

ENERGY FIJI LIMITED



MR 202 / 2021

SUPPLY AND INSTALLATION OF METER TEST
BENCH

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SECTION 1: INTRODUCTION

Energy Fiji Limited (EFL) became a corporatized entity on 16th April 2018. It is responsible for the generation, transmission, distribution and retail of electricity throughout the main islands of Fiji.

EFL currently operates two Meter Testing Stations located in Suva and Lautoka and are currently tasked with testing all electricity meters which are used throughout the nation.

The demand for using new generation of energy metering continues to increase and besides this, we have a failing asset that needs to be replaced. EFL would therefore like to procure a replacement meter test bench for the Meter Testing Station at EFL's Navutu Depot.

1.1 Invitation to Tender

Energy Fiji Limited hereby invites tenders (sealed bids) for the supply, installation, training & warranty for a Meter Test Bench/Work Station at Lautoka by April 2022 or such other time as may be agreed between EFL and the successful bidder. The project referred to in this invitation as **"Meter Test Bench"**.

1.2 Documents Enclosed

The following documents (Tender Documents) are enclosed:

1. This Invitation to Tender
2. Conditions of Contract
3. Technical Specification
4. Form of Tender (SCHEDULE 1)
5. Agreement Form (SCHEDULE 2)
6. Form of Performance Guarantee (SCHEDULE 3)
7. Appendix to Tender (SCHEDULE 4)

One set of the tender is provided electronically to prospective bidders and further copies of the documents will be provided by EFL upon written request from bidders.

Unless the context otherwise requires, the definitions and rules of interpretation set out in the conditions of Contract shall apply to this Invitation.

SECTION 2: INSTRUCTIONS TO BIDDERS

Please refer to Section 3 for Detailed Technical Specifications

2.1 Confidentiality

The Instructions made available to each Bidder only on the condition that the Bidder will not disclose to any third party:

- a. any information whatsoever concerning the works, EFL, or the tendering process, or set out in the Tender Documents
- b. any part of the tender documents
- c. any existence of the tender process

Nevertheless, a Bidder may disclose confidential information

- I. to its officers, employees, advisers and contractors for the purpose of completing its Tender (if successful) the Works
- II. if required to do so by Law, and
- III. if it is already publicly available otherwise than through any breach by the Bidder of its obligations of confidentiality

EFL retains any and all proprietary rights in the Confidential Information.

A Bidder will provide and maintain a copy on request to EFL of, a list of every person or entity receiving the Confidential Information in terms of this clause. Before the Bidder discloses Confidential Information under this clause to any third party, the Bidder will ensure by deed that the third party agrees to be bound by the confidentiality obligations set out in this clause

2.2 COMMUNICATIONS IN RELATION TO THIS TENDER

All communication in relation to this tender must be directed to the Manager Procurement, Inventory & Supply Chain who will then be responsible for disseminating to the Project Manager(s). The contact details of this person are given below:

Jitendra Reddy
Manager Procurement, Inventory & Supply Chain
2 Marlow Street,
Suva, Fiji
Phone: +679 3224 360
Email: JReddy@efl.com.fj

2.3 Tender Submission

2.3.1. Tender Closing Time

Tenders must be received by the EFL no later than **4.00pm Wednesday 17th November, 2021.** (Fiji Standard Time).

2.3.2 Submission Details

Overseas Bidders

Electronic copies of the tender bid must be uploaded in the **Tenderlink** Electronic Tender Box no later than **4:00pm Wednesday 17th November, 2021.**

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

Due to COVID 19 restrictions on movements, EFL will not accept any hard copy submission.

This tender closes at **4.00pm Wednesday 17th November, 2021**

For further information or clarification please contact our Supply Chain Office on phone (+679) 3224360 or (+679) 999 2400 or email us on tenders@efl.com.fj

Lowest bid will not necessarily be accepted as successful bid.

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.

Bidders must fill in Schedules & Forms in SECTION 5 as part of the tender submission.

2.4 Costs of Tender Preparation

All costs related to preparation and submission of the tender (including site visit) shall be borne by the bidder/tenderer and shall be at no cost to EFL

2.5 Meter Test Room Visit

Bidders may request to visit the Western Meter Testing Station located at Navutu Depot during normal working hours (8am to 4:30pm) and normal weekdays (Monday to Friday). However, prior approval must be sought from EFL in accordance with **Clause 2.2.**

EFL will try to accommodate each request, but access to the Meter Testing Station will be at the sole discretion of EFL subject to EFL's HSE procedures and rules, and current pandemic restrictions

In undertaking visits, the bidder will do so at its own cost and shall comply with EFL's OHS Policies, Rules & Regulations, and shall be deemed to have agreed to indemnify and keep indemnified EFL and

their respective employees, agents and advisors from and against all claims, liabilities, costs, damages or expenses which any of them may suffer or incur as a result of the actions of the bidder (including the actions of the bidders' employees agents and advisors), including the undertaking of any remedial work required as a result of such actions. Whilst in the Meter Testing Station, all communication shall be directed to the Project Manager who will be on site.

SECTION 3: TECHNICAL SPECIFICATIONS

3.1 Extent of Work

Under the Fiji Electricity Act 2017 the testing and calibration of all energy meters has been prescribed.

EFL intends to replace the existing **Old Meter Test Bench** with a “state of the art” automated meter test bench at its Meter Testing Station in Navutu.

Current setup of the Meter Testing Station as well dimensions of the Old Meter Test Bench are given in **Appendix 1**

3.2 Scope of Contract

The scope of this Contract is for complete Supply, Installation, Commissioning, Training & Warranty of one Meter Test Bench/Work Station at the Meter Testing Station located in Navutu Depot, Lautoka.

The Contractor shall develop and execute a suitable work program to ensure that the entire project is successfully completed and on time. The Bidder’s Work Program must be submitted with the Tender Documents.

The Bidder should also take complete responsibility for all works such as transportation from the port(s) to the Navutu Meter Testing Station, as well as associated cabling works.

The existing (old) Meter Test Bench is to be carefully dismantled and handed over to EFL’s Project Manager.

3.3 Power System Details

The System Details for Low Voltage in Fiji are stated below:

EFL supplies energy using alternating current (ac)

- i. at single phase 2 wire system at 240Volts $\pm 6\%$
- ii. at 3 phase 4 wire systems at 415Volts (phase to phase) and 240Volts (Phase to Neutral)
- iii. or in the case of High Voltage at 3 phase 3-wire system
- iv. or such other voltage authorized by the Authority

The system frequency is 50 Hz

Symmetrical Fault Level Ratings are given below

	132kV	33kV	11kV	0.415kV
Fault Rating (MVA)	4500MVA	1125MVA	250MVA	25MVA
Fault Rating (kA)	20kA	20kA	13.1kA	35kA

3.4 Weather Conditions

Fiji has a tropical climate and details are given below:

Daily Ambient Temperature	32 °C
Maximum Ambient Temperature	40 °C
Annual Average Ambient Temperature	30 °C
Minimum Ambient Temperature	5 °C
Relative Humidity	90%
Attitude	< 50m

All plant/equipment provided must be rust proof, vermin proof and weather proof and designed to be suitable for the abovementioned conditions.

3.5 General Design Criteria

3.5.1 Insulation Co-ordination

The design of the meter test bench shall be such that insulation co-ordination is provided between different components of items within the test bench and also with other equipment.

3.5.2 Interchangeability

Corresponding items or parts shall be interchangeable as much as possible.

3.5.3 Maintainability

The Meter Test Bench supplied under this Contract shall be maintainable. The Bidder must provide all necessary tools and equipment as well as operations and maintenance manuals required for this purpose. All special tools shall be supplied by the contractor in 2 sets.

3.5.4 Ventilation

Cubicles and similar enclosed compartments shall be adequately ventilated to restrict condensation. All components shall be suitably protected against corrosion and fully tropicalised.

3.5.5 Risk of Fire

All apparatus, cabling and connections shall be designed and arranged to minimise the risk of fire and any damage which might be caused in the event of fire.

3.6 Quality of Materials and Workmanship

All materials used under this contract shall be new and of the quality and class most suitable for working under the conditions specified and shall withstand variations of temperature, atmospheric conditions arising under working conditions without distortion or deterioration or the setting up of undue stresses in any part and also without affecting the strength and suitability of the various parts of the work which they may have to perform.

All work shall be carried out in a neat and professional manner to the approval of the Project Manager.

3.7 Standards

Generally, IEC standards are to be adopted at all times. British and Australian/New Zealand Standards may also be applied wherever necessary. Any other national or international standard may also be used as long as they are equivalent or superior to the corresponding IEC standard. In such an instance, a copy of the relevant standard must be forwarded to the Project Manager(s).

The design, construction and performance requirements must be fully tested. The Meter Test Bench must be fully certified by a recognised International Testing Institution.

In accordance with the Fiji Electricity Act, any equipment or apparatus must fully comply with AS/NZS Wiring Rules. According to the AS/NZS 3000:2018 Wiring Rules, electrical equipment shall be selected to satisfy the following provisions:

- a) Safe Design & Construction
- b) Proper functioning under external influences to which the electrical equipment is expected to be exposed
- c) prevention of any adverse effects that the electrical equipment might cause on the electrical installation

EFL is guided by the abovementioned wiring standards and wiring regulations. Any equipment introduced in Fiji must meet the requirements of AS/NZS Wiring Rules

3.8 Detailed Design of Meter Test Bench

The detailed design and installation of the Meter Test Bench must be carried out by the Contractor in accordance with acceptable standards and codes of practice.

Notwithstanding the specifications, technical schedules and requirements specified by the tender document, the successful Contractor shall be fully responsible for ensuring that the design, manufacture and construction of all items of the Test Bench and associated equipment under this Contract to be fully compliant, functional and compatible with each other technically and otherwise, complying with IEC and/or other relevant standards and safety regulations applicable and to have the installation complete in all respects including training and warranty.

3.9 Meter Test Bench and Equipment to be Supplied

The Meter Test Bench and associated materials and equipment supplied under this Contract shall be of proven design, manufacture and construction and shall have been in commercial operation for at least five (5) years without any negative history. The Bidder should submit a list of past orders, indicating the type of equipment, location, country etc. in support of this information. Type test certificates or other certifications from other independent International organizations may also be furnished.

The Contractor shall guarantee the availability of spare parts for all items of the Test Bench and equipment for a period of at least fifteen (15) years.

3.10 Inspection & Testing

Type test certificates shall be furnished for all new items of plant and equipment with the tender.

The Contractor shall, at its own cost, carry out all routine tests as or relevant IEC or equivalent standards.

EFL will require their representative to inspect the test bench and equipment offered by the successful bidder, prior to shipment, under this contract and to witness some of the type tests and routine tests. The associated costs should be included in the tender price.

All commissioning tests shall be carried out in accordance with relevant IEC or equivalent standards. All tools, equipment and instruments for carrying out such tests shall be made available by the Contractor

3.11 Training of EFL Personnel

EFL requires 2 EFL personnel to be attached to the Contractor's Project Team throughout the entire duration of the project. They are to be trained on installation, operation, maintenance of the meter test bench and associated equipment supplied under this Contract.

The 2 EFL personnel shall not form part of the Contractor's Team for the execution of project but must be attached purely for training purposes.

The cost of the associated training should be included in the Tender Price.

The successful bidder shall forward a suitable training program for approval by the Project Manager

Kindly note for any services conducted (including training), there is an additional withholding tax of 15% charged on the associated training. Kindly ensure the final bid incorporates this into the bid price. For more information on taxing, you may visit www.fracs.org.fj

3.12 Tools & Equipment

The bidder shall submit a list of tools and equipment required for the successful operation and maintenance of the installation and shall include the cost of supplying such tools and equipments in the price schedule.

3.13 Spares

The bidder shall forward a list of manufacturer's spare parts required for the operation and maintenance of the plant and equipment supplied under this Contract for a period of 15 years.

The cost of these spare parts shall not form part of this Contract but should be shown in a separate price schedule.

The Contractor shall ensure the availability of spare parts for all items of the equipment for a period of at least fifteen (15) years.

3.14 Technical Literature – Operations and Maintenance Manuals

Bidders shall furnish technical literature including catalogues, test certificates etc. in support of plant and equipment offered by him with the tender.

The successful bidder is to interface existing and new equipment drawings and a set of original drawings.

The successful Contractor shall forward six (6) copies of all operations and maintenance manuals, spare parts, catalogues, detailed schematics and wiring diagrams and all other documents required for successful operation and maintenance of Meter Test Bench. The originals of the drawings in transparent oil paper and one copy in digital format (dxf or dwg) are required to be handed over to the Project Manager(s).

3.15 Type Test Certificates

Copies of all type test certificates for all new plant and equipment shall be furnished as evidence in support of compliance with the specifications.

The Contractor shall furnish copies of certificates of all routine tests, inspection tests and any other type of tests, which would have to be performed at a later stage.

3.16 Existing Conditions & Space

The Bidder is required to ascertain for himself the existing conditions, including limitation of space, geographical, climatic or other considerations.

The Bidder shall satisfy himself of the suitability of the existing meter room for the installation of the Test Bench and equipment to be supplied.

3.17 Packing

Equipment shall be carefully packed for transport and shipment in such a manner that it is protected from all dust, and climatic conditions during loading, transport, unloading, and subsequent storage in the open.

Equipment shall be suitably packed and protected against vibration, movement and shock which may occur during loading and transport. Particular care in packing shall be taken when the apparatus is transported by road. Instruments and fragile items shall be packed separately. All items, which include delicate equipment, shall be suitably sealed to prevent corrosion.

3.18 Program

Within 14 days of acceptance of the tender, the Contractor shall provide the Project Manager(s) with two (2) copies of the Program of Work covering manufacture, test, delivery and installation.

The Program shall conform to the general requirements of Schedule E unless otherwise approved by the Project Manager(s).

3.19 Annual Certification of Meter Test Bench & Energy Meters

The Trade Measurement Legislation provides that all instruments used for Trade purpose must have a pattern approval certificate. Therefore, before an instrument is inspected by the Department of National Trade Measurement & Standards, the instrument's design and performance must be certified. Fiji accepts instruments that have Pattern Approval Certificate from National Standards Commission Australia for Pattern Approval Examination.

The Meter Testing Stations are tested annually under the Fiji National Trade Measurement Decree 1989 by the Department of National Trade Measurement & Standards. After the Meter Test Bench is certified, the electrical energy meters are selected randomly and tested. The test results are then verified by comparison.

Bidders are required to check with the Ministry Of Commerce, Trade, Tourism & Transport regarding National & Trade Measurement Decree for further clarification. Their address is:

The Director
Department of National Trade Measurement & Standards
PO Box 2118
Government Buildings
Suva
Fiji

SECTION 4: DETAILED TECHNICAL SPECIFICATIONS

4.1 Introduction

This section details the minimum requirements for an energy meter test system. The system shall be fully automated and shall be comprised of a self-contained, single three phase meter test and calibration station with interface facilities, computer controlled and Windows based meter software. The system shall be capable of testing automatically single phase as well as three phase electromechanical, static or electronic/digital type active and reactive energy meters, including three phase meters with closed IP links.

The system must work from an un-stabilized mains supply.

4.2 Test Station

4.2.1 Standards

Generally, IEC standards are to be adopted at all times. British and Australian/New Zealand Standards may also be applied wherever necessary. Any other national or international standard may also be used as long as they are equivalent or superior to the corresponding IEC standard. In such an instance, a copy of the relevant standard must be forwarded to the Project Manager(s).

In accordance with the Fiji Electricity Act, any equipment or apparatus must fully comply with AS/NZS Wiring Rules.

4.2.2 Testing Process

The testing process of the Test Bench shall be fully automatic and computer controlled. The equipment shall be capable of performing multiple load points test in sequence and also do the individual tests when selected by the Operator from the computer screen menu, via the computer keyboard.

4.2.3 Measurement System

The system shall compare values of voltage and current using the reference standard meter and not by using measuring transformers. The voltage and current generated shall be measured by the reference standard meter directly so that the accuracy of the standard meter is the accuracy of the whole system. The process control, calculation, data storage and recording must be carried out automatically.

4.2.4 Capacity

The Test Bench should be able to test up to twenty (20) single phase or twenty (20) 3 phase meters at any one time. The Offer must provide a complete system to test automatically single phase and 3 phase electromechanical, static or electronic type active and reactive energy meters, including three phase meters with closed IP links.

4.2.5 Test Rack

The Test Rack should be able to accommodate up to twenty (20) single phase or twenty (20) 3 phase meters completely assembled and shall be provided with scanning devices suitable for all types of meters. The scanner shall be easily adjustable in any direction to accommodate all types of meters.

4.2.6 Safety

All safety switches, protective devices, circuit breakers and fuses must be included. Use of LASER scanning device is not acceptable due to the possibility of eye damage.

4.3 Voltage & Current Generation System

4.3.1 Power Supply

Single phase 240V and three phase 415V ($\pm 5\%$) at frequency 50Hz

4.3.2 Operating Temperature

Maximum 40 °C of ambient temperature

4.3.3 Humidity

Up to 90% humidity

4.3.4 Test Voltage Circuit

Single phase to neutral voltage output shall be from 50-300V and three phase to phase voltage output shall be from 80-500V. Accuracy of RMS voltage must be within 0.2% with high resolution. The signal generation shall be controlled by the computer. Full protection against overload and open circuit conditions must be provided. Also protection between voltage and current wiring must be included.

4.3.5 Test Current Circuit

The current output shall be from 1mA-120A per phase. Accuracy of RMS current must be within 0.2% with high resolution.

4.3.6 Phase Shift

The phase angle setting shall be 0 to $\pm 180^\circ$ with accuracy better than 0.1°. The quick selection for changeover for any power factor (i.e. from power factor 1 to 0.5) must be provided by the test system.

4.3.7 Frequency

The frequency output shall be from 45 to 65Hz in steps of 0.1Hz

4.3.8 Power Output

The output power of the voltage circuit shall be 500VA per phase, and the output power of the current circuit shall be 1000VA per phase.

4.3.9 Harmonic Superposition

Both voltage and current circuits shall be superimposed from the 2nd to the 10th harmonic in accordance with IEC 60687. All testing parameters shall be automatically controlled and adjusted by the pc.

4.4 High Accuracy Reference Standard Meter

The following parameters shall be tested and appear on the computer screen:

- voltage per phase
- current per phase
- frequency
- phase to phase and three phase power factor
- phase to phase and three phase active, reactive, and apparent power
- phase shift between current and voltage
- phase shift between voltage (symmetry f voltage generated)
- internal temperature

4.5 Test Rack

Proposed dimensions of the test rack shall be:

Length:	220-260cm
Width:	180-220cm
Height:	40-60cm

4.6 Process Management System

4.6.1 Computer

The computer shall be minimum intel CORE i7, 4/8 GB RAM and 1TB HD with at least 2 serial ports plus 1 parallel port for the printer, LCD monitor wide 22 inch

4.6.2 Printer

An A4 size printer laser jet type

4.7 Software

4.7.1 Characteristics of the Software

The front client software must run on Windows XP. Backend database must operate in Windows 2007 server environment. The software shall be menu driven and user friendly. It must allow control and monitor of simultaneous testing of twenty (20) three phase meters with different constraints in the same test. The constraint may be given in rev/kWh and similarly in impulse/kWh for static meters. The software must allow entry of error band tolerance for each different test point and also entry of meter parameters via the keyboard.

The average mean error and standard deviation shall be automatically calculated and printed at the end of the rest process. There shall be facility for central storage and monitoring of the testing procedures. This includes storage of results on hard disk and/or flash drives. All these information shall be compatible and be able to be transferred to other standard database such as MS Access, Excel, or any other ASCII files. Backup procedures of test results must be clearly mapped out.

The main tasks that will be executed by the software shall be:

1. Meter verification
2. Meter calibration
3. Meter Data Record

The meter verification shall allow the operator to program an unlimited number of tests with different current, voltage, and phase angle values or power factor, defining for each one an error band tolerance. The tests may be executed in sequence or individually as designed by the operator.

The meter calibration shall allow the operator to adjust the meter in the shortest amount of time possible. At the end of the sequential tests, the operator should be able to adjust those meters out of the defined tolerance ranges. The percentage (%) error of failed meters shall be displayed also on the PC screen. Graphical curve error shall also be included.

The meter data record shall allow the operator to store in MS Access database compatible data-file mainly the following information of the meters:

- manufacturer
- model
- year of manufacture
- name of owner
- serial number
- date received
- conditions of seals when received
- date tested
- mean value of error on first test
- performance after adjustment
- customer
- register value
- observations

4.7.2 Backup Facilities

The software shall be delivered in CD Rom for back up purposes

4.7.3 Self Diagnostic

Scanning head check; must be available when the whole system is ready to batch off meters. Voltage & current generation: direct communication between power amplifiers and the computer.

4.7.4 Interface Communication

Direct control with all the interface system connected to the system

4.7.5 Software Security

Edition of databases of test sequence and results shall only be possible under authorised password with Access Control. Access shall be given to allow others to see the results.

4.7.6 Manual for Hardware/Software Product

The manual shall consist of user's guides, maintenance, trouble shooting and software instructions, electrical and electronic diagrams and standard meter accuracy certificates.

All technical documentation and manuals shall be provided in the English language.

4.8 Testing

The Testing, Commissioning & Training Course shall be carried out at EFL's workplace by the Contractor.

4.9 Warranty

The above described equipment shall be provided with minimum warranty of 18 months from shipment of the goods, or 12 months after commissioning – whichever occurs earlier.

SECTION 5: SCHEDULES & FORMS

SCHEDULE 1: FORM OF TENDER

NAME OF CONTRACT: _____

To: _____

We have examined the Conditions of Contract, Employee’s Requirements, Schedules, Addenda’s, notes and the matters set out in the Appendix hereto. We have understood and checked these enclosed documents and take full responsibility of them. We accordingly offer to supply, install and complete the said works and remedy any defects, fit for purpose in conformity with these documents and the enclosed proposal, for the lump sum contract price of

FOREIGN CURRENCY (amount in words)

LOCAL CURRENCY (amount in words)

We accept your suggestion for the appointment of Dispute Adjudication Board if required. (Bidder may make a proposal)

We agree to abide by this tender until _____ and it shall remain binding upon us and may be accepted at any time before the date. We acknowledge that the Appendix to Tender forms part of our tender.

If our tender is accepted, we will provide the specified performance security, commence the Works as soon as reasonably possible after receiving the Employee’s Representative’s notice to commence, and complete the Works in accordance with the above-named documents within the stated time in the Appendix to Tender.

Unless & until a formal agreement is prepared and executed, this Tender together with our written acceptance thereof, shall constitute a binding agreement between us.

We understand you are not bound to accept the lowest or any tender you receive.

We are, yours faithfully,

Signature: _____ in the capacity of _____ duly

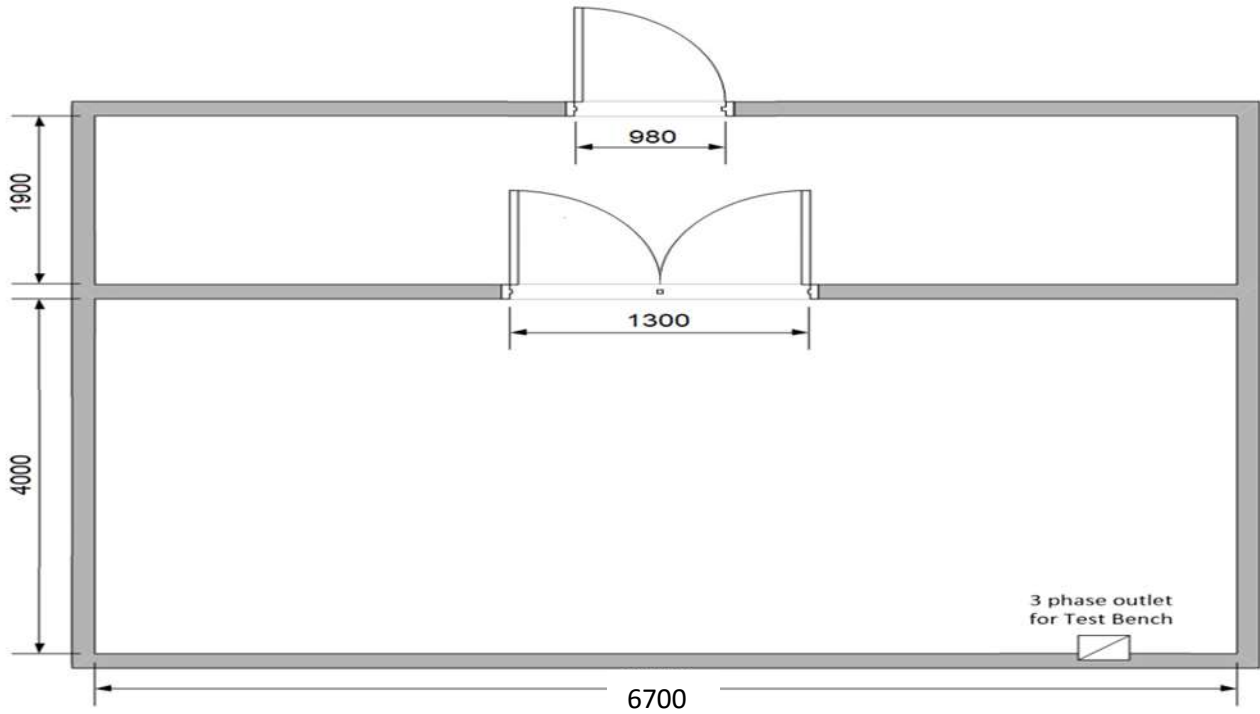


Authorised to sign tenders for and on behalf of:

ADDRESS: _____

APPENDIX 1: CURRENT METER TEST ROOM SETUP

The dimensions of the **existing** meter test station are as below.



The dimensions of the **existing** meter test station are as follows

Length	Width	Height
6700mm	4000mm	2900mm

APPENDIX 2: Current Meter Test Station Component Features

Meter test bench Features:

- 4 × Emergency stop button (2 on each side)
- max.20 × single phase meter rack (10 on each side)
- max.5 × three phase meter rack
- Dimension W 908mm ; H 1775 – max.2365mm ; T 3167mm

Control unit (STE 10) Features:

- On-off push buttons
- Circuit breaker (3Ø)
- Surveillance of the Mains power supply and protection against short circuits between **U** and **I** in the output circuits

Static power source (PSP 10) Features:

- Compact electronic voltage and current source (1Ø × 3)
- Controlled by PC via serial interface RS232C
- Phantom load generation for active and reactive power meters
- High accuracy and stability of the adjusted load independent of supply voltage deviations
- Voltage and current range:
 - Voltage 30mV – 300V
 - Current 1mA – 120A
- Output power per phase
 - Voltage : 800VA
 - Current : 1200VA

System Measuring Module (SMM 397) & Basic System Control Interface (SSI 343) Features:

- Error measurement
- Test of transmitting contact
- Definition of test impulses
- Dosage
- Measurement of the contact time
- Definition of the measurement period
- Control of the dosage
- Automatic read out of tariff units

Photoelectric Scanning Head (SH 2003):**Technical Data**

- | | |
|---|-------------|
| ➤ Supply voltage | 11 - 30Vdc |
| ➤ Max. current consumption
(without output load at disc mark scanning) | < 30mA |
| ➤ Max. current consumption
(without output load at LED scanning) | ca.5mA |
| ➤ Output impedance Ra
(at High and Low level) | ca.470Ω |
| ➤ Max. output voltage
(depending on supply voltage) | 9.5 – 28.5V |

Digital electronic reference meter (SRS 121.3) Features:

- 3 ϕ reference standard
- Precision measurement unit for AC values in the frequency range of 45- 65Hz
- Simultaneous availability of the measured values over the RS232C serial line interface
- Test of two, three and four wire meters
- Integrated measurement correction mode switching
- Easy operation due to the use of processor technology
- Operation verification with error indication
- Integrated RS232C serial line interface for data transmission and programmed operations using an external computer
- Voltage and current range:
 - Voltage 30V – 480V
 - Current 1mA – 120A

Technical Data

- | | |
|--|----------------------------|
| ➤ Auxiliary voltage | 86 -260V, 47 – 65Hz |
| ➤ Power input | max.50VA |
| ➤ Housing | 19" plug-in unit 3HE |
| ➤ Dimension | W 483 × H 133 × T 342 (mm) |
| ➤ Weight | approx. 7kg |
| ➤ Variation due to the influence of the auxiliary voltage on the measuring results | ≤0.005% at 10% variation |
| ➤ Frequency range | 45 -65Hz |
| ➤ Measured quantities: | |
| ➤ Ambient temperature | 0 — +45°C |
| ➤ Temperature coefficient | ≤0.0025% / °C |
| ➤ Influence of magnetic induction of external origin | ≤0.005% / mT |
| ➤ Voltage and current range: | |

Voltage (U) 30V – 480V
Current (I) 1mA – 120A

Safety Requirements:

CE – Certified
Isolation protection: EN 61010-1
Degree of protection: IP 20
Storage temperature: -20 — +55°C
Relative humidity: ≤85% at Ta ≤21°C
Relative humidity at 30 days/year spread: ≤95% at Ta ≤25°C

NEEDED IMPROVEMENT ON PROPOSED METER TEST BENCH

1. Three phase meter compatible all 20 positions
2. Clamp on type meter rack (pre-wired rack)
3. Testing of three phase meters with closed IP links
4. Existing MTB base flooring needs to be concrete for scanner testing stability.
5. 260mm concrete fill to replace wooden flooring before acquiring MTB in 2022.
6. Raised flooring above main floor due flood-prone location.
7. Temperature & Humidity monitoring device installed within testing facility room.
8. Sub-board with rated protection installed within facility in case of fault or surge.
9. UPS for testing equipment and Computer to minimize efl blackout effect on equipment while testing and to prolong life of hardware.
10. Wireless bar code scanner.
11. Computer Software to be the latest version(windows 10 pro) as windows xp is outdated
12. Reliable Licensed Antivirus to be preinstalled
13. Printer to have automatic double sided printing feature.
14. One portable meter testing equipment single phase and three phase used in parallel with MTR equipment.
15. Power analyzer for data monitoring MTE and ensuring PC data is as it says it is
16. Have printing capacity that of MTR log book 600mm by 300mm to file as per Electricity Act as writing is old school.

Testing stations

67.—(1) Save as provided in regulation 70, no meter shall be tested, and no certificate as to the result of a test shall be issued, except, at a testing station approved in writing by the Authority for that purpose.

(2) Every testing station shall maintain a register of all meters submitted to it and shall enter therein the following particulars in respect of every such meter:—

Name of owner.
Serial Number.
Date received.
Conditions of seals when received.
Date tested.
Mean value of error on first test.
Performance after adjustment.

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: _____