



ENERGY FIJI LIMITED

**TECHNICAL SPECIFICATION FOR 12kV AND 36kV SURGE
ARRESTERS**

MR 115/2024

Revision History & Document Control

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1	Prepared by	Rajiv Singh		28/08/19
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3	Reviewed by		Amitesh Chandra	16/09/19
4	Reviewed by		Mohammed Zainal Alim	25/03/24

Next Scheduled Revision

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1. INTRODUCTION AND SCOPE OF WORK

Energy Fiji Limited [EFL] is responsible for generation, transmission and distribution of electricity in Viti Levu, Vanua Levu, Ovalau and Taveuni in Fiji. By January 2023, the EFL had 215,515 customers. This included residential, commercial and institutional customers.

EFL is requesting proposal for the Preferred Supplier to supply items listed below for EFL's consumption to carryout repair, construction and maintenance of Power line Network in Fiji.

The preferred Supplier arrangement will be for a period of three (3) years from the date of signing of the contract. The award of this tender may be split and awarded to more than one successful bidder.

This document outlines the technical requirements for 11kV and 33kV surge arresters for use in EFL's high voltage distribution and sub-transmission networks.

The items covered by this specification are listed below:

No.	Stock Code	Item Description
1	I04497	11kV Surge Arrester
2	I04505	33kV Surge Arrester

Table 1.1: Items Covered Under this Specification

This Specification covers the general requirements of design, manufacture, testing, supply and delivery of 11kV and 33kV surge arresters to be used in EFLs high voltage distribution and sub-transmission networks.

1 INSTRUCTIONS TO BIDDERS

1.1 Eligible Bidders

This invitation is open to all Bidders who have sound Financial Background, and have previous experience in design, manufacture, testing and supply of such pole-mounted and platform-mounted transformers.

Bidders shall provide such evidence of their continued eligibility satisfactory to EFL as EFL shall reasonably request. Bidders who are not manufacturers of such transformers shall provide evidence of agency.

Bidders shall not be under a declaration of ineligibility for corrupt or fraudulent practice.

1.2 Eligible Materials, Equipment and Services

The materials, equipment, and services to be supplied under the Contract shall have their origin from reputable companies (as specified by EFL where relevant) and from various countries and all expenditures made under the Contract will be limited to such materials, equipment, and services. Upon request, bidders may be required to provide evidence of the origin of materials, equipment, and services.

For purposes of this Contract, "services" means the works and all related services including design services.

For purposes of this Contract, "origin" means the place where the materials and equipment are mined, grown, produced or manufactured, and from which the services are provided. Materials and equipment are produced when, through manufacturing, processing or substantial or major assembling of components, a commercial recognized product results that is substantially different in basic characteristics or in purpose or utility from its components.

The materials, equipment and services to be supplied under the Contract shall not infringe or violate any industrial property or intellectual property rights or claim of any third party.

1.3 One Bid per Bidder

Each bidder shall submit only one bid. A bidder who submits or participates in more than one bid will cause all those bids to be rejected.

1.4 Cost of Bidding

The bidder shall bear all costs associated with the preparation and submission of its bid and EFL will in no case be responsible or liable for those costs.

1.5 Site Visits

Bidders can visit existing EFL networks by making arrangements to visit existing EFL installations. Bidders are required to familiarize themselves with the existing EFL installations so the solutions they offer does not require modification to existing poles and support infrastructure.

1.6 Contents of Bidding Documents

The bidder is expected to examine carefully the contents of this Bidding document. Failure to comply with the requirements of bid submission will be at the bidder's own risk. Bids which are not substantially responsive to the requirements of the bidding documents will be rejected.

1.7 Clarification of Bidding Documents

A prospective bidder requiring any clarification of the bidding documents may notify EFL in writing by email, addressed to:

Jitendra Reddy
Manager Procurement, Inventory & Supply Chain
2 Marlow Street,
Suva, Fiji
Phone: +679 331 3333 Ext 2320 or
Mobile: +679 999 2400
Email: JReddy@efl.com.fj

EFL will respond to any request for clarification which it receives earlier than 10 days prior to the deadline for submission of bids.

1.8 Amendment of Bidding Document

At any time prior to the deadline for submission of bids, EFL may, for any reason, whether at its own initiative or in response to a clarification requested by a prospective bidder, modify the bidding documents by issuing addenda.

1.9 Language of Bid

The bid, and all correspondence and documents related to the bid, exchanged between the bidder and the EFL shall be written in the English language.

1.10 Bid Prices

Unless specified otherwise, Bidders shall quote for the entire facilities on a "single responsibility" basis such that the total bid price covers all the Supplier's obligations mentioned in or to be reasonably inferred from the bidding documents in respect of the design, manufacture, including procurement and subcontracting (if any), testing and delivery.

Bidders shall give a breakdown of the prices in the manner and detail called for in this bidding document, or any issued addenda.

Bids shall be given on CIF basis. The point of delivery shall be EFL's Navutu Depot in Lautoka. The term CIF shall be governed by the rules prescribed in the current edition of Incoterms, published by the International Chamber of Commerce, Paris.

EFL has a marine insurance cover for items it is required for purchase for its project and operational works. Bidders are required to comment if the marine insurance component is covered in their bids.

1.11 Bid Currencies

Prices shall be quoted in a single currency only.

1.12 Bid Validity

Bids shall remain valid for a period of **120 days** from the date of Deadline for Submission of Bids specified in Sub-Clause 21.1.

1.13 Format and Signing of Bids

The bidder shall provide one electronic copy of the Technical and Financial proposals on EFL's electronic tender hosting website; <https://www.tenderlink.com/efl>

The bid shall contain no alterations, omissions or additions, except those to comply with instructions issued by EFL, or as necessary to correct errors made by the bidder, in which case such corrections shall be initialed by the person or persons signing the bid.

1.14 Sealing and Marking of Bids

Due to the Covid19 restrictions on movements, bidders are encouraged to bid via Tender link Portal.

1.15 Deadline for Submission of Bids

Bids must be received by EFL at the address specified above no later than **1600 hours (Fiji Time) 8th May 2024**.

EFL may, at its discretion, extend the deadline for submission of bids by issuing an addendum, in which case all rights and obligations of EFL and the bidders previously subject to the original deadline will thereafter be subject to the deadlines extended.

1.16 Late Bids

Any bid received by EFL after the deadline for submission of bids prescribed above will be rejected.

1.17 Modification and Withdrawal of Bids

The bidder may modify or withdraw its bid after bid submission, provided that written notice of the modification or withdrawal is received by EFL prior to the deadline for submission of bids.

No bid may be modified by the bidder after the deadline for submission of bids.

1.18 Rejection of One or All Bids

EFL reserves the right to accept or reject any bid, and to annul the bidding process and reject all bids, at any time prior to award of Contract, without thereby incurring any liability to the affected bidder or bidders or any obligation to inform the affected bidder or bidders of the grounds for the rejection.

1.19 Process to be Confidential

- 2.19.1. Information relating to the examination, clarification, evaluation and comparison of bids and recommendations for the award of a contract shall not be disclosed to bidders or any other persons not officially concerned with such process.
- 2.19.2. Any effort by a bidder to influence EFL's processing of bids or award decisions may result in the rejection of the bidder's bid.
- 2.19.3. Lowest bid will not necessarily be accepted as successful bid.

1.20 Clarification of Bids

To assist in the examination, evaluation and comparison of bids, EFL may, at its discretion, ask any bidder for clarification of its bid. The request for clarification and the response shall be in writing, but no change in the price or substance of the bid shall be sought, offered or permitted except as required to confirm the correction of arithmetic errors discovered by EFL in the evaluation of the bids.

1.21 Compliance with Specifications

The tender shall be based on the equipment and work specified and shall be in accordance with the Technical Specification. It should be noted that unless departures from specifications are detailed in Schedules of the Technical Specification, the tender would be taken as conforming to the Specification in its entirety. The Bidder shall tender for the whole of the Works included in the Specification.

2. REFERENCES

2.1. Applicable Standard

The item shall be designed, manufactured and tested in accordance with the latest edition of the Standards specified below and all amendments issued prior to the date of closing of tenders except where varied by this specification.

IEC 60099-4	Surge arresters – Part 4: Metal-oxide surge arresters without gaps for a.c. systems
IEC 60099-5	Surge arresters – Part 5: Selection and application recommendations
IEC 60270	High voltage test techniques - Partial discharge measurements
IEC 60071	Insulation co-ordination – Part 1: Definitions, principles and rules
IEEE C62.11	Metal-oxide surge arresters for a.c. power circuits (> 1 kV)
IEEE C62.22	Guide for the application of metal-oxide surge arresters for alternating-current systems
IEC 60721-3-3	Classification of environmental conditions – Part 3-3: Classification of groups of environmental parameters and their severities – Stationary use at weather protected locations
IEC 60507	Artificial pollution tests on high-voltage ceramic and glass insulators to be used on a.c. systems
IEC 60587	Electrical insulating materials used under severe ambient conditions - Test methods for evaluating resistance to tracking and erosion
AS/NZS 4680	Hot-dip galvanized (zinc) coatings on fabricated ferrous articles
ISO 48-2	Rubber, vulcanized or thermoplastic Determination of hardness — Part 2: Hardness between 10 IRHD and 100 IRHD
AS/NZS ISO:9001	Quality Management Systems – model for quality assurance in design, development, production, installation and servicing

Should inconsistencies be identified between standards and/or this specification, the tenderer shall immediately refer such inconsistencies to the EFL for resolution.

3. SERVICE CONDITIONS

3.1. Environmental Conditions

The 11kV and 33kV surge arresters shall be suitable for installation outdoors and shall be designed to withstand the following service conditions.

Description	Conditions
Atmosphere Pollution Level	: Sulfurous, Corrosive and Dusty
Ambient Temperature	: Peak: 40°C 24 Hour Average: 30°C Annual Average: 22°C Minimum: 10°C
Relative Humidity (Average)	: 90%
Rainfall	: Annual Average: 2663mm
Isokeraunic (Thunder day) level	: 60 thunder days per year
Seismic	: To a maximum of 7 on the open-ended Richter Scale

Note: Fiji is situated in a region where cyclones are experienced frequently. All plant and equipment shall be designed and constructed to withstand these extreme conditions. All plant and equipment shall be rust proof, vermin proof and weather proof and designed to be suitable for a damp, tropical climate, which may be experienced simultaneously.

3.2. System Conditions

Nominal Voltage	11kV	33kV
System Highest Voltage	12kV	36kV
System Frequency	50Hz	50Hz
Number of Phases	3	3
System Earthing	Effectively Earthed	Effectively Earthed
Impulse Withstand Voltage (peak)	95kV	200kV
Power Frequency Withstand Voltage	38kV (rms)	95kV
Maximum Duration of Earth Fault	≤ 3 seconds	
Earth Fault Factor as per IEC 60099-4	1.4	
Maximum Short Circuit Current, kA	20	
Discharge Class as per IEC 60099-4	Class 1	
Specific Creepage Distance as per IEC 60815 (Coastal/Industrial – Class e)	31mm/kV	

4. DESIGN AND CONSTRUCTION

This specification is for a non-linear metal-oxide resistor type, 10kA distribution class surge arresters without spark gaps designed to limit voltage surges on a.c. power circuits operated at 11kV with highest system voltage of 12 kV at 50 Hz and 33 kV with highest system voltage of 36 kV at 50 Hz.

The specification also covers inspection and testing of the surge arresters.

The specification stipulates the minimum requirements for 11kV and 33 kV surge arresters acceptable for use in EFL and it shall be the responsibility of the supplier to ensure adequacy of the design, good workmanship and good engineering practice in the manufacture of the surge arresters.

The surge arrester shall be connected between phase and earth to an overhead system that is generally solidly earthed neutral 11kV and 33 kV - systems and with the system and environmental conditions as per clause 3.0.

4.1. General

The surge arrester shall be designed and constructed in accordance with IEC 60099-4, IEEE Std. C62.22 and the requirements of this specification. It shall be suitable for overvoltage protection of distribution and sub-transmission networks.

The surge arrester shall have one non-linear metal-oxide resistors with highly non-linear voltage-current characteristics, connected in series, but having no integrated series or parallel spark gaps.

The metal-oxide used shall be of such quality to ensure thermal stability under service duty of the surge arrester and shall be single column, self-supported and be installed between phase and earth.

The guaranteed protection characteristics of the surge arrester based on IEC 60099-5 and ANSI/IEEE Std. C62.11. selection formulas shall be required to comply during tests, with all the withstand capabilities stated under system and environmental conditions (clause 3.0) and the general arrangement of the surge arrester with all the features and accessories.

4.2. Housing

The housing of the surge arrester shall be made of high quality reinforced high temperature vulcanized (HTV) silicone rubber based on dimethyl siloxane, which exhibit hydrophobicity with the capability to transfer hydrophobicity to the layer of pollution.

The reinforced HTV silicone rubber shall have a Shore 'A' hardness of not less than 60 as per ISO 48 and the track resistance of the sheath and shed materials shall meet the requirements of IEC 60587 Method 1 Class 1A4.5 or 1B4.5 or Method 2 Class 2A4.5.

The housings shall meet the requirements of IEEE Std. 592-1990 by demonstrating shield resistance of less than 5000Ω and capability of initiating two consecutive fault- current arcs to ground.

The surge arrester shall be designed and constructed in a manner so as to prevent explosive shattering relief capability (short circuit) as per Table 1.

The entire insulator housing shall have the rated withstand voltage given in Table 1 based on IEC 60099-4 clause 6.1 with creepage distance based on system conditions under clause 3.2 and tested as per IEC 60507.

Insulator sheds shall be open type, designed to minimize trapping of contamination. It shall be made of polymer having glazed brown or gray color. The silicon rubber housing shall be made by direct molding method.

4.3. Over Pressure Relief Device

Arresters shall be provided with a pressure relief device, a means for relieving internal pressure in an arrester and preventing explosive shattering of the housing following prolonged passage of flow current or internal flashover of the arrester.

4.4. Fault Indicators

Fault indicators shall give a clear visual indication of a failed arrester without disconnecting the arrester from the line. The device shall be an integrated part of the arrester and the working principle shall be based on the amplitude and duration of the arrester current, or on the temperature of the non-linear metal-oxide resistors.

4.5. Disconnectors

Disconnectors shall be an integral part of the arrester to give a visual indication of a failed arrester by disconnecting it from the system while the line remains in operation after disconnection of the arrester. This shall be an explosive device triggered by the fault current but shall extinguish the fault current.

The disconnector shall be incorporated in the arrester and shall withstand, without operating, long-duration current impulse test and operating duty tests as per IEC 60099- 4 clause 6.12.

4.6. Moisture Sealing

The surge arrester shall be sealed (end caps) with a controlled permanent seal to prevent moisture absorption or deterioration of the metal-oxide element of the surge arrester.

The supplier shall describe the moisture sealing system used and shall state his own experience with the design offered. The method of factory testing of the sealing shall be described.

4.7. Mounting Arrangement

The surge arresters shall be supplied complete with an insulating mounting bracket made of a base polymer or cast resin. The device shall withstand each of the following tests without damage:

- a) Environmental tests –
 - i. Temperature cycling tests
 - ii. Salt mist tests in accordance with IEC 60099-4 clause 8.10
- b) Bending tests as per IEC 60099-4 clause 8.9

The mounting brackets shall be NEMA type mounting brackets to facilitate mounting of arresters on wooden cross-arms suitable for both horizontal and vertical mounting.

The brackets shall have fixing accessories and clamp connector suitable for both Copper and Aluminium conductors of up to 12.5mm diameter. All parts shall be protected against corrosion.

4.8. Corrosion Protection

All metal parts shall be hot dip galvanized with average minimum coating thickness of **85µm** in accordance with the AS/NZS 4680 with exception to stainless steel. In all cases the supplier shall clearly mention the protective measure used when dissimilar metals are in contact.

4.9. Terminals

Terminals shall be clamp type and shall be constructed for both Copper and Aluminium conductors of up to 12.5mm diameter and a continuous work shall be guaranteed without any deterioration. Full details of the design of terminals shall be submitted at the time of tendering.

4.10. Characteristics

The surge arresters shall be of the following minimum characteristics:

Description		Requirements	
Maximum system voltage, U_m , kV		12	36
Rated voltage, U_r , kV		11	33
Maximum continuous operating voltage as per IEC 60099-4, U_c , kVrms		9.6	28.8
Temporary overvoltage capability (TOV) , kVrms	1s	12.8	38.5
	100s	11.2	33.5
Maximum residual voltage at steep, surge and switching impulse current with current wave, kV	10 kA (1/2 µs)	37.5	104.9
	5 kA (8/20 µs)	32.6	91.1
	10 kA (8/20 µs)	35.0	98.0
	20 kA (8/20 µs)	38.9	108.8
	40 kA (8/20 µs)	43.8	122.5
	125 kA (30/75µs)	25.6	71.5
	250 A (30/75 µs)	26.4	73.8
	500 A (30/75 µs)	27.3	76.4
	1000 A (30/75 µs)	28.4	79.4
3000 A (30/75 µs)	30.7	85.9	
Surge impulse protective level, max, kV as per IEC 60099-5		60	130
Steep current impulse protective level, max, kV as per IEC 60099-5		65	140
Energy discharge capability, kJ/kV at U_r		≥4.5	
Long duration discharge class (current compliance)	Current A	500	
	Duration, µs	2000	
	Discharge tolerance, %	5	
Accelerated ageing performance	Temperature, °C	115	
	Time, hrs	100	
	Watt loss	Continues decreasing	
Operating duty characteristics (Discharge current withstand)	Two 4/10µs current wave (U_r), kA	100	
	Low current at 2000µs, kApk	900	
	Discharge tolerance, %	5	
Partial discharge performance, pC as per IEC 60270		< 10	
Pressure relief withstand capability (Short circuit)	High symmetrical RMS (A), duration (s)	20kA at 0.2s	
	Low symmetrical RMS (A), duration (s)	2kA at 1s	
	Asymmetrical peak (A)	50kA at 0.2s	

Withstand Capabilities of Surge Arrester Housing			
Surge impulse withstand voltage	kVpk	95	200
Power frequency withstand voltage for 1 min, wet	kVrms	46	116
Creepage distance, 31mm/kV	mm	373	1116
Permissible head load static (SLL)	N	175	
Permissible head load dynamic (SLL)	N	250	
Short circuit withstand capability (rated short circuit (withstand) current Is)	kA	20	
Minimum permissible length of the active part	mm	135	145
Housing shield resistance	Ω	< 5000	
Number of units		1	

Table 1: Surge Arrester Characteristics

5. PERFORMANCE AND TESTING

5.1. Type Testing

Type tests, sampling tests and routine tests shall be done in accordance with the requirements of IEC 60099-4, IEC 60587, IEEE std. C62.11, IEEE std. 592 and this specification. It shall be the responsibility of the supplier to perform or to have performed all the tests specified.

Copies of Type Test Certificates & Type Test Reports issued by a third party testing laboratory that is accredited to ISO/IEC 17025 shall be submitted with the tender for the purpose of technical evaluation. A copy of the accreditation certificate to ISO/IEC 17025 for the testing laboratory shall also be submitted (all in English language).

Copies of type test reports to be submitted with the tender (by bidder) for evaluation shall be as per Table 3 of IEC 60099-4 tests and as stated:

- a) Insulation withstand of the arrester housing
- b) Residual voltage tests
- c) Long duration current impulse withstand tests
- d) Operation duty tests
 - i. Accelerated ageing tests
 - ii. Verification of thermal section
 - iii. Switching surge operating duty test
- e) Pressure relief tests
- f) Test of arrester disconnectors/fault indicators
- g) Artificial pollution tests
- h) Partial discharge tests
- i) Seal leakage tests
- j) Current distribution tests
- k) Temporary overvoltage tests
- l) Radio interference voltage (RIV)

5.2. Routine Tests

The surge arrestors shall be subject to acceptance tests at the manufactures' works before dispatch. Routine and sample test reports for the surge arrestors to be supplied shall be submitted to EFL for approval before shipment of the goods.

5.3. Acceptance Tests

The EFL may carry out acceptance test on equipment to prove its compliance to the requirements of this Specification. Any equipment showing evidence of failure to comply with the requirements of this specification will be liable to rejection.

5.4. Witnessing of Tests

The EFL reserves the right to witness all testing. The Supplier shall give EFL reasonable notice of when testing will be carried out and two (2) EFL engineers to be invited to witness the testing. The return-air travel, accommodation, meals and other expense related to test witnessing shall be borne by the Bidder as a value adding service.

Tests to be witnessed by EFL Engineers at the factory before shipment shall be in accordance with IEC 60099-4, IEC 60587, KS C IEC 60099-4, ISO 48, IEEE std. C62.22, IEEE std. 592 and this specification and shall include the following:

- a) Verification of dimensions
- b) Pressure relief tests
- c) Measurement of reference voltage (Uref)
- d) Residual voltage test.
- e) Seal leakage tests for arrester units with sealed housing
- f) Current distribution test.
- g) Measurement of power-frequency voltage on the complete arrester at the reference current measured at the bottom of the arrester.
- h) Lightning impulse residual voltage on the complete arrester or arrester unit at nominal discharge current
- i) Internal partial discharge test
- j) Thermal stability test

Note the Factory Acceptance Testing (FAT) is a mandatory requirement by EFL.

5.5. Compliance

The Supplier shall state in writing that their offer complies with the relevant Standards and this specification. If the Supplier is offering equipment manufactured to an equivalent standard, full details of that standard must be given including a copy written in English.

6. RELIABILITY

6.1. Service Life

Bidders are required to comment on the reliability of the equipment and the performance of the materials offered for a service life of 35 years under the specified system and environmental conditions in clause 3.

6.2. Evidence in Support of Reliability

Where the specified guaranteed service life is less than 35 years Suppliers are required to provide comment and submit evidence in support of the reliability and performance claimed including detailed information on Failure Mode and Effect Analysis.

7. ENVIRONMENTAL CONSIDERATIONS

Suppliers are required to comment on the environmental soundness of the design and the materials used in the manufacture of the items offered. In particular, comments should address such issues as recyclability and disposal at end of service life and also disposal of packaging material.

8. PACKAGING AND MARKING

8.1 Packaging

The packaging of items by the bidder must ensure that they are capable of being delivered undamaged giving due consideration to the quantity, distance of transportation and the preferred method of handling at each location.

Each packaged lot shall be marked with the following information:

- Manufactures Name
- Purchase Order Number
- Contact No.
- EFL Stock Code
- Item Description
- Applicable standards
- Pack Size
- Pack Weight

8.2 Marking

The following information shall be marked indelibly and legibly on a nameplate permanently attached to the surge arrester in English language:

- Continuous operating voltage
- Rated voltage
- Rated frequency
- Nominal discharge current
- Rated short-circuit withstand current in kA
- The manufacturer's name or trade mark
- The year of manufacture
- Line discharge class
- The letter "**PROPERTY OF EFL**"

9. QUALITY REQUIREMENTS

Tenderers are required to submit evidence that the design and manufacture of the surge arresters are in accordance with AS/NZS ISO 9001 and shall include the Capability Statement associated with the Quality System Certification.

If the Tenderer is a non-manufacturing supplier, the documentary evidence shall include the quality system certifications of both the supplier and the manufacturer.

10. STOCK AVAILABILITY

The bidder is required to indicate the size of consignment stock it will hold and the ability to meet the required demand of the estimated quantity at any given time during the contract period. The movement of the surge arresters will depend on the EFL's project works and for operation and maintenance purposes. An estimate movement of the items are outlined in the table below but the surge arrestors will not be purchased as a lump sum quantity at once. Hence, the successful bidder will be required to carry a consignment / safety stock at times to meet EFL's demand within the three year contract period.

No.	Stock Code	Item Description	Approximate 3 Year Stock Movement
1	I04497	11kV Surge Arrester	884
2	I04505	33kV Surge Arrester	67

11. PRODUCT WARRANTY PERIOD

The bidders are required to provide the warranty period as part of the proposal. A minimum warranty period of twenty-four (24) months from time of dispatch from factory shall be provided.

12. INFORMATION TO BE SUPPLIED BY THE BIDDER

12.1. Documentation to be supplied with the tender

To enable the EFL to fully evaluate the surge arresters offered, (in addition to the completed Specification Requirement and Guaranteed Performance schedule) the bidder shall submit the following information with their tender: **(Note these are mandatory requirements)**

- List showing similar equipment supplied to or on order for other utilities in Australia or New Zealand or the Oceania region for the past 5 years
- Typical arrangement drawings and full details of the dimensions including drawings for the accessories offered
- Type test certificates as per Clause 5
- End of service life disposal methods
- Evidence of Quality Management Systems used in the manufacturing process
- Evidence of Health, Safety and Environmental plans
- Evidence of financial ability to provide the level of service and support
- Origin of materials used in manufacture of the surge arresters
- Names and resumes of key team members who will be assigned to work with EFL upon successful award of the three-year supply contract (if bidder is successful)

Bidders may be asked to provide additional information during tender assessment period or following award of contract.

12.2. Samples

When requested, production samples of each item shall be submitted with the offer.

Each sample shall be delivered freight free (Delivery Duty Paid (DDP)), suitably packaged and labelled with the following information:

- Name of supplier and this contact number
- Tender number
- Any supporting data on features or characteristics

12.3. Training

Training material in the form of drawings, instructions and/or audio visuals (in CD format) are required to be provided for the items accepted under the tender. The Tenderers shall allow the cost of production and delivery of training material in the tendered prices.

The training materials should include but not be limited to the following topics:

- Handling
- Storage
- Application
- Installation
- Maintenance
- Environmental performance
- Electrical performance
- Mechanical performance
- Disposal

Offers of vendors who fail to furnish above particulars shall be rejected.

13. APPENDIX

13.1. Price Schedule

Bidders are required to complete the following price schedule and submit with the offer. EFL requires the bidding prices to be in CIF incoterms.

No.	Stock Code	Item Description	Unit Price (CIF)	Currency of bid
1	I04497	11kV Surge Arrester		
2	I04505	33kV Surge Arrester		
3		Factory Acceptance Testing (FAT) for 2 EFL Engineers.		

Bidders are to clearly indicate the currency of bid.

13.2. Technical Details – Surge Arresters

This schedule shall be completed and submitted with the offer. A separate schedule shall be provided for each item offered: **(Note these are mandatory requirements)**

Particulars	Requirements		Tenderers Response	
	11kV Surge Arresters	33kV Surge Arresters	11kV Surge Arresters	33kV Surge Arresters
Name of Manufacturer				
Origin of materials used for manufacturing of surge arresters				
Country of manufacture				
Manufactures type test certificate number				
Name of testing authority				
Impulse Withstand Voltage (peak)	95kV	200kV		
Power Frequency Withstand Voltage	38kV (rms)	95kV		
Maximum Duration of Earth Fault	≤ 3 seconds			
Earth Fault Factor as per IEC 60099-4	1.4			
Maximum Short Circuit Current, kA	20			
Discharge Class as per IEC 60099-4	Class 1			
Rated system frequency	50Hz			
Maximum system voltage, U _m , kV	12	36		
Rated voltage, U _r , kV	11	33		
Maximum continuous operating voltage as per IEC 60099-4, U _c , kVrms	9.6	28.8		
Temporary overvoltage capability (TOV) , kVrms	1s	12.8	38.5	
	100s	11.2	33.5	
	10 kA (1/2 μs)	37.5	104.9	
	5 kA (8/20 μs)	32.6	91.1	

Maximum residual voltage at steep, surge and switching impulse current with current wave, kV	10 kA (8/20 μ s)	35.0	98.0		
	20 kA (8/20 μ s)	38.9	108.8		
	40 kA (8/20 μ s)	43.8	122.5		
	125 kA (30/75 μ s)	25.6	71.5		
	250 A (30/75 μ s)	26.4	73.8		
	500 A (30/75 μ s)	27.3	76.4		
	1000 A (30/75 μ s)	28.4	79.4		
	3000 A (30/75 μ s)	30.7	85.9		
Surge impulse protective level, max, kV as per IEC 60099-5		60	130		
Steep current impulse protective level, max, kV as per IEC 60099-5		65	140		
Energy discharge capability, kJ/kV at U_r		≥ 4.5			
Long duration discharge class (current compliance)	Current A	500			
	Duration, μ s	2000			
	Discharge tolerance, %	5			
Accelerated ageing performance	Temperature, $^{\circ}$ C	115			
	Time, hrs	100			
	Watt loss	Continues decreasing			
Operating duty characteristics (Discharge current withstand)	Two 4/10 μ s current wave (U_r), kA	100			
	Low current at 2000 μ s, kA _{pk}	900			
	Discharge tolerance, %	5			
Partial discharge performance, pC as per IEC 60270		< 10			
Pressure relief withstand capability (Short circuit)	High symmetrical RMS (A), duration (s)	20kA at 0.2s			
	Low symmetrical RMS (A), duration (s)	2kA at 1s			
	Asymmetrical peak (A)	50kA at 0.2s			
Withstand Capabilities of Surge Arrester Housing					

Surge impulse withstand voltage	kVpk	95	200		
Power frequency withstand voltage for 1 min, wet	kVrms	46	116		
Creepage distance, 31mm/kV	mm	373	1116		
Permissible head load static (SLL)	N	175			
Permissible head load dynamic (SLL)	N	250			
Short circuit withstand capability (rated short circuit (withstand) current Is)	kA	20			
Minimum permissible length of the active part	mm	135	145		
Housing shield resistance	Ω	< 5000			
Packaging Details					
Packaging type		Box			
Units per box		3			
Weight of each surge arrester					
Weight of box (3 units)					

Name of Tenderer: _____

Signature of Tenderer: _____

Date: _____

13.3. Submission Requirements

All tenderers are required to complete and submit a copy of the submission requirements with their bid submissions. **(Note these are mandatory requirements)**

Requirements	Response from Bidders
Validity of bid (120 days required) (Yes/No)	
Detailed reference list of customers already using equipment offered during the last 5 years with particular emphasis on units of similar design and rating.	
List of test reports/certificates provided. (As per Clause 5)	
Minimum warranty period from time of acceptance of item required is 24 months.	
Completed price and technical schedules (Clause 13.1 and 13.2) (Yes/No)	
Complete dimensional drawings provided	
The bidding pricing to be in CIF incoterm	
Currency of bid	
Lead time of delivery after tender award	
Price review period after award of tender (months)	
Bidders company profile outlining financial, technical and production capabilities	
Disposal method after service life	
Witnessing included as part of bid (Clause 5.4). (Yes/No)	
Quality management system used in the production of surge arresters, attached certificate.	

Name of Tenderer: _____

Signature of Tenderer: _____

Date: _____

Complete the following schedule as part of the bid: (Note these are mandatory requirements)

Stock Codes	Items	Country of Manufacture	Manufacturer of product	Brand Offered	Manufactured to standards	ISO Certification of Manufacturer
I04497	11kV Surge Arrester					
I04505	33kV Surge Arrester					

Name of Tenderer: _____

Signature of Tenderer: _____

Date: _____

TENDER CHECKLIST

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 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 8th May, 2024.

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

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.