

PUERTO RICO ELECTRIC POWER AUTHORITY

Bid -- Purchase Order

Page 1 of 3

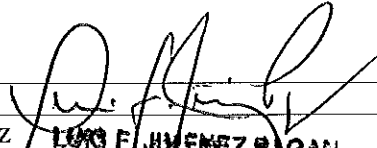
Prepared Date

: 02/26/2010

Replies Required By

: 03/11/2010

Quote Number : Q034610  
Description : APENDICE I / COMPRA E INSTALACION / UPS  
Supplier : 00540202

  
LUIS JIMENEZ PAGAN  
03-04-2010

To : BULLETIN BOARD  
DIVISION DE SUMINISTROS  
SAN JUAN PR 00936  
United States of America

From : LUIS JIMENEZ  
PR Electric Power Authority  
PO Box 364267  
San Juan PR 00936-4267  
US

Phone :  
Fax :  
Phone : (787) 289-3300

DELIVERY POINT OFFER:

DELIVERY PROMISE:

PAYMENT TERMS:

P.R. EXCISE TAXES INCLUDED

(Y/N) \_\_\_\_\_

SELLING TERMS (CHOOSE ONE)

FOB \_\_\_\_\_ FAS \_\_\_\_\_ CIF \_\_\_\_\_ C+F \_\_\_\_\_

VALIDITY: (IN DAYS)

Authorized Signature

TITLE:

S.S.:

DATE:

PH:

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Deliver To : CORPORATE INFORMATION OFFICE- ADMINISTRATOR  
LUCHETTI'S BUILDING  
8TH FLOOR  
PREPA'S CORPORATE OFFICES  
SAN JUAN  
PR  
00936

Notes: NÚM. REQ. USUARIO: 092-007-10A  
NUM. REQ. EMPAC: 10-2302  
NÚM. PUBLICACION: Q-034610

APÉNDICE NÚMERO I

CONFORME A NUESTRA:

INVITACIÓN A SUBASTA DEL 26 DE FEBRERO DE 2010, CON APERTURA PROGRAMADA PARA EL 11 DE MARZO DE 2010, A LAS 9:30 AM .

LOS LICITADORES SON INFORMADOS COMO SIGUE:

LA FECHA DE APERTURA DE LA SUBASTA SE MANTIENE INALTERADA EL:

DÍA: 11 DE MARZO DE 2010  
HORA: 9:30 AM

CON LOS SIGUIENTES CAMBIOS:

AL LICITADOR AGRACIADO SE LE SOLICITARÁ LO SIGUIENTE;

REQUISITOS DE SEGUROS:

- A) SEGURO COMPENSACIÓN PARA ACCIDENTES EN EL TRABAJO - FSE
- B) SEGURO DE RESPONSABILIDAD PATRONAL
  - 1) LÍMITE DE \$1,000,000 POR PERSONA EN EL CASO DE LESIONES CORPORALES Y \$1,000,000 POR ACCIDENTE
- C) SEGURO COMPRENSIVO DE RESPONSABILIDAD GENERAL
  - 1) LÍMITE DE \$1,000,000 POR OCURRENCIA Y DE \$1,000,000 AGREGADO QUE INCLUYA CUBIERTA DE OPERACIONES COMPLETADAS Y PRODUCTOS.
- D) SEGURO COMPRENSIVO DE RESPONSABILIDAD AUTOMÓVIL
  - 1) \$1,000,000 LÍMITE SENCILLO COMBINADO
- E) FIANZA DE EJECUCION 20%

LOS LICITADORES INTERESADOS DEBERAN COORDINAR VISITA AL AREA DE LA INSTALACION, CON EL ING. MANUEL VELEZ , TEL 787-5214840/4226

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Line Number	Item Number/Requisition	Quantity Required	Unit Price
Commodity Code/Description		UOM	UOM
Manufacturer Name		Lead Time	Total Line Value
Reference			Discount %
Description			

1 D084086/10-0000002302

1.00

EACH

UPS (UNINTERRUPTIBLE POWER SYSTEM) DE 80 KVA, DE ACUERDO A LAS ESPECIFICACIONES QUE SE INCLUYEN.

INCLUYE INSTALACION EN EL CENTRO DE COMPUTOS DEL EDIFICIO LUCCHETTI EN SANTURCE.

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Supplier : 00540202

*[Handwritten Signature]*  
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02-26-2010

To : BULLETIN BOARD  
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FECHA DE APERTURA: 03-11-2010

HORA: 9:30 AM

LUGAR: SALON DE SUBASTAS 3 ER PISO EDIFICIO NEOS, SANTURCE

NOTAS ESPECIALES:

1. PARA ESTA SUBASTA LA AEE NO ACEPTARÁ COTIZACIONES POR FAX Y/O CORREO ELECTRONICO.
2. LOS LICITADORES COTIZARAN LOS MATERIALES DE ACUERDO A ESPECIFICACIONES, TERMINOS Y CONDICIONES DE LA AUTORIDAD.
3. TIENEN QUE INCLUIR LITERATURA PARA EVALUACION TECNICA.
4. CUALQUIER DUDA CON ESTA SOLICITUD DE PRECIOS FAVOR DE ENVIARLA POR ESCRITO A LUIS F. JIMÉNEZ PAGÁN, SUPERVISOR DE COMPRAS PRINCIPAL, VIA FAX AL 787-521-3170. TAMBIEN PUEDE LLAMAR AL 787-521-3034/3035 y l-jimenez-dsad@prepa.com
5. INCLUIR COPIA DEL CERTIFICADO DE ELEGIBILIDAD DEL REGISTRO ÚNICO DE LICITADORES DE LA ADMINISTRACIÓN DE SERVICIOS GENERALES DEL ESTADO LIBRE ASOCIADO DE PUERTO RICO.
6. SE INCLUYEN ESPECIFICACIONES ( UNINTERRUPTIBLE POWER SYSTEM - UPS - 80 HVA) (10 PAGES.)
7. LOS LICITADORES INTERESADOS DEBERAN COORDINAR VISITA AL AREA DE LA INSTALACION, CON EL ING. MANUEL VELEZ , TEL 787-5214840/4226
8. EL LICITADOR AGRACIADO SE LE SOLICITARÁ FIANZA DE EJECUCION 20%

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1	D084086/10-0000002302	1.00	
		EACH	

UPS (UNINTERRUPTIBLE POWER SYSTEM) DE 80 KVA, DE ACUERDO A LAS ESPECIFICACIONES QUE SE INCLUYEN.

INCLUYE INSTALACION EN EL CENTRO DE COMPUTOS DEL EDIFICIO LUCCHETTI EN SANTURCE.

REQUISITOS Y DOCUMENTOS GENERALES:

1. TODO PROVEEDOR QUE INTERESE PARTICIPAR EN LOS PROCESOS DE COMPRAS EN LA AUTORIDAD DE ENERGIA ELECTRICA, TIENE QUE PERTENECER AL REGISTRO UNICO DE LICITADORES DE LA ADMINISTRACION DE SERVICIOS GENERALES DEL ESTADO LIBRE ASOCIADO DE PUERTO RICO Y AL REGISTRO DE LICITADORES DE LA AUTORIDAD DE ENERGÍA ELÉCTRICA.
2. TIENE QUE ESTAR REGISTRADO Y ACTIVO EN EL REGISTRO DE LICITADORES DE LA AUTORIDAD DE ENERGÍA ELÉCTRICA.
3. TIENE QUE ESTAR EVALUADO Y/O CALIFICADO PARA OFRECER LOS BIENES Y SERVICIOS SOLICITADOS ANTES DE SOMETER SU PROPUESTA.
4. LOS LICITADORES TIENEN QUE INCLUIR CON SU COTIZACIÓN UNA DECLARACIÓN JURADA DE NO CONFLICTO DE INTERESES.

GENERAL REQUIRED DOCUMENTS AND REQUIREMENTS

1. BIDDERS WHO HAS AN INTENTION TO PARTICIPATE IN PREPA'S PURCHASING PROCESSES SHALL BE REGISTERED AND ACTIVE IN PUERTO RICO'S GENERAL SERVICES ADMINISTRATION BIDDERS REGISTRY OFFICE AND PUERTO RICO'S ELECTRIC POWER AUTHORITY BIDDERS REGISTRY OFFICE.
2. BIDDERS MUST BE REGISTERED AND ACTIVE IN PREPA'S SUPPLIERS' REGISTRATION OFFICE.
3. ALL POSSIBLE BIDDERS MUST BE QUALIFIED AND/OR EVALUATED TO PROVIDE SERVICES OR GOODS BEFORE A PROPOSAL SUBMISSION.

PUERTO RICO ELECTRIC POWER AUTHORITY

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4. BIDDERS SHALL INCLUDE PREPA'S SWORN STATEMENT OF NON- CONFLICT WITH PROPOSAL DOCUMENTS.

CLAUSULAS PARA PAGOS DE IMPUESTOS ESTATALES Y FEDERALES

EN CUMPLIMIENTO CON LA SECCIÓN 2906 DEL ARTÍCULO 2, DEL CÓDIGO DE RENTAS INTERNAS DE PUERTO RICO, LA AUTORIDAD DE ENERGÍA ELÉCTRICA ESTÁ EXENTA DEL PAGO DEL ARBITRIO GENERAL DEL 6.6%. ADEMÁS, A PARTIR DEL 15 DE NOVIEMBRE DE 2006, ESTÁ EXENTA DEL PAGO DEL IMPUESTO A LA VENTA Y USOS (IVU) ESTATAL Y MUNICIPAL POR VIRTUD DE LA SECCIÓN 2508 DE LA LEY 117 DEL 4 DE JULIO DE 2006, CONOCIDA COMO LA LEY DE JUSTICIA CONTRIBUTIVA.

\* LAS FACTURAS TIENEN QUE DETALLAR EL CONCEPTO DE LA COMPRA O SERVICIO.

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LOCAL AND FEDERAL TAXES CLAUSE

IN COMPLIANCE WITH PUERTO RICO'S INTERNAL REVENUE SERVICE CODE, SECTION 2906, ARTICLE 2, PUERTO RICO ELECTRIC POWER AUTHORITY IS EXEMPT OF 6.6% TAX PAYMENT, ALSO, STARTING ON NOVEMBER 15TH, 2006; AND IN ACCORDANCE TO LAW 117 OF 4TH OF JULY OF 2006, KNOWN AS LEY DE JUSTICIA CONTRIBUTIVA ; PREPA IS EXCEMPT OF IVU (IMPUESTO A LA VENTA Y USOS ESTATAL Y MUNICIPAL) TAX PAYMENT.

INVOICES SHALL INCLUDE ALL DETAILS RELATED TO GOOD OR SERVICE PURCHASED.

INSTRUCCIONES PARA PARTICIPAR EN SUBASTA FORMAL

1. SE INCLUYEN INSTRUCCIONES ESPECIALES PARA ESTA INVITACIÓN A SUBASTA FORMAL, ASÍ COMO LOS DOCUMENTOS QUE EN ELLA SE MENCIONAN.

2. LOS LICITADORES QUE INCLUYAN EN SU COTIZACIÓN SUS TÉRMINOS Y CONDICIONES DE VENTA O SERVICIO SERÁN DECLARADOS NO RESPONDIENTE. FAVOR VER EL ARTÍCULO 24 DE LAS INSTRUCCIONES A LOS LICITADORES.

3. GARANTÍA DE LA PROPUESTA

EL LICITADOR SOMETERÁ CON SU PROPUESTA UNA GARANTÍA DE LICITACIÓN (BID BOND) POR LA CANTIDAD DE 10 PORCIENTO DEL PRECIO TOTAL COTIZADO. LAS PROPUESTAS QUE NO INCLUYAN ESTA GARANTÍA SERÁN RECHAZADAS.

4. LA AEE NO ACEPTARÁ ESTA COTIZACIÓN POR FACCIÓN MIL U OTROS MEDIOS ELECTRÓNICOS.

5. NO SE OTORGARÁ CONTRATO DE CLASE ALGUNA EN EL CUAL NO SE ACOMPAÑE, PREVIO A LA FIRMA, UNA CERTIFICACIÓN DEL DEPARTAMENTO DE HACIENDA DONDE ESTABLEZCA QUE ESTÁ AL DÍA EN EL PAGO DE CONTRIBUCIONES O POSEE ALGÚN PLAN DE PAGOS.

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FORMAL BLIND SEAL BID INSTRUCTIONS

1. SPECIAL INSTRUCTIONS AND OTHER DOCUMENTS MENTIONED IN THIS

**PUERTO RICO ELECTRIC POWER AUTHORITY**

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PUBLICATION ARE ATTACHED.

2. BIDDERS THAT INCLUDE THEIR OWN TERMS AND CONDITIONS WILL BE DISQUALIFIED AUTOMATICALLY. (SEE INSTRUCTIONS TO BIDDERS, ARTICLE 24)

3. BID PROPOSAL WARRANTIES:

A 10% OF A PROPOSAL TOTAL BID BOND IS REQUIRED FOR THIS BID. PROPOSALS THAT NOT INCLUDE REQUIRED BID BOND WILL BE DISQUALIFIED.

4. PROPOSALS WILL NOT BE ACCEPTED BY FAX OR E-MAIL.

5. PREPA WILL NOT SIGN ANY CONTRACT OR PO WITHOUT A PUERTO RICO I.R.S. NO DEBT CERTIFICATION.

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Q. 034610  
LUIS F. JIMENEZ PAGAN  
*R. J. R.*

**AUTORIDAD ENERGÍA ELÉCTRICA**  
**OFICINA DE INFORMÁTICA COORPORATIVA**

**UNINTERRUPTIBLE POWER SYSTEM (UPS) 80KVA SPECIFICATION**

---

1. Scope

1.1 The System

This document describes a three-phase continuous duty, on-line, solid-state uninterruptible power system referred to as the UPS. The UPS operates in conjunction with the existing building electrical system to provide power conditioning, back up and distribution for electronic loads. The system consists of an UPS module, one or more maintenance-free battery packs, options and accessories.

2. System Description

2.1 The UPS module shall consists of the following mayor components:

- 2.1.1 Inverter
- 2.1.2 Rectifier / Charger
- 2.1.3 Static Bypass
- 2.1.4 Full maintenance / service bypass
- 2.1.5 Emergency power off (EPO)
- 2.1.6 Input / Output and bypass circuit breakers
- 2.1.7 Microprocessor controlled logic and control panel with alarm indicators and digital metering display.

2.2 General Characteristics

This computer – grade power UPS shall have the following attributes:

- 2.2.1 True on-line / dual-conversion
- 2.2.2 Automatic restart / reverse transfer operation
- 2.2.3 Generator Compatible
- 2.2.4 IGBT / PWM technology
- 2.2.5 Provide high – quality AC power for sensitive electronic equipment loads.
- 2.2.6 Field – installable power upgrade
- 2.2.7 On-line battery test
- 2.2.8 Front Access

# UNINTERRUPTIBLE POWER SYSTEM 80KVA SPECIFICATION

## 2.2.9 Easy to operate

- 2.2.10 Redundant cooling fans and power supplies.
- 2.2.11 Integrated Power Distribution Module

## 3. Standards

The UPS shall meet the requirements of and is compliant to the following standards:

- 3.1 IEEE 587 – 1980 / ANSI C62.41/1980 Standards for surge withstand ability category A and B.
- 3.2 FCC Class A, subpart J of part 15 (certified compliance)
- 3.3 Nema PE-1
- 3.4 UL standard 1778
- 3.5 OSHA
- 3.6 NEC (NFPA-70)
- 3.7 ISO 9001
- 3.8 IEC 801-2

## 4. Performance Characteristics

### 4.1 UPS module input

- 4.1.1 Input voltage 480VAC + 10%, - 15%, 3 phase, 3 wire plus ground
- 4.1.2 Frequency: 60HZ + 5%, - 5%
- 4.1.3 Power factor: .9 lagging at full load, nom. Input voltage
- 4.1.4 Total current distortion 5% THD or less at full load and 10% or less at 50% load.
- 4.1.5 Current limit: Nominal 115%, adjustable, 95- 125
- 4.1.6 Current walk-in: 20 seconds to full current limit
- 4.1.7 Input surge protection: Per IEEE 587/ ANSI C62.41 standards
- 4.1.8 Inrush current: 600% of full load rectifier input current

### 4.2 UPS module output:

- 4.2.1 Output rating: Minimum 80 KVA Upgradeable at least up to 100KVA, at 0.9 PF
- 4.2.2 Output voltage: 208Y/120 VAC, 3 phase, 4 wire plus ground
- 4.2.3 Output voltage adjustment.  $\pm 5\%$  manual adjustment
- 4.2.4 Phase voltage harmonic distortion: 5% THD for 100% non-linear load; 3% for 100% linear load
- 4.2.5 Frequency

## UNINTERRUPTIBLE POWER SYSTEM 80KVA SPECIFICATION

- 4.2.5.1 Internal oscillator: 60HZ  $\pm$  0.1%
  - 4.2.5.2 Slew rate: 1hz/sec
  - 4.2.5.3 Line sync range  $\pm$  0.5HZ; adjustable to  $\pm$  5.0 HZ
  - 4.2.6 Phase voltage unbalance:  $\pm$  5% with 100% load unbalance.
  - 4.2.7 Phase separation: 120°  $\pm$  1° for balanced load:  $\pm$  3 degrees for 50% unbalanced load.
  - 4.2.8 Overload current: 125% for 10 minutes or better
  - 4.2.9 Current limit: 145% for 10 seconds or better.
  - 4.2.10 Voltage Transient response:  $\pm$  5% for 50% load step change;  $\pm$  3% for loss or reapplication of AC input
  - 4.2.11 System efficiency: 90% minimum at rated system load.
  - 4.2.12 Fault clearing current capability: 150% phase to phase
5. Environment
- 5.1 Ambient temperature
    - 5.1.1 UPS Module: Operating 32° F to 105°F (0° C to 40°C)
    - 5.1.2 Battery: 77 $\pm$  9° F (25  $\pm$  5°C)
  - 5.2 Transport/ Storage Ambient Temp: -4° F to 158 °F (20°C to 70°C)
  - 5.3 Relative Humidity: Operating 0 to 95%, non-condensing for 50°F to 122°F (10°C to 50°C); NON-operating 0 to 95%
  - 5.4 Acoustical Noise: 65 dba at one meter from any operator surface measured at 25° C full load.
  - 5.5 EMI suppression: Meets FCC part 15 subpart J for Class A devices.
  - 5.6 Electrostatic discharge (ESD): withstands up to 25 kilovolts with no disturbance or adverse effect to the critical load.
6. Battery
- 6.1 Type: sealed, maintenance – free, high-rate discharge, valve regulated lead – acid cells.
  - 6.2 Expected life: 10 years or 200 complete full load discharge cycles to deliver no less than 80% of its rated capacity.
  - 6.3 Back-up time: 30 minutes minimum at full load.
  - 6.4 Circuit breaker: A molded case breaker shall be provided for battery short circuit protection and as a means of manually disconnecting the battery for maintenance.
  - 6.5 Housing: A separate cabinet that matches the UPS cabinet styling to form an integral system line-up and match.

## UNINTERRUPTIBLE POWER SYSTEM 80KVA SPECIFICATION

6.6 The rectifier / charger output shall minimize ripple voltage into the battery.

### 7. Displays and Control Panel

The UPS shall be equipped with a control panel that provides metering, monitoring and control functions.

7.1 Metering: A digital read-out shall display among others, upon request the following parameters:

- 7.1.1 Input AC voltage for each phase
- 7.1.2 Input AC current for each phase
- 7.1.3 Input frequency, KW, KVA and power factor
- 7.1.4 DC battery voltage
- 7.1.5 DC battery charge / discharge current
- 7.1.6 Output AC voltage for each phase
- 7.1.7 Output AC current for each phase
- 7.1.8 AC inverter frequency, KW, KVA and power factor
- 7.1.9 Battery time left during battery operation.

7.2 Alarm Monitoring: The following alarm indicators among others shall be displayed:

- 7.2.1 AC Input voltage out of tolerance
- 7.2.2 Input phase rotation is incorrect
- 7.2.3 Line frequency is not normal
- 7.2.4 UPS on battery discharge
- 7.2.5 Low battery warning
- 7.2.6 DC ground fault alarm
- 7.2.7 Failed cooling fan
- 7.2.8 Failed power supply
- 7.2.9 Over temperature shutdown
- 7.2.10 Over load shutdown

### 7.3 Control Logic

- 7.3.1 Fully automatic operation of the UPS shall be provided through the use of microprocessor control logic.
- 7.3.2 All operating and protection parameters shall be firmware controlled eliminating the need for manual adjustment.
- 7.3.3 The logic shall include system and battery test capability to facilitate maintenance and trouble shooting.
- 7.3.4 Start-up, transfers, and battery charging shall be automatic functions

## UNINTERRUPTIBLE POWER SYSTEM 80KVA SPECIFICATION

### 7.4 On-line Battery Test

7.4.1 UPS shall be provided with an On-line battery test feature that ensures the capability of the battery to supply power to the inverter while the load is supplied power in the normal mode. If the battery fails the test, the system shall automatically do the following:

7.4.1.1 Record and display the pass/fail status, battery voltage.

7.4.1.2 Sound and audible alarm.

7.4.2 The battery test shall have the following features:

7.4.2.1 Date and time of test

7.4.2.2 The periodic test if performed on a reasonable basis will not deduce overall battery life.

7.4.2.3 If a utility outage occurs while a test is in progress, the test shall be discontinued.

7.4.2.4 A user programmable battery time remaining warning when the UPS module is on battery power.

7.4.2.5 An imminent shutdown alarm for a low battery condition.

7.4.2.6 Work with either wet cell or valve – regulated batteries.

## 8. Options

### 8.1 Communication

8.1.1 The UPS module shall be equipped with a communication panel, which provides the following signals and communication features:

8.1.1.1 Alarm and notice contacts shall be provided for external use.

8.1.1.2 RS-232C circuitry shall be provided for communication interface.

8.1.1.3 LAN circuitry shall be provided for SNMP and HTML Protocols with management software license or client.

## UNINTERRUPTIBLE POWER SYSTEM 80KVA SPECIFICATION

### 8.2 Power Distribution Module (Integrated)

8.2.1 The Module shall consist of a panel board housed in a matching cabinet for output power distribution, 208Y/120v, in a UPS configuration.

8.2.1.1 Panel board must be equipped with a main circuit breaker and four (4) breakers for distribution to loads.

## 9. Construction

### 9.1 Materials of the UPS

9.1.1 New and of current manufacture.

9.1.2 High grade and free from all defects.

9.1.3 Shall not have been in prior service except as required during factory testing.

### 9.2 Wiring

9.2.1 Wiring practices, materials and coding shall be in accordance with the requirements of the National Electrical Code (NFPA 70).

9.2.2 All bolted connections of bus bars, lugs, and cables shall be in accordance with the National Electrical code and other applicable standards.

9.2.3 Electrical power connections are to be torque to the required value and marked with a visual indicator.

9.2.4 All power cable connections to power transformers and chokes shall be secured with permanent cold weld crimps.

9.2.5 Facilities shall be provided for power cables to enter or leave from the top or bottom of the UPS cabinet.

9.2.6 Grounding.

9.2.6.1 The AC output neutral shall be electrically isolated from the UPS chassis.

9.2.6.2 The UPS chassis shall have an equipment ground terminal.

9.2.6.3 Provisions for local bonding shall be made.

### 9.3 Manufacture and Mounting

9.3.1 The manufacturer shall have ISO 9001 certification.

## UNINTERRUPTIBLE POWER SYSTEM 80KVA SPECIFICATION

- 9.3.2 Housing shall be in a single-free standing NEMA type 1 enclosure.
- 9.3.3 Cabinet doors and covers shall require a tool for gaining access.
- 9.3.4 Casters and leveling feet shall be provided for ease of installation
- 9.3.5 Front access for easy servicing, and adjustments.
- 9.3.6 Cabinet shall be structurally adequate and have provisions for hoisting, jacking and forklift handling.
- 9.3.7 The UPS shall be constructed of replaceable sub assemblies.
  - 9.3.7.1 Printed circuit assemblies shall be plug-in.
  - 9.3.7.2 Like assemblies and like components shall be interchangeable.
- 9.3.8 Cooling
  - 9.3.8.1 The UPS shall be cooled by forced-air.
  - 9.3.8.2 Redundant fans shall be used.
  - 9.3.8.3 Fan power shall be provided by the UPS output.
  - 9.3.8.4 The thermal design, along with all thermal and ambient sensors, shall be coordinated with the protective devices before excessive component or internal cabinet temperatures are exceeded.

### 9.4 Factory testing

- 9.4.1 The manufacturer shall fully and completely test the system to assure compliance with the specification before shipment.
- 9.4.2 These shall include operational discharge and recharged test on at least a one-minute battery plant to assure guaranteed rate performance.

### 9.5. Warranty

The manufacturer shall warrant the UPS module against defects in materials and workmanship for at least 12 months after initial start-up.

## 10. Submittals

### 10.1 Proposal submittals shall include:

- 10.1.1 System configuration with single-line diagrams.

## UNINTERRUPTIBLE POWER SYSTEM 80KVA SPECIFICATION

- 10.1.2 Functional relationship of equipment including weights, dimensions and heat dissipation.
  - 10.1.3 Descriptions of equipment to be furnished, including deviations from these specifications.
  - 10.1.4 Size and weight of shipping units to be handled.
  - 10.1.5 Detailed layouts of customer power and control connections.
  - 10.1.6 Detailed installation drawings.
- 10.2 UPS delivery submittals shall included
- 10.2.1 Complete set of submittal drawings.
  - 10.2.2 One copy of the operation manual; the manual shall describe the UPS in full including the following major items:
    - 10.2.2.1 Step-by-step operating procedures
    - 10.2.2.2 Routine maintenance guidelines.
    - 10.2.2.3 Performance & Technical Specifications.
    - 10.2.2.4 General Description
    - 10.2.2.5 UPS module description
    - 10.2.2.6 Communications Capability
    - 10.2.2.7 Battery and Accessory Description
  - 10.2.3 One copy of the installation manual. It shall possess sufficient detail and clarity to enable the owner's technicians to install the UPS. The following shall be included:
    - 10.2.3.1 Receiving and installation Instructions
    - 10.2.3.2 UPS One-Line Drawing
    - 10.2.3.3 Equipment Outline Drawings
    - 10.2.3.4 Interconnection Drawings
    - 10.2.3.5 Battery Wiring Diagram
    - 10.2.3.6 Accessory Wiring Diagram

### 11. Startup

The following inspections, tests, and procedures shall be performed by factory trained field service personnel during the UPS installation:

#### 11.1 Visual Inspection

- 11.1.1 Inspect equipment for signs of damage
- 11.1.2 Verify installation per drawings.
- 11.1.3 Examine cabinets for foreign objects.

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- 11.1.4 Verify neutral and ground conductors are properly, sized and configured.
- 11.1.5 Inspect battery cases
- 11.1.6 Examine battery for proper polarity
- 11.1.7 Verify all printed circuit boards are configured properly.

### 11.2 Mechanical Inspection

- 11.2.1 Check all power connections for tightness.
- 11.2.2 Check all control wiring terminations for tightness.

### 11.3 Electrical Inspection

- 11.3.1 Confirm input voltage and phase rotation is correct.
- 11.3.2 Verify DC bus for possible short circuit.
- 11.3.3 Check all lamp test functions.

### 11.4 UPS in service

- 11.4.1 Basic operator training
- 11.4.2 Prepare a checklist with among others the following items:
  - 11.4.2.1 Input/output voltage per phase
  - 11.4.2.2 Input/output current per phase
  - 11.4.2.3 Input/output frequency
  - 11.4.2.4 Battery bank DC voltage
  - 11.4.2.5 Internal resistance of each cell

## 12. Field Service

- 12.1 Service Personnel: UPS manufactures shall employ a local service organization consisting of factory trained field service personnel dedicated to:
  - 12.1.1 Start up
  - 12.1.2 Maintenance
  - 12.1.3 Repair of UPS and power equipment
- 12.2 Replacement parts: The manufacturer shall provide a complete stock of spare parts locally with back-up available from national parts center and/or the manufacturing location.
- 12.3 Response time: Shall be adequate in case of an emergency service 24 hours/day, 7 weeks, 365 days/year.
- 12.4 Training

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- 12.4.1 Basic operator training conducted as part of the system start-up.
- 12.4.2 Maintenance training courses for customer employees shall be available by the UPS manufacturer.
- 12.4.3 The training course shall cover:
  - 12.4.3.1 UPS theory
  - 12.4.3.2 Location of subassemblies
  - 12.4.3.3 Safety
  - 12.4.3.4 Battery considerations
  - 12.4.3.5 UPS operational procedures
  - 12.4.3.6 AC to DC conversion and DC to AC inversion techniques.
  - 12.4.3.7 Control, metering and feedback circuits to the printed circuit board level.
  - 12.4.3.8 Troubleshooting and fault isolation using alarm information and Internal self-diagnostics.

### 12.5 Contracts

- 12.5.1 A complete offering of preventive and full service maintenance for both the UPS and battery system shall be available and performed by factory-trained service personnel.
- 12.5.2 Extended warranty and preventive package shall be available.
- 12.5.3 The manufacturer shall maintain the user's equipment to the latest engineering levels as they are developed.