Closing Date:	25/02/2011	at 12:00pm
Our Reference:	T 03/2011	

MEPA

Subject:

Tender for the supply, delivery installation and commissioning of a Uninterrupted Power Supply (UPS) System

Tender Document:

This is available for download free of charge from:
www.mepa.org.mt

Terms of Reference

1. Background

The Malta Environment & Planning Authority (MEPA) is responsible for land use planning and environmental regulation in Malta.

As part of its ongoing improvement programme, MEPA intends to strengthen and upgrade its current ICT facilities at MEPA Head Office, Floriana. As a result of this improvement programme, MEPA intends to issue Tenders for the installation and maintenance of a new UPS system to support its ICT infrastructure.

2. Scope

The objectives of this ITT are principally three fold:

- **Installation of scalable UPS system** as defined in this ITT;
- **Preventive maintenance programme** to ensure that such facilities are maintained appropriately;
- **Corrective maintenance framework** for rectifications of faults based on 24/7 coverage.

3. Financial Offer

Tenders must be presented in Euro.

The price for the contract must include the supply, delivery installation and commissioning of both UPS units. Refer to attached BOQ.

The price shall include a two (2) year warranty on parts and labour from the date of commissioning. In addition, the batteries shall be covered by a 5 year pro-rata warranty.

The warranty shall warrant that the supplies are new, unused, of the most recent models and incorporate all recent improvements in design and materials.

A separate price is to be submitted for an annual maintenance agreement for both units.

VAT and all other taxes are to be quoted separately.

4. Timeline

The supply, delivery installation and commissioning for both units must be in 6 weeks from the date of signing the contract.

5. Business Objective

The business objective of this installation is to render the critical ICT services fail safe when the power supply is down.

6. Specifications

PART 1 – GENERAL

Section Includes

- Standards of Workmanship
- Specific Requirements for the Panels

- Installation

Related Standards

- BS 7671 - Requirements for electrical installations, IEE wiring regulations.
- IEC 61000 – Limitation of Harmonics.
- IEC 146-4 & ENV 50091-3 UPS – Performance
- EN 50091-1 / IEC 60950 / EN 60950 UPS – Safety
- EN 50091-2 / IEC 61000-4 UPS –EMC
- EN 55011 Radio Interference
- BSEN 60439 Low Voltage Switchgear
- EneMalta Electricity Supply Regulations
- Health and Safety Act and related regulations
- National Building Regulations
- Standards and Mandatory Orders issued by the Malta Standards Authority

UPS systems and associated components shall be CE Approved
The UPS manufacturer shall be ISO9001 certified

PART 2 – UPS SYSTEM

The UPS system under this ITT shall be based on the following:

- The UPS system shall support a **load of 25KW** at unity Power Factor.
- The UPS system shall be connected in a parallel using an N+1 configuration in order to provide a continuous duty redundant UPS system;
- The UPS system shall be modular type with plug-in hot swappable modules;
- The UPS system must be scalable to support at least 75KW load;
- The UPS system shall consist of the following components:
  - Rectifier/battery charger
  - Solid state invertor
  - Static switch
  - Manual maintenance bypass switch
  - Battery plant
- The UPS modules shall operate in a distributed parallel architecture;
- Each UPS module shall be complete unit with its own power and control circuits, CPU and paralleling intelligence;
- Any defective UPS module shall be automatically isolated without inhibiting normal operation of the other UPS modules. Replacement or repair of a UPS module shall be achieved without disruption to the connected load;

The UPS system shall be Online with **Double Conversation** technology with a **system efficiency of** 92% (or higher) at full load.

Operation

The UPS shall ensure continuity of electrical power of the load within the specified tolerances without interruption upon failure or deterioration of the main source for a maximum protection time determined by the capacity of the back-up batteries.

The UPS shall operate in the following modes:

Normal Supply Mode:	When mains power is present, the critical load is continuously supplied and shared equally by the invertors. The rectifier/battery charger of each UPS units derive

	alternating current (AC) power from the mains and convert it into direct current (DC) for the invertor and battery. The invertor converts back the DC into clean and regulated AC current for the critical load.
Standby Supply Mode:	The UPSs shall be switched over to standby supply without interruption of supply to the load.
Operation On Battery Power:	In the event of a mains failure, the critical load is to be supplied without any interruption through the invertors supplied by with power from the batteries, for a period of time determined by the available capacity of the batteries (30mins full load).
Battery Recharge:	When mains power has been re-instated, the rectifier/charger units shall automatically restart and gradually resume both the invertor and battery recharge loads.
Load Sharing:	The UPS system shall ensure equal sharing of the loads amongst the operational UPS modules.
Redundancy:	If a fault occurs on a unit, it shall automatically disconnect without affecting the Load.
Transfer to Bypass Mains:	If the unit is sufficient to supply the load, it shall remain in operation. Otherwise, the load shall be transferred, without interruption to the bypass source on condition that this is available and within tolerance
Synchronisation:	Synchronisation of each invertor in phase and frequency with the bypass source shall be automatic.
Transfer Back:	Transfer back to the output of the invertor shall be automatic or manual and without any loss of power quality including any interruption to the load.
Maintenance:	For personal safety during servicing or testing, the UPS system shall be designed to isolate the UPS units while continuing to supply power to the load from the other unit or mains bypass without interruption. It shall also be possible to isolate rectifier and charger from the mains sources.
Battery Maintenance:	A circuit breaker shall be included to isolate the battery from the corresponding rectifier. The UPS shall continue to supply the load without loss of quality or interruption of supply - unless the mains supply is lost.

Input Characteristics

Input Voltage (nominal)	400V 3ph
Voltage Variation	±15%
Bypass Voltage	400V 3ph
Input Frequency	50 Hz ± 2%
Input Power Factor	PF=0.99 @ 100 % load
Inrush Current	limited by soft start/max In
Input Distortion THDI	Sine-wave THDi = < 2 % @ 100% load

Quality of UPS Downstream Supply

The UPS shall accept high crest factors (3:1) without derating of the output even if all connected loads are non-linear.

Supply:	400V 3ph 50Hz
Voltage Regulation:	Static ±1% Dynamic ±5% at 100% step load Recovery 10ms to 2%
Frequency Regulator:	±0.5% when synchronised with mains ±0.01% when battery operated
Invertor Overload Capability:	125% load for 10 minutes 150% load for 1 minute
Electronic Bypass:	2000% rated current for 20ms 200% rated current for 1 minute
THD downstream:	Ph/N <5% Ph/Ph <3% for both linear and non linear loads
RFI Suppression Complies with:	EN 50091-2 EMC IEC 61000-2-2 Compatibility levels for low frequency conducted disturbances and signalling in public low voltage power supply system
Standards:	IEC 61000-3-4 Units for harmonic current content IEC61000 -4 EMC - electrical fast transient/burst Immunity ENS5011 - Units and methods of measurement of radio interference, characteristics of industrial, scientific and medical (ISM) radio-frequency equivalent - Level 1 conducted and radio led emissions VDE 0875 Grade G RFI Suppression VDE0160 Voltage transient protection EN50091 Pt 1, 2, 3 IEC 62040 Pt 1, 2, 3

Batteries

- The batteries shall be valve regulated sealed lead-acid c10 type batteries factory mounted and wired in cabinets with a service life of 10 years minimum.
- The Battery autonomy shall be **30 minutes** at full load
- The batteries shall be housed in cabinet/s comprising a floor-standing steel enclosure with dimensions and paint finish to match the UPS system cabinet/s to form a continuous suite when standing immediately adjacent to the UPS system cabinet/s. The battery cabinet/s shall have full width opening doors to permit ease of access for the purposes of maintenance and/or repair of the batteries.
- The battery system shall consist of a minimum of two parallel strings of multiple cells. Each individual string shall have its own dedicated means of electrical circuit protection.

Enclosures

- Each UPS system shall have its own secluded structure from the other UPS systems.
- Enclosures shall be in galvanised sheet steel
- Degree of Protection minimum IP21
- All PCB circuits shall be accessible
- All power and control cables shall enter the units from the bottom or from the top
- All power connections shall be properly marked and shrouded from the remaining electronic parts
- Ventilation: Fans shall be provided with any fan failure giving an alarm.

Local Control Panel

A key-pad and LED/LCD display panel shall be provided on each UPS system and shall include the following:

- Display operating parameters
- Log all parameters with date and time
- Enable forced transfer
- Enable forced shutdown
- Enable self-test
- Percentage Load
- Time remaining on Battery
- Mimic display of UPS system including invertor, rectifier and bypass supply

All the above readings should be in English

Environmental Conditions

The UPS system shall be designed to operate continuously at full load without degradation of its reliability, operating characteristics or service life in the following environmental conditions:

- UPS ambient temperature range 10℃ to 40℃
- Battery ambient temperature range 20℃ to 25℃
- Humidity 5 to 95% RH non-condensing

Interfaces

- Auxiliary Contacts: The UPS system shall have free voltage contacts for alert purposes.
- Network Interface: The UPS system shall be equipped with Ethernet card that supports TCP/IP and SNMP protocols. SNMP MIBS shall also be supplied with the UPS system
- Web-based Monitoring: The UPS system shall have web based monitoring facility which supports the following functions:
    - View system status
    - Input/output voltage readings
    - Input/output current readings
    - Alarm notification
    - Send Email notification or alerts and general notifications
    - Event logging with timestamp

Factory Test

The Tenderer shall provide Factory Tests and quality assurance certifications of the UPS system provided.

Delivery

The supplier shall include for packing and protection of the panels for delivery to site on pallets, including carriage, insurance and freight.

The supplier shall provide supervision for unloading and distribution around the site, unpacking, assembly and installation.

Installation

The Tenderer shall recommend to MEPA the interconnections necessary for the proper installation of the UPS system at the indicated site.

Installation facilities, including space, electrical power, cooling and fire suppression shall be provided by MEPA in accordance with the Tenderer's installation specifications.

The Tenderer will assume full responsibility for connecting at its expense all cabling and components of the UPS system to the power installation at the indicated site. In addition, the Tender shall provide and install all the relevant electrical and communication cables between the UPS system.

It will be the Tenderer's responsibility to ensure that the UPS system will have the necessary built-in safety measures against fire and/or other similar hazards and such measures shall be in accordance with recognised international standards.

Commissioning and Testing

If, as a result of the commissioning exercise, any items of the UPS system are found to be defective or not in conformity with this ITT specifications, the Tenderer shall with all due speed and diligence and at its expense forthwith provide a remedy acceptable to MEPA.

Where MEPA deems that any such remedy is defective or not in conformity with this ITT specifications, then MEPA shall, within seven (7) days of the test, write its reasons with the objection to the Tenderer. In any case if MEPA so requires the tests shall be repeated and the situation remedied to MEPA's satisfaction.

Maintenance and Support of UPS Systems

The Tenderer shall provide MEPA with:

a) Ongoing Preventive maintenance to all the equipment supplied under this ITT.
b) 24 x 7 corrective maintenance within the Service Levels described below:

Service Level Definition

Low Priority Fault

Low priority faults shall be attended to within 24 hours from notification and rectified or escalated within 48 hours.

Low Priority Faults includes degraded performance of any UPS related equipment.

The charges for corrective maintenance and the cost of the replacement parts shall only apply outside the warranty period.

High Priority Fault

High Priority Faults shall be attended to within 4 hours from notification and rectified within 8 hours.

High Priority Faults is when one UPS unit or system is adversely affected or is inoperative, UPS system is compromised; work can be done but severely limited.

The charges for corrective maintenance and the cost of the replacement parts shall only apply outside the warranty period.

Penalties – Service Levels
Failure by the Tenderer to attend to the calls within the periods specified above shall render the Tenderer liable to a penalty for mere delay of one hundred Euro (€100) per calendar day in excess of the periods stated.

The maximum penalty that may be incurred in relation to a specific individual fault reported shall be the equivalent of six month's maintenance charge. This penalty shall be offset against the annual maintenance charges.

Any fault call for corrective maintenance by MEPA that does not result from MEPA's equipment shall render MEPA liable to a minimum service charge equivalent to the hourly maintenance charge.

Training
The Contractor of the UPS system shall provide 5 hours of on site training for the Clients personnel.

Authorised Supplier
Provide written confirmation from the Manufacturer that the Tenderer is authorised to distribute and support the UPS system being proposed in this ITT.

Provide proof that Tenderer installed and is maintaining similar systems in at least two other sites in Malta.

Submittals

- Installation drawings: Provide schematic drawings and plan layout drawings of the each entire installation to clearly identify the proposed scheme. Shop drawings must also be produced by the final equipment supplier.

- All test results (typed), associated record "as fitted" drawings and documentation which are required for signature by the Director Corporate Services or his appointed engineer. (Such records and documentation shall be signed, by an independent Warranted Engineer on behalf of the Services Contractor, as being in conformity with the requirements of the specification.)

- Product Data: Provide manufacturers information identifying all component assemblies, accessories and wiring diagrams to ensure compliance with this document.

7. Reporting
The Contractor shall report to the MEPA's Director Corporate Services.

8. Payment
Payment will be done 45 days from the date of invoice after final successful commissioning is done. A 10% retainer will be kept for 6 months.

9. Applications
The offer should be deposited in sealed envelopes entitled '**Supply, delivery installation and commissioning of a Uninterrupted Power Supply (UPS) System**' and referenced '***T***

03/2011' to the tender box at the MEPA premises in Floriana, before 12:00pm on Friday 25th February 2011. Any technical questions concerning this call for quotations should be addressed to the Director of Corporate Services, Ing Ray Piscopo on email ray.piscopo@mepa.org.mt.

Late or incomplete submissions will not be considered. Diversion from the specification will render the offer null and void.

10. Criteria for the evaluation of offers

If the offer is technically complaint, then the cheapest offer will be selected. Technically complaint includes:

- **80%** → Adherence to specified technical requirements
- **20%** → After Sales Services and availability of spare parts & technical expertise

Bidders are to specify for how many years spare parts will be available on the market.

MEPA reserves the right to refuse any offer, even the most advantageous.

Bills of Quantity

Item	Cost in € (excluding VAT)
Stage 1: Year 0	
Supply, Install and Commissioning of UPS System (25kW in N+1 configuration) complete with battery bank for 30 minutes autonomy.	
Preventive Maintenance Programme:	
Year 1: Preventive Maintenance Programme for UPS system based on 3 visits per year. Such preventive maintenance shall be carried out on Saturday mornings to minimise any possible business impact.	
Year 2: Preventive Maintenance Programme for UPS system based on 3 visits per year. Such preventive maintenance shall be carried out on Saturday mornings to minimise any possible business impact.	
Year 3: Preventive Maintenance Programme for UPS system based on 3 visits per year. Such preventive maintenance shall be carried out on Saturday mornings to minimise any possible business impact.	
Year 4: Preventive Maintenance Programme for UPS system based on 3 visits per year. Such preventive maintenance shall be carried out on Saturday mornings to minimise any possible business impact.	
Year 5: Preventive Maintenance Programme for UPS system based on 3 visits per year. Such preventive maintenance shall be carried out on Saturday mornings to minimise any possible business impact.	
Corrective Maintenance Programme:	
Year 1: Corrective Maintenance Programme for UPS system inline with the Service Levels defined in this ITT based on 24/7 support.	
Year 2: Corrective Maintenance Programme for UPS system inline with the Service Levels defined in this ITT based on 24/7 support.	
Year 3: Corrective Maintenance Programme for UPS system inline with the Service Levels defined in this ITT based on 24/7 support.	
Year 4: Corrective Maintenance Programme for UPS system inline with the Service Levels defined in this ITT based on 24/7 support.	
Year 5: Corrective Maintenance Programme for UPS system inline with the Service Levels defined in this ITT based on 24/7 support.	
Total Cost over 5 years	

Hourly Rate for Corrective Maintenance during Office hours	
Hourly Rate for Corrective Maintenance during outside Office hours	