

TERMS OF REFERENCE AND TECHNICAL SPECIFICATIONS

I. General information

Assignment name	Rehabilitation of MRCC Backup Power System, including provision, installing, testing and commissioning of (UPS) infrastructure
Beneficiary	Medical Research and Care Centre (MRCC) in the University of Mosul
Country	Mosul-Iraq
Total estimated number of days	90 days

II. Context and justification of the need

The project “Support to Medical Care and Research Centre (MRCC)” of the University of Mosul aims to improve the health conditions of the population of Nineveh Governorate, by providing a range of health care and strengthening medical training with a view to national excellence. The main objective is to ensure the rehabilitation of the Centre’s building and equipment so as to enable rapid start-up of diagnostic and external consultation activities in Mosul while guaranteeing international standards are followed.

Hospital backup power systems are critical infrastructure, ensuring patient safety, preventing fatalities, and maintaining operations during grid failures. These systems power life-support equipment, operating rooms, and data systems, preventing data loss. They are mandatory for compliance with safety regulations and protecting sensitive medical equipment from surges.

Project focuses on the continuity of healthcare services at MRCC's by integrating rehabilitation activity and ensuring the continuous operations of emergency rooms, and diagnostic equipment (like MRI/CT scanners) functional. And protecting equipment via prevents damage to high-value, sensitive medical machinery from sudden power shutdowns and voltage spikes.

In this context, corrective rehabilitation and maintenance works are required, including the supply, installation, testing, commissioning, repair, restoration, and replacement of defective batteries and faulty components in order to restore the full operational functionality, reliability, and backup capacity of the infrastructure and UPS systems. The assignment shall also ensure compliance with applicable technical standards, proper system integration, operational safety requirements, and long-term sustainability through warranty coverage, post-warranty maintenance support, and operational training for designated technical personnel.

The assignment will also aim to reduces hazardous waste and improves efficiency of the system to meet strict emission standards for cleaner, greener backup power in modern, eco-friendly, and reliable backup power systems and reduced carbon footprint.

III. Objectives and desired results**1) General objective**

The general objective of the assignment is patient safety and life support via ensuring an immediate, uninterrupted power that is vital for ventilators, cardiac monitors, and ICU equipment to prevent fatal consequences. These systems keep surgical suites, emergency rooms, and diagnostic equipment functional. Restoration the operational functionality, reliability, protection capability, and backup autonomy of the UPS systems at the Medical Research and Care Centre (MRCC) is the main objective, to ensure a stable, continuous, and uninterrupted power supply for critical infrastructure, laboratory equipment, medical systems, and essential operations.

2) Specific objectives

- **Rapid Emergency Response:** Provide automatic startup and transfer of power within minimal time to critical areas such as emergency rooms, operating theatres, and intensive care units.
- **Essential Infrastructure Operation:** Maintain power to capital equipment and systems including radiography, radiotherapy, fire alarms, emergency communication systems, hospital security, medical air compressors, and suction pumps.
- **Data Integrity and Stability:** Protect sensitive patient data, electronic medical records, and digital imaging systems from corruption or loss caused by sudden shutdowns.
- **Environmental Control:** Operate heating, ventilation, and air conditioning (HVAC) systems to maintain sterile environments in operating rooms and temperature control for medications and blood storage.
- **Regulatory Compliance:** Meet mandatory safety codes and standards.
- **Controlled Power Management:** Prioritize critical loads (Life Safety, Critical, Equipment) to prevent generator overload and ensure stable voltage/frequency during sustained outages.

3) Anticipated results

- MRCC backup power infrastructure (both UPS systems) are fully rehabilitated, tested, commissioned, and operational.
- Backup autonomy, system stability, and overall power supply reliability are restored for critical MRCC operations.
- All supplied batteries, spare parts, repaired modules, and replacement components are properly installed, integrated, tested, and compliant with applicable technical standards and manufacturer requirements.
- Protection, monitoring, cooling, and control functions of the UPS systems are fully restored and functioning properly.
- MRCC critical infrastructure and sensitive equipment are protected against power interruptions, voltage instability, and operational downtime.
- Technical documentation, test records, warranty certificates, and commissioning reports are submitted and validated.
- Designated MRCC personnel receive operational and basic maintenance training for the rehabilitated UPS systems.
- Post-warranty maintenance and technical support arrangements are established in accordance with the contract requirements.

IV. Description of the assignment

1) Planned activities

- 1- To replace defective and degraded batteries of the main 650 KVA UPS system and auxiliary 80 KVA UPS system in order to restore the required backup autonomy and operational performance.
- 2- To supply, repair, rehabilitate, install, and/or replace faulty electrical and electronic components, including IGBT driver control cards, protection modules, thyristor control boards, control and monitoring units, capacitors, cooling fans, protection fuses, and electronic signal PCB boards.
- 3- To carry out all required installation, integration, programming, testing, calibration, commissioning, and operational verification activities necessary to ensure full compatibility, stability, and functionality of the UPS systems.
- 4- To ensure that all supplied materials, spare parts, and rehabilitation work comply with applicable technical specifications, manufacturer recommendations, and relevant electrical safety standards.
- 5- To provide technical documentation, warranty coverage, post-warranty maintenance support, and operational training for designated MRCC technical personnel in order to ensure sustainable operation and maintenance of the rehabilitated UPS systems.

The service provider shall support the Medical Research and Care Centre (MRCC), in accordance with applicable technical standards, manufacturer recommendations, electrical safety regulations, and standard maintenance practices, in order to carry out the following activities:

Assignment preparation

- Site assessment, review all relevant technical documentation, assessment findings, existing UPS configurations, and available maintenance records.
- Participate in a kick-off meeting with end users and Expertise France, if required, in order to validate the implementation methodology, scope of intervention, work schedule, safety measures, and coordination arrangements.
- Prepare and submit a detailed implementation and intervention plan, including technical methodology, staffing, testing procedures, and proposed implementation schedule.

Phase I: Inspection and diagnosis

- Conduct a detailed technical inspection and condition assessment of the UPS systems, associated battery banks, control units, protection systems, and related electrical components.
- Identify defective, degraded, damaged, or non-operational components and confirm the required scope of corrective rehabilitation works.
- Verify compatibility requirements and operational conditions for all replacement components and spare parts.
- Assess battery bank conditions, charging systems, ventilation conditions, and overall system operational stability.
- Provide technical clarification and support to MRCC technical personnel regarding identified deficiencies, risks, and proposed corrective actions.

Phase II: Repair and replacement

- Supply, deliver, install, connect, test, and commission new batteries for the 650 KVA UPS system and the auxiliary 80 KVA UPS system in accordance with the approved technical specifications.
 - Supply, install, configure, test, and commission all required spare parts and replacement components, including:
 - IGBT driver control cards
 - Protection module programs and cards
 - Thyristor control boards
 - Control and monitoring units
 - High voltage capacitors
 - Cooling fans
 - Protection fuses
 - Motor start capacitors
- Carry out inspection, rehabilitation, repair, and recommissioning of electronic signal PCB boards and other repairable electronic assemblies.
- Perform all required corrective maintenance works, system adjustments, programming, configuration, calibration, and integration activities necessary for proper UPS operation.
- Ensure proper cable connections, polarity verification, protection settings, ventilation arrangements, and operational compatibility of all supplied and repaired components.
- Ensure that all supplied materials and spare parts are brand new, compliant with applicable IEC standards, and supported with technical datasheets, certificates of origin, warranty certificates, and test reports where applicable.

Phase III: Testing and commissioning

- Conduct functional, operational, and performance testing of the rehabilitated UPS systems and associated components.
- Carry out battery performance verification, charging system verification, load testing, backup autonomy testing, and system stability assessment.
- Verify the functionality of protection systems, monitoring systems, cooling systems, and control interfaces.
- Perform commissioning activities and validate the operational readiness and reliability of both UPS systems under actual operating conditions.
- Record, compile, and submit all inspection records, test reports, calibration records, commissioning reports, and technical documentation related to the assignment.

Phase IV: Training and handover

- Conduct operational and basic maintenance training sessions for designated MRCC technical personnel regarding the operation, monitoring, troubleshooting, and routine maintenance of the UPS systems.
- Submit all operation manuals, technical datasheets, warranty certificates, maintenance recommendations, and as-built technical records.
- Participate in the final validation, handover, and acceptance process with MRCC and Expertise France.
- Provide post-warranty maintenance and technical support services in accordance with the contractual requirements and agreed support arrangements.

Post-assignment follow-up:

- Participate in the final validation, handover, and acceptance process with MRCC and Expertise France, including the submission of all relevant technical documentation and records.

2) Anticipated deliverables

Deliverables	End date
1. Initial inspection and diagnostic assessment report	5 days
2. Detailed diagnostic, intervention, and implementation report	5 days
3. Supply, delivery, and installation of UPS batteries and replacement components	35 days
4. Completion of corrective maintenance, repair, rehabilitation, and integration works	20 days
5. Testing, calibration, load testing, and performance verification report	5 days
6. Commissioning and operational validation of both UPS systems	10 days
7. Training sessions, submission of handover documentation, warranty certificates, and technical records	7 days
8. Final technical report and final acceptance of works	3 days

3) Coordination

The service provider shall designate a qualified focal point and single contact person responsible for the overall coordination, communication, supervision, and implementation follow-up of the assignment.

Mr. Hayder Al-Tameemi from the Procurement Department shall act as the main focal point and sole contact person on behalf of Expertise France for all coordination, administrative, and technical matters related to the assignment.

Tel:

E-mail:

A launch (kick-off) meeting shall be held within twelve (12) days following the notification of the contract award in order to confirm the implementation methodology, intervention schedule, technical arrangements, safety requirements, reporting procedures, and communication channels.

Close coordination and collaboration shall be maintained with MRCC technical personnel, facility management, and Expertise France representatives throughout all phases of the assignment, from preparation and inspection activities up to final commissioning, handover, and acceptance.

The service provider shall ensure regular communication and progress reporting to Expertise France and MRCC regarding:

- Assignment progress and implementation status;
- Delivery and installation schedules;
- Technical findings and inspection results;
- Any operational constraints, delays, risks, or difficulties encountered during implementation;
- Corrective measures and mitigation actions, where applicable.

The service provider shall immediately notify Expertise France and MRCC of any technical issue or unforeseen condition that may affect the implementation schedule, operational continuity, system safety, or assignment performance.

V. Place, duration and terms of performance

- 1) **Implementation period: 90 days**
- 2) **Start date: 21 Aug 2026**
- 3) **End date: 24 December 2026**
- 4) **Effective duration per assignment: 90 days**
- 5) **Schedule/programme:** The Contractor shall submit a detailed implementation schedule for approval within 7 calendar days from the contract start date. The schedule shall be based on the provisional implementation programme below and shall ensure completion of all activities within the overall implementation period of 90 calendar days.

The provisional programme for assignment implementation is as follows:

Activity	Place	Period	Duration (man/days) Expert 1:
Kick-off meeting, site coordination, and review of technical documentation	MRCC – University of Mosul		7 days
Detailed inspection, technical assessment, and diagnostic activities	MRCC – University of Mosul		13 days
Procurement, supply, manufacturing (if applicable), and delivery of batteries, spare parts, and replacement components	MRCC – University of Mosul		40 days
Installation, rehabilitation, repair, integration, and corrective maintenance works	MRCC – University of Mosul		15 days
Testing, calibration, load testing, commissioning, and operational validation	MRCC – University of Mosul		10 days
Training sessions, final handover, submission of technical documentation, and reporting	MRCC – University of Mosul		5 days
Total			90 Days

VI. Required expertise and profile

- 1) **Number of experts per assignment:**
 - Minimum five (5) qualified technical experts shall be assigned for the implementation of the assignment.

2) Profile of the designated expert(s) responsible for contract execution

A. Qualifications and skills:

- Holder of a university degree in Electrical Engineering, Electromechanical Engineering, Electronics Engineering, Power Systems Engineering, Industrial Engineering, or equivalent technical qualifications and professional experience relevant to UPS systems and backup power infrastructure.
- Strong technical knowledge of UPS systems, industrial electrical systems, battery banks, power electronics, electrical protection systems, and backup power solutions.
- Excellent qualities/capacities in:
 - Communication;
 - Teamwork and interpersonal coordination;
 - Technical knowledge transfer and training delivery;
 - Technical analysis, diagnostics, and reporting;
 - Problem identification, troubleshooting, and corrective action implementation;
 - Planning, decision-making, and initiative taking; High proficiency in written and spoken French or English, depending on the country in question.
- Ability to prepare clear technical reports, commissioning records, maintenance documentation, and testing reports in English.
- High proficiency in written and spoken English is required. Knowledge of Arabic is considered an asset.

B. General professional experience

- Professional experience of at least five (5) years in the field of electrical systems maintenance, UPS systems, industrial power systems, and backup power solutions.
- Proven professional experience of at least five (5) years in the installation, rehabilitation, repair, testing, and commissioning of UPS systems and associated electrical and electronic equipment.
- Solid understanding of:
 - Power backup infrastructure;
 - Battery technologies and battery bank integration;
 - Electrical protection systems;
 - Power electronics and control systems;
 - Diagnostic procedures and troubleshooting methodologies;
 - Corrective and preventive maintenance operations.
- Previous experience in implementing similar assignments in hospitals, laboratories, healthcare facilities, data centres, industrial facilities, or other critical infrastructure environments is considered a strong asset.
- Experience in working under donor-funded, institutional, or international organization projects is considered an advantage.

C. Specific professional experience

- Demonstrated experience in troubleshooting, rehabilitation, repair, testing, commissioning, and operational validation of UPS systems and associated backup power infrastructure.
- Proven experience in the supply, replacement, installation, programming, configuration, and integration of:
 - UPS battery systems;
 - IGBT driver control cards;

- Protection modules and protection cards;
- Thyristor control boards;
- Control and monitoring units;
- High voltage capacitors;
- Cooling systems and fans;
- Protection fuses;
- Electronic PCB boards and related electrical/electronic components.
- Good knowledge of preventive and corrective maintenance methodologies applicable to UPS systems, industrial electrical systems, and backup power infrastructure.
- Ability to conduct:
 - Functional testing;
 - Load testing;
 - Battery autonomy verification;
 - Calibration activities;
 - System performance analysis;
- Operational validation activities in accordance with applicable technical standards and manufacturer recommendations.
- Experience in implementing similar technical interventions in healthcare facilities, laboratories, or other operationally sensitive environments is considered an asset.
- Ability to deliver operational and basic maintenance training for technical personnel regarding UPS system operation, monitoring, troubleshooting, and maintenance procedures.

VII. Assignment reports

A report following the model provided must be forwarded by e-mail on conclusion of the assignment: it must correspond with the deliverable summary analytical report ...

VIII. Monitoring-evaluation

Performance indicators

Deliverables	Immediate effects	Intermediate effects	Verification sources

IX. Practical information

- The assignment shall be implemented at the Medical Research and Care Centre (MRCC), University of Mosul, Iraq.
- The service provider shall be fully responsible for the supply, transportation, delivery, installation, testing, commissioning, and integration of all materials, spare parts, tools,

equipment, consumables, and qualified technical personnel necessary for the proper execution of the assignment.

- The service provider shall ensure that all supplied batteries, spare parts, and replacement components are brand new, unused, genuine, compatible with the existing UPS systems, and compliant with the approved technical specifications, manufacturer recommendations, and applicable IEC and electrical safety standards.
- Technical datasheets, certificates of origin, warranty certificates, catalogues, and test certificates shall be submitted for all major supplied components and equipment where applicable.
- Any equivalent brand, model, or component proposed by the service provider shall be subject to prior written approval by MRCC and Expertise France before installation or use.
- The service provider shall coordinate all site access, implementation schedules, shutdown requirements, and technical interventions with MRCC and Expertise France focal points.
- All activities shall be carried out in compliance with applicable safety regulations, electrical protection standards, occupational health and safety requirements, and site security procedures.
- The service provider shall ensure proper handling, transportation, installation, and disposal of batteries and electronic components in accordance with environmental protection and safety requirements.
- Any interruption to MRCC operations during implementation shall be minimized, carefully planned, and coordinated in advance with the beneficiary institution and relevant technical personnel.
- The service provider shall be responsible for protecting existing equipment, systems, facilities, and infrastructure against damage during implementation works.
- All testing, commissioning, and operational validation activities shall be conducted in the presence of designated MRCC and/or Expertise France representatives where required.
- The service provider shall provide a minimum twenty-four (24) months warranty for supplied batteries, replacement components, and workmanship related to installation and commissioning activities.
- The service provider shall also ensure the provision of post-warranty maintenance and technical support services for a minimum period of two (2) years in accordance with contractual requirements.
- Operational and basic maintenance training sessions for designated MRCC technical personnel shall form part of the assignment scope and shall be completed prior to final acceptance of the assignment.
- All technical documentation, reports, manuals, testing records, commissioning reports, warranty documents, and deliverables shall be submitted in English in both hard and soft copy formats where applicable.