TECHNICAL SPECIFICATION FOR PREFERRED SUPPLIER FOR SUPPLY OF LINE FAULT INDICATOR

ENERGY FIJI LIMITED

MR 210/2024

Revision History & Document Control

Rev No.	Notes	Prepared By	Reviewed & Approved By	Date of Issue
1	Draft – Issued for Review	Rajiv Singh		7/7/17
2	Reviewed		Rajiv Singh	2/07/18
3	Reviewed		Mohammed Zainal Alim	11/6/24

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1. INTRODUCTION

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.

The Energy Fiji Limited (EFL) is requesting proposal for the Preferred Supplier for supply of item listed below for installation on EFL's Overhead Network. The preferred Supplier arrangement will be for a period of three (3) years from the date of signing of the contract.

This document outlines the technical requirements for Overhead Line Fault Indicator for use in EFL's distribution network.

The items covered by this specification are listed below:

Stock No.	Item Description
I01241	OVERHEAD LINE FAULT INDICATOR

Table 1.1: Items Covered Under this Specification

This Specification covers the general requirements of design, manufacture, testing, supply and delivery of overhead line fault indicators to be used in EFLs distribution network.

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) 17th July 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

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 61000-4	Electromagnetic compatibility measurements and testing
IEC 61000-6-2	Electromagnetic compatibility generic standards – Immunity for industrial environment
IEC 61089	Round wire concentric lay overhead electrical stranded conductors
IEC 60529	Degrees of protection provided by enclosures (IP code)
IEEE Std 495	IEEE Guide for testing Faulted circuit indicators
IEC 60060-1	Dielectric test
AS/NZS ISO 9001	Quality management systems -Requirements

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 line fault indicators shall be suitable for installation outdoors and shall be designed to withstand the following service conditions.

Description		Conditions
Atmosphere	:	Saliferous, corrosive and dusty
Ambient Temperature	:	Peak: 40^{o}C 24 Hour Average: 30^{o}C Annual Average: 22^{o}C Minimum: 10^{o}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.

3.2 System Conditions

Nominal Voltage	11kV
System Highest Voltage	12kV
System Frequency	50Hz
Number of Phases	3
System Earthing	Effectively Earthed
Impulse Withstand Voltage (peak)	28kV
Power Frequency Withstand Voltage	95kV (peak)

4. DESIGN AND CONSTRUCTION

4.1 General

Energy Fiji Limited, in its distribution network employs Line Fault Indicators for 11kV voltage level. The Line Fault Indicator is made of hard plastic casing with a lithium ion battery to power its board. The LFI is to measure the magnetical field (image of the current) and measure the electrical field (image of the voltage). The LFI shall be capable of expressing faults either in terms of the exceeding of an absolute current threshold (Imax, phase-phase fault), or a variation in current over a given time (di/dt, phase-earth fault) and shall be capable of indicating both transient faults and permanent faults.

4.2 Line Fault Indicator

Line Fault Indicators shall be made suitable for mounting with Helium conductor or conductors with overall diameter up to 25mm and shall be suitable for voltages up to 12kV.

The Fault Indicator housing shall be made of weather proof, robust, nonmetallic, fire retardant, UV stabilized material. The dimensions shall not be more than 200 mm (L) X 150 mm (w) or (Φ).

The Fault Indicator shall be suitable for outdoor installation with IP65 degree of protection. It shall be suitable for installation/removal on live overhead lines with a standard insulated hot stick without causing disruptions to network performance, it's accepted to use a suitable adapter provided by supplier. Also it shall withstand wind pressure without falling or moving.

The indicating mechanism shall be multi-display type with high intensity LEDs as well as highly visible reflective red colored mechanical target. The indication mechanism shall have clear 360° visibility from a distance of 50 meters during daylight and 200 meters at night.

The Fault Indicator shall be maintenance free, fully self-contained without external transformer or connections, and not require any additional source of supply. Battery for driving the indicators shall be easily replaceable using normal tools without de-soldering. It shall have a minimum of 10 years' operating life, and total continuous indicating time of 500 hours or more.

The Fault Indicator should be bi-directional and able to detect all line to line and line to ground fault conditions with built-in restraints to prevent false operation due to sudden variations in load current, proximity to other circuits, inrush currents due to feeder switching or auto recloser operation, etc.

The Fault Indicator shall be provided with Manual reset such as Magnet, Remote or any other method from ground level, in addition to the following selectable and adjustable reset options:

Automatic reset: 10 up to 30 seconds after recovering the line voltage (reenergized line).

Timed reset: From 1 up to 8 hours in steps of one hour.

The Fault Indicator shall be provided with manual pre adjusted trip current value of load currents in steps up to 500 amperes or load dependent self-adjusted value of trip current.

The Fault Indicator shall be with adjustable response time from 20 to 200ms (accuracy: ±10%) and shall be capable to prevent operation due to inrush currents.

The LFI shall be coordinated with the upstream protection system whose trip threshold can be varied accordingly to adjust to the 11kV protection system network.

The LFI when installed on a live conductor must automatically adapt to the network voltage frequency and activate the fault detection function.

The LFI shall be neutral grey (N23) in color in accordance with AS 2700 standard and be of a uniform shade.

The LFI will be in service in a tropical climate. The design of the LFI shall allow for easy inspection and cleaning.

4.3 Marking

Each Fault Indicator shall have a clear name plate engraved with following information:

- Rated voltage
- Rated frequency
- Manufacturers log/ name
- Serial number
- Year of manufacture

5. PERFORMANCE AND TESTING

5.1 General

All Line Fault Indicators shall be tested in accordance with the latest standards and as specified herein. Supplier shall provide all test results for review and acceptance by EFL.

The full range of Routine, Special and Type tests specified in relevant specifications shall be carried out as applicable.

Routine and/or special tests shall be carried out in the supplier's factory. Type test report/certificate from an independent testing agency shall be submitted to EFL.

5.2 Type Tests

All tests to be done according to applicable standards mentioned in this specification.

1. Temperature Cycling Test.
2. Water Submersion Test
3. Outdoor Weathering of Plastic Test
4. Salt Spray Test
5. Immersion Corrosion Test
6. Impact Resistance Test
7. Short Time Current Test
8. Operating Current Test
9. Time current test
10. Effect of current from adjacent conductors

5.3 Routine Tests

Following routine tests shall be carried out by the manufacturer on every Line Fault Indicator:

1. Operating Current Test
2. Reset Test
3. Instantaneous Trip Test

5.4 Acceptance Tests

The EFL may carry out acceptance test on equipment to prove it conforms 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.

5.5 Witnessing of Tests

The EFL reserves the right to witness all testing. The Supplier shall give the EFL reasonable notice of when testing will be carried out and one (1) EFL engineer 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.

5.6 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. Any item showing evidence of failure to comply with the requirements of this specification and/or does not preform as required for its intended purpose will be liable to rejection and may result in cancellation of contract.

6. RELIABILITY

Bidders are required to comment on the reliability of the equipment and the performance of the materials offered for a service life of 40 years under the specified system and environmental conditions.

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

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
- Pack Size
- Pack Weight

9. QUALITY REQUIREMENTS

Tenderers are required to submit evidence that the design and manufacture of line fault indicators 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 line fault indicators will depend on the EFL's project works and for operation and maintenance purposes. An estimate movement of the item are outlined in the table below but it will not be purchase 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.

Bidders must not base their price on EFL to buy the entire quantity mentioned below within the contract period.

Stock No.	Item Description	Approximate 3 Years Stock Movement
I01241	OVERHEAD LINE FAULT INDICATOR	42

11. PRODUCT WARRANTY PERIOD

The bidder is 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 item offered, (in addition to the completed Specification Requirement and Guaranteed Performance schedule) the bidder will submit the following information with their tender:

- 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
- Type test certificates as per Clauses 5
- Sample inspection and test plans
- End of service life disposal methods
- Detailed procedure for installing the item and storage
- Evidence of Quality Management Systems
- Evidence of Health, Safety and Environmental plans
- Evidence of financial ability to provide the level of service and support
- Origin of materials used in manufacturing of the line fault indicators
- 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 sample of the item shall be submitted with the offer.

Sample shall be delivered freight free, suitably crated and packaged and labelled with the following information:

- Name of supplier and this contact number
- Contract item numbers and 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. Technical Details – Line Fault Indicator

This schedule shall be completed and submitted with the offer.

Application	Requirement	Manufactures Comments
Distribution network voltage	7kV to 12kV	
Power frequency	50Hz	
MV neutral arrangement	Impedant, solidly grounded	
Conductor diameter	5mm to 25mm	
Fault Detection - Parameters		
di trigger setting	6-12-25-60-90-120-160 A	
Imax trigger	100-200-500-800 A	
Transient fault detection	On or Off	
dt value for di/dt operation	30ms ±10ms	
Inrush restraint duration	3s	
Loss of voltage condition	U<45% Un	
Fault confirmation	Voltage drop within 70s after fault detection	
Reset (Permanent Faults)		
Automatic power return reset	Voltage presence during 70s	
Timer reset	2-4-8-16 hours	
Manual reset	By magnet	
Fault Indication		
Indication	High intensity LEDs	
Light power	40 lumens	
Visibility angle	360^{o}	
Flash period for permanent faults	1 flash every 3s up to 2 hours	
Flash period for transient faults	2 flashes every 12s up to 8 hours	
Standard total flash duration	800 hours	
Power Supply		
Lithium battery life expectancy	Up to 10 years	
Environment		
Operation temperature	Up to 40^{o}C	
Storage temperature	Up to 40^{o}C	
Protection level	IP 65 (IEC 60529)	
Mechanical		
Dimensions	Not more than 200mm (L) x 150mm (w)	
Net weight	Not more than 400g	
Wind resistance	Up to 150 Km/hours	

Name of Tenderer: _____

Signature of Tenderer: _____

Date: _____

13.2. Submission Requirements

All tenderers are required to complete and submit a copy of the submission requirements with their bid submissions.

Requirements	Response from Bidders
Completed technical details (Clause 13.1) (Yes/No)	
Training included as part of Bid. (Yes/No)	
Witnessing included as part of bid. (Yes/No)	
Payment conditions.	
Delivery Term. (CIF preferred)	
Price review period after award of tender. (months)	
Bidders company profile outlining financial, technical and production capabilities.	
Detailed reference list of customers already using equipment offered during the last 5 years with particular emphasis on units of similar design and rating.	
Quality management system used in the production of LFI, attached certificate.	
Health, Safety and Environmental plans.	
Detailed receiving, handling and storage details.	
Minimum warranty period from time of acceptance of LFI.	
Sample inspection and test plan.	
Typical installation manual for fuses.	
Disposal method after service life.	
Complete dimensional drawing.	
List of Type test certificates provided. (As per Clause 5.2)	
Sample routine test certificates.	

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 17th July, 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.