. Any advance payment will require a bank guarantee. And this added cost will be beared by bidder
  - c. The currency used in the tender bid prices must be indicated in the tender bid
  - d. Prices shall be fixed during the Supplier's performance of the Contract and not subject to variation on any account.
  - e. EFL financial terms are applicable for these works.
3. EFL Energy Fiji Limited uses Federation Internationale Des Ingenieurs Conseil (FIDIC) Contract template. General conditions of this contract shall be governed by it.
4. Failure to submit required documents may affect bid compliance. Failure to submit mandatory items as stated in Compliance Checklist will result in non-compliance.
5. A detailed work plan to be provided with expected date for the works.

**Compliance Checklist Declaration**

I \_\_\_\_\_ of \_\_\_\_\_  
located at \_\_\_\_\_ confirm that the bid submitted  
for the following tender MR 168/2025 : The Supply of 1.5MVA 11/0.415kV, Dyn11,  
3Phase transformer bid complies with the mandatory bidder submission as stated in Sub  
Clause 2.6;

	Yes	No	Comments
Price Schedule			
Company Profile			
Statement of Exclusion or Amendment for Tender Specification (if Any)			
Shipping Term (if Applicable)			
Payment Term			
Price Validity [preferred 60 days]			
Withholding Tax Inclusion (If Applicable)			

**Scope of Supply & Submissions;**

	Yes	No	Comments
Past Supply History/ Experience submission			
Warranty on 1.5MVA 11/0.415kV, Dyn11, 3Phase transformer			

Note that these submissions are mandatory submission for a successful tender bid. This declaration must be signed and submit as well.

Name: \_\_\_\_\_

Position: \_\_\_\_\_

Company: \_\_\_\_\_

Sign Off: \_\_\_\_\_

Date: \_\_\_\_\_

## **Tender Check List**

***The Bidders must ensure that the details and documentation mention below must be submitted as part of their tender Bid***

Tender Number \_\_\_\_\_

Tender Name \_\_\_\_\_

1. Full Company / Business Name: \_\_\_\_\_

**(Attach copy of Registration Certificate)**

2. Director/Owner(s): \_\_\_\_\_

3. Postal Address: \_\_\_\_\_

4. Phone Contact: \_\_\_\_\_

5. Fax Number: \_\_\_\_\_

6. Email address: \_\_\_\_\_

7. Office Location: \_\_\_\_\_

8. TIN Number: \_\_\_\_\_

**(Attach copy of the VAT/TIN Registration Certificate - Local Bidders Only (Mandatory))**

9. FNPF Employer Registration Number: \_\_\_\_\_ **(For Local Bidders only) (Mandatory)**

10. **Provide a copy of Valid FNPF Compliance Certificate (Mandatory- Local Bidders only)**

11. **Provide a copy of Valid FRCS (Tax) Compliance Certificate (Mandatory Local Bidders only)**

12. **Provide a copy of Valid FNU Compliance Certificate (Mandatory Local Bidders only)**

13. Contact Person: \_\_\_\_\_

I declare that all the above information is correct.

Name: \_\_\_\_\_

Position: \_\_\_\_\_

Sign: \_\_\_\_\_

Date: \_\_\_\_\_

## **TENDER FORM**

To: Jitendra Reddy  
Manager Procurement, Inventory & Supply Chain  
Energy Fiji Limited  
2 Marlow Street,  
Suva,  
Fiji Islands  
Phone: +679 331 333 EXT 2320  
Mobile : +679 999-2400  
Email: [JReddy@efl.com.fj](mailto:JReddy@efl.com.fj)

Sir,

1. Having examined the Tender Document, the receipt of which is hereby duly acknowledged, we, the undersigned, offer to supply  
.....  
.....(*Description of Goods*) in conformity with the said Tender Document for the sum.....  
..... (*total tender amount in words and figures*) or such other sums as may be ascertained in accordance with the Schedule of Prices attached herewith and made part of this Tender.
2. We undertake, if our Tender is accepted, to deliver the Goods in accordance with the delivery schedule specified in the Schedule of Requirements.
4. We agree to abide by this Tender for a period of 90days from the date fixed for Tender opening under Clause 19 of the Instructions to Tenderers, and it shall remain binding upon us and may be accepted at any time before the expiration of that period.
5. Until a formal Contract is prepared and executed, this Tender, together with your written acceptance thereof and your notification of award, shall constitute a binding Contract between us.
6. We understand that you are not bound to accept the lowest or any Tender you may receive.

Dated this: \_\_\_\_\_ day of  
201\_.

*[Signature] [In the capacity  
of]*

Duly authorized to sign Tender for and on  
behalf of

## **Tender submission**

Bidders are requested to upload electronic copies via Tender Link by registering their interest at: <https://www.tenderlink.com/efl>

**EFL will not accept any hard copy submission to be dropped in the tender box at EFL Head Office in Suva.**

**This tender closes at 4.00pm (1600hrs) on Wednesday 21<sup>st</sup> May, 2025.**

For further information or clarification please contact our Supply Chain Office on phone **(+679) 3224360 or (+679) 9992400** or email us on [tenders@efl.com.fj](mailto:tenders@efl.com.fj)

**The bidders must ensure that their bid is inclusive of all Taxes payable under Fiji Income Tax Act. Bidders are to clearly state the percentage of VAT that is applicable to the bid prices.**

The lowest bid will not necessarily be accepted as the successful bid.

**The Tender Bids particularly the “Price” must be typed and not hand written.**

**Any request for the extension of the closing date must be addressed to EFL in writing three (3) working days prior to the tender closing date.**

**Tender Submission via email or fax will not be accepted.**