

Part 1:
Supply, Installation and Commissioning of Cooling/Heating/Ventilation/Filtration Systems

1. Objective

UNHCR Lebanon has its main branch office in Beirut and field offices in Mount Lebanon, Qobayat, Tripoli, Sur (Tyre) and Zahle. It aims to enhance the existing cooling/heating and air ventilation/filtration systems and/or install new cooling/heating and air ventilation/filtration systems in all Offices. The purpose of this RFP is the provision of cooling/heating and air ventilation/filtration systems in all offices. In addition, UNHCR might support governmental entities with providing cooling/heating and air ventilation/filtration systems in the Lebanese territories.

This Terms of Reference outlines the specifications for the design, supply, installation, and commissioning of fully functional cooling/heating and air ventilation/filtration systems including and all associated accessories and equipment. The contractor shall furnish all labour, materials, tools, equipment, and reasonable incidental services necessary to complete an acceptable and functional installation and commissioning of the cooling/heating and air ventilation/filtration systems. This is to include but is not necessarily limited to Variable Refrigerant Flow VRF indoor and outdoor units, refrigerant, controllers, pipes, ducting (where applicable), drainage, control and power cabling, stand-alone split units.

2. Scope of Work

The scope of work includes the supply, installation and commissioning of functional cooling/heating and air ventilation/filtration systems. UNHCR would like to establish a Frame Agreement for a duration of two (2) years with the possibility of a one (1) year extension. The immediate requirements are the following:

Site	Required services
Not identified yet	This a passive frame agreement to be used whenever UNHCR has a project.

The BoQ for the potential projects should be provided as part of the offer following the procedures set out under point 2.2.

The following list include the accepted brands or equivalent (alphabetically ordered, no preference entailed):

- Bosch;
- Carrier;
- Daikin;
- Fujitsu;
- Hitachi;
- LG;
- Mitsubishi;
- Panasonic;
- Samsung;
- Toshiba;

For all units (indoor, outdoor, VRF, standalone)/systems offered please provide the following parameters (or European equivalents):

- Cooling/heating capacity expressed in both BTU/h -specifically for indoor units- and Cooling/Heating kW;
- Energy Efficiency Ratio (EER);
- Cooling Coefficient of Performance (COP);
- Heating Coefficient of Performance (COP);
- Seasonal Energy Efficiency Ratio (SEER);
- Seasonal Energy Performance factor (HSPF);
- Integrated Part-Load Value (IPLV).

UNHCR is seeking the most cost efficient and reliable cooling/heating and air ventilation/filtration systems with lower overall Total Cost of Ownership (TCO) and thus systems with higher efficiency and lower TCO will have higher scores.

All VRF systems offered should allow for the integration with and full control by Building Management Systems.

The contractor should specify the warranty terms provided by the manufacturer for each range offered, details about parts, labour, motors and compressors warranty period should be clearly articulated. Since UNHCR is seeking reliable cooling/heating and air ventilation/filtration systems with proven track record, contractors providing better warranty services would be scored higher. The contractor should be able to honour and provide all warranty services as per the manufacturer terms and conditions.

All cooling/heating systems should use environment friendly refrigerants that are not banned -or not scheduled to be banned-.

All offered VRF systems components should be manufactured by the same manufacturer. VRF systems and stand-alone split units can be from different manufactures.

All offered stand-alone split units should be inverter-based units.

All offered components of the systems should be approved by the manufacturer and meets or exceeds the manufacturer's recommendations and technical specifications.

2.1 Contractor's Requirements

- The successful contractor must be a certified installer of the cooling/heating and air ventilation/filtration systems and components being provided and show proof thereof (the manufacturer's certificate granted to the installer must be included with the offer).
- The contractor must be an authorized reseller of the cooling/heating and air ventilation/filtration systems quoted and show proof thereof (the manufacturer's certificate granted to the reseller must be included with the offer).
- The contractor must be an authorized service and warranty provider of the cooling/heating and air ventilation/filtration systems quoted and show proof thereof (the manufacturer's certificate granted to the contractor must be included with the offer).
- The offered brand(s) should have authorized service centres in Lebanon.
- The offered brand(s) and models should be designed and manufactured for the corresponding climate region and had been successfully put in service and use -in the corresponding climate region- for not less than five years.
- Work must be supervised by a syndicated and certified mechanical engineer and electrical engineer during all phases of the installation. Both mechanical and electrical engineers must be on site and available to technicians and installers at all times work is being performed.

- The offer for each site/project should include a bill of quantities (BoQ) of items that will be used for that site. The BoQ should be based on the items list provided in Annex B. The BoQ should also include all equipment and/or items required for the delivery of the above services, even those that are not included in the mentioned itemized list. It is the responsibility of the contractor to mention any missing items needed for the completion of the proper installation of the system(s).
- If a unit or system with the exact same capacity does not exist in the offered manufacturer range, the contractor should provide the closest capacity unit or system that is available by the manufacturer.
- All per-meter-installation-prices/per-kilo-installation-price should include all related materials for the proper installation according to the manufacturer recommendations and specifications.
- Upon finalization of each project, the invoice should be provided electronically¹ to UNHCR with all items used in that project and their quantity, referencing the “FA Item Code” as per Annex B.
- For items that the contractor is not an authorized dealer for, all such items used in the projects should be obtained directly from the authorised and affiliated dealers by/with the manufacturer of the item. With complete documentation showing the origin of the items and that they were acquired through a current authorised dealer by the item manufacturer in the country of installation.

2.2 Procedures for Each Project

For each new project, the following steps will be followed:

- UNHCR will provide electronic documents of the layout for the site where heating/cooling and/or ventilation/filtration is required.
- The contractor will visit the project site to collect additional data and information (existing heat loads -number of persons in the room, equipment-, building materials, insulation materials, location and orientation, etc.) for accurate heating/cooling and/or ventilation/filtration capacity estimation.
- The contractor will calculate the estimated heating/cooling capacity based on the collected information and using appropriate simulation software (preferably those provided by the manufacturer, especially for VRF systems).
- The contractor will provide the design of the heating/cooling and/or ventilation/filtration system (including but not limited to all VRF, stand-alone, indoor, outdoor units, pipes, power and control cabling, ducting (where applicable), drainage). The contractor would also provide the needed BoQ (which should also specifically include pipes system, ducting system (where applicable), drainage system, fittings, accessories, control cables) to accomplish the project. This design should be done by a certified and syndicated mechanical and electrical engineers, fulfilling all the requirements described in this document with most cost-efficient routing of pipes and drainage system and ducting system (where applicable).
- UNHCR would approve and validate the suggested design before the contractor can start the work at the site.

2.3 Supplier pre-bidding conference and site visit before submission of proposals:

- Bidder/contractor may commit to a site visit and understand all necessary points and issues if UNHCR requested.

¹ At minimum as an Excel or similar database structured file

- Bidder/contractor shall investigate and check compatibility and matching of the plot infrastructure points and fittings and ability to fit with proposed supplied goods and services.

2.4 Works Included

Works shall include all components and items that are required for the implementation of each project as per the shared BoQ submitted by the contractor, including the testing and commissioning of the installed systems to the satisfaction of UNHCR.

All installation works should be according to the manufacturer specifications and recommendations, no deviation is allowed from the manufacturer's specifications and recommendations for the installation, materials and accessories used.

The contractor will provide UNHCR with the design of the Electrical Power Supply Network needed for the implementation of each project as per 2.2. UNHCR will instruct its current electrical contractor to implement the Electrical Power Supply Network as per the design, specifications and requirements provided.

The contractor's electrical engineer would supervise and approve the electrical work done by UNHCR electrical contractor to be as per the design, specifications and requirements.

The contractor should be responsible for installation of the control cables for the system as per the NEC, and specifications and recommendations of the manufacturer in the case of using proprietary cables for the control.

If agreed by the contractor, all non-proprietary control cables can be installed by UNHCR electrical contractor -that have proven experience with low voltage installation- under the supervision of the contractor's electrical engineer and subject to his/her final approval of the works to be as per the design, specifications and requirements.

2.4.1 Time schedule and response time

Any and all overtime or off-hours work required to complete the scope of work within the time frame specified is to be included in the contractor's bid. No additional overtime will be paid.

The awarded contractor must instruct UNHCR's representative about all the necessary procedures for satisfactory operation and maintenance of the systems relating to the work described in their specifications and provide complete end-user manuals for all systems, components, and equipment specified.

During the warranty period, the contractor shall respond to trouble calls within twenty-four (24) hours after receipt of such a call considered not in need of critical service. Critical-service calls must be responded to, on site, within four hours of receipt of a trouble call. Bidder must acknowledge their agreement to this requirement as part of the RFP response.

2.4.2 Fire-Code Compliance

The entire installation of the heating/cooling and/or ventilation/filtration system(s) shall meet or exceed all local fire codes. At a minimum, the requirements of the National Electrical Code and NFPA 70 shall be met, unless superseded by a local code.

The contractor should ensure that the installed system(s) are installed in compliance with the NEC and according to the manufacturer requirements and specifications.

2.4.3 Grounding and bonding and lightning and surge protection

Grounding and bonding of electrical installations shall be in accordance with the requirements of the National Electrical Code² Article 250.

A separate grounding system that is dedicated to non-information and telecommunication technology systems is available and bonded to other electrical grounding systems of the site.

The contractor should ensure that the installed system(s) are properly grounded and bonded as per the code and the manufacturer requirements and specifications.

2.4.4 As-Built Drawings

Contractor will provide as-built documentation within 15 days of completion of each project. The documentation should include (VRF, stand-alone, indoor, outdoor units, pipes, power and control cabling risers, ducting (where applicable), drainage) systems.

All documentation should be provided in electronic format (AutoCAD and Visio format as applicable).

Any invoices for performed works should be accompanied by the corresponding as-built drawings in order for payments to be processed.

2.4.5 Site Cleaning

The contractor would be responsible to perform reasonable and thorough cleaning of the sites.

In sites where the works will be performed in occupied and in use buildings or sites the following should be carried out by the contractor:

- Protection of office furniture and equipment: The contractor will ensure that adequate protection and cover is in place for office furniture and equipment in areas where the works will be performed.
- Day-to-day cleaning: The contractor will ensure that all dust and debris produced on site are removed. Since the building or site will be in use whilst work is under way, cleaning with brooms, brushes or any equipment that could raise dust is not allowed. Only, Vacuum cleaning is allowed to be carried out.

After completion of all works the contractor would be responsible to perform a thorough cleaning of the site and its contents and must be concluded upon completion of works and constitutes part of the services in specifications. This cleaning also includes removal of any protective equipment that has been put in place, as well as of all waste relating to activity that has taken place on site by the contractor.

2.4.6 Contractor Liability for Loss of or Damage to Property of UNHCR

- (a) Except as provided in paragraphs (b) and (c) of this clause, and except to the extent that the contractor is expressly responsible under this contract for deficiencies in the services required to be performed under it (including any materials furnished in conjunction with those services), the contractor shall not be liable for loss of or damage to property of UNHCR that—
- (1) Occurs after UNHCR acceptance of services performed and supplies delivered under this contract; and
 - (2) Results from any defects or deficiencies in the services performed or materials furnished.

² Article 250

(b) The limitation of liability under paragraph (a) of this clause shall not apply when a defect or deficiency in, or UNHCR's acceptance of, services performed or materials furnished results from wilful misconduct or lack of good faith on the part of any of the contractor's personnel.

(c) The contractor shall be liable to UNHCR for loss of or damage to property of UNHCR occurring after UNHCR acceptance of, and resulting from any defects and deficiencies in, services performed, or materials furnished within the warranty period under this contract.

(d)(1) This clause does not diminish the contractor's obligations, to the extent that they arise otherwise under this contract, relating to correction, repair, replacement, or other relief for any defect or deficiency in supplies or services delivered under this contract.

(2) if loss or damage occurs and correction, repair, or replacement is not feasible or desired by UNHCR, the contractor shall, as determined by UNHCR—

(i) Pay UNHCR the amount it would have cost the contractor to make correction, repair, or replacement before the loss or damage occurred.

(ii) Provide other equitable relief.

2.5 Ducting

All ducting elements of a project including the installation, testing and commissioning -for projects with ducting requirements- should comply with the latest published version of Sheet Metal and Air Conditioning Contractors' National Association (SMACNA) HVAC duct construction standards.

The contractors are reminded of the following highlights:

(a) Compliance with SMACNA's "HVAC Duct Construction Standards—Metal and Flexible" for acceptable materials, material thickness, and duct construction methods, unless otherwise indicated. Sheet metal materials shall be free of pitting, seams marks, rollers marks, stains, discolorations, and other imperfections.

(b) G90 Galvanized Sheet Steel: Complying with ASTM A653/A653M and having Z275 coating designation.

(c) Rods: Galvanized steel, with a 6mm minimum diameter for lengths 900mm and less; and 10mm minimum diameter for lengths longer than 900mm.

(d) Sealant Material: Solvent-based Joint and Seam Sealant: one-part, non-sag, solvent release curing, polymerized ASTM C920, Type S, Grade NS, Class 24, Use O.

(e) Fabrication: Fabricate ducts, elbows, transitions, offsets, branch connections and any other construction according to SMACNA's "SMACNA's "HVAC Duct Construction Standards—Metal and Flexible" and complying with requirements for metal thickness, reinforcing types and intervals.

(f) Duct Insulation: Apply duct insulation on all indoor supply & outdoor air plenums ducts in addition to all outdoor supply and return ducts.

(g) Duct Insulation Material: Fiberglass blanket, 50mm thick and 48kg/m³ nominal density for outdoor applications and 25mm thick similar insulation for indoor applications.

2.6 Air Filtration

All projects with filtration requirements should use high-efficiency particulate air (HEPA) filters. The HEPA filters should comply with any of the following standards depending on the usage case and requirements:

(a) EN1822 H13 or EN1822 H14

(b) ISO 29463 class ISO 35 H to ISO 50 H