STATEMENT OF WORK FOR

PREVENTIVE MAINTENANCE SERVICE

Chillers Modular Airstack
York YCAL Chillers
Carrier Chillers
Multistack Heat Recovery Chiller
Associated Motor Starters/VFD's /Pumps
&
Electronic Panels and Subsystems

United States Consulate Frankfurt

2024-2029

EXHIBIT A

Statement of Work

I. GENERAL INFORMATION:

The United States Consulate Frankfurt requires professional services and contractor cost proposals to perform preventive maintenance services of the facility's Airstack Modular Chiller Systems

II. PROJECT REQUIREMENTS:

DESCRIPTION OF EQUIPMENT *:

**Please see attachment at the end of this sheet for more details*

III. GENERAL REQUIREMENTS:

The Contractor under this SOW shall be responsible for labor, tools, and materials required to carry out all preventive maintenance as outlined in this SOW. The Government has the following manuals:
Air Cooled Packaged Modules Operation and Maintenance

IV. SCOPE OF WORK - - CHILLERS MAINTENANCE

Contractor shall provide all materials, supervision, labor, tools and equipment to perform preventive maintenance. All personnel working in the vicinity shall wear and /or use safety protection while all work is performed. Any questions or injuries **shall** be brought to the attention of the Post Occupation Safety and Health Officer (POSHO) immediately. Material Safety Data Sheets (MSDS) shall be provided by the Contractor for all HAZMAT materials. Copies shall be provided to the COR for approval.

The Contractor shall inventory, supply and replace expendable parts (e.g., filters, belts, hoses, gaskets) that have become worn down due to wear and tear. The Contractor shall maintain a supply of expendable and common parts on site so that these are readily available for normal maintenance to include: hoses, belts, oil, chemicals, coolant, filters (Air, Fuel, Oil), grease, sealant, thermostat, fuses; in addition to the appropriate tools, testing equipment, safety shoes and apparel for technicians, personal protective equipment (hands, hearing, eye protection), MSDS, cleaning material and oil spill containment kits. The contractor should inventory the supply after each visit and order replacement supplies and have them delivered on site. Maintenance materials shall be unused and are to be industry standard and intended for the task to be performed. Parts are to be OEM approved. Refrigerants are to meet the AHRI_Standard_700-2015 or most recent AHRI Standards.

Refrigerants, parts and maintenance materials delivered to the post are to be new and unused. Reclaimed refrigerants are not to be delivered to posts. Reclaimed refrigerants within post

compounds are to be retained and stored and may be used if not contaminated. Refrigerants shall be stored in containers clearly indicating the refrigerant type.

SAFETY AND SPECIAL INSTRUCTIONS:

1. Follow site safety procedures and supervisor's instructions.
2. Schedule outage with operating personnel.
3. Use extreme caution when climbing access ladders.
4. Perform applicable lockout/tag out steps of site safety procedures.
5. Lockout and disconnect the main power before tightening the main supply lugs in order to avoid the hazard of electrical shock, which could result in serious personal injury or death.
6. Record and report equipment damage or deficiencies.
7. Review and follow the manufacturer's O&M instructions.
8. Record results in the equipment history log.
9. Allow only qualified personnel to do maintenance work on this equipment.
10. Record results in the equipment history log.
11. Check manufacturer's specifications for the maximum number of plugged tubes.
12. Allow only qualified personnel to do maintenance work on this equipment.

CHILLERS

MAINTENANCE PROCEDURES:

Air Cooled Chiller:

Semi-Annually

1. Check unit for proper operation, excessive noise or vibration.
2. Run system diagnostics test.
3. Check oil level in oil separator sight glass. Add oil as necessary.
4. Check liquid line sight glass, oil, and refrigerant pressures.
5. Record system operating temperatures and pressures in the checklist.
6. Check programmable operating set points and safety cutouts. Assure they are correct for the application.
7. Verify motor amperage load limit.
8. Thoroughly clean evaporator and condenser tubes. .
9. Inspect plumbing and valves for leaks, adjust as necessary.
10. Check compressor and evaporator heater operation.
11. Check superheat on the evaporator and the economizer feed to the compressor.
12. Check condenser sub-cooling. Check for dirt in the panel. Check door gasket for sealing integrity.
13. Clean chiller and surrounding area.
14. Fill out maintenance checklist and report deficiencies.

Annually

1. Disconnect power source and lock out. Check electrical wiring and connections; tighten loose connections.
2. Perform all check items in the Semi-Annual schedule.
3. Perform analysis on oil and filter. Change if necessary. Check compressor oil pump and seals. Check oil heater and thermostat. Check all strainers, valves, etc.
4. Conduct vibration analysis of motor & assembly: Check all alignments to specifications. Check all seals.
5. Lubricate shaft bearings and motor bearings as required.
6. Check superheat and sub-cooling temperatures.
7. Check contactors, sensors, and mechanical safety limits.
8. Check the chiller for leaks. Add refrigerant if low. Record amounts and address leakage problems.
9. Thoroughly clean intake side condenser coils, fans, and intake screens.
10. Perform any additional maintenance tasks as recommended in the manufacture's operation and maintenance manuals.
11. Perform operational test and return to service.
12. Remove debris from work-site.
13. Fill out maintenance checklist and report deficiencies.

Water Cooled Chiller:

Semi-Annually

1. Check unit for proper operation.
2. Check oil level; add oil as necessary.
3. Check oil temperature.
4. Check dehydrator or purge system; remove water if observed in sight.
5. Run system control tests.
6. Check refrigerant charge/level, add as necessary.
7. Check compressor for excessive noise/vibration.
8. Check sensor and mechanical safety limits; replace as necessary.
9. Clean area around equipment.
10. Document all maintenance and cleaning procedures.

Annually

1. Disconnect power source and lock out. Check electrical wiring and connections; tighten loose connections.
2. Perform all check items in the Semi-Annual schedule.
3. Clean dehydrator float valve.
4. Perform spectrochemical analysis of compressor oil; replace oil as necessary.
5. Replace oil filters and add oil as necessary.
6. Inspect cooler and condenser tubes for leaks; clean screens as necessary.
7. For dedicated PCC chillers the glycol level of the chill water is to be checked and adjusted to the percentage required by OBO Engineering Dept.

8. Inspect utility vessel vent piping and safety relief valve; replace as necessary.
9. Inspect/clean the economizer, gas line damper valve and actuator arm.
10. Run an insulation test on the centrifugal motor.
11. Clean area around equipment.
12. Document all maintenance and cleaning procedures.

Scroll Chiller:

Monthly

1. Measure and record the evaporator superheat.
2. Measure and record the system sub-cooling.
3. Manually rotate the condenser fans to ensure that there is proper clearance on the fan shroud openings.

Annually

1. Disconnect power source and lock out. Check electrical wiring and connections; tighten loose connections.
2. Complete all monthly maintenance checks.
3. Check the oil level and refrigerant charge.
4. Have a qualified laboratory perform a compressor oil analysis to determine system moisture content and acid level.
5. Leak test the chiller, check operating and safety controls, and inspect electrical components for proper operation.
6. Inspect all piping components for leaks and damage. Clean all water strainers
7. Clean and repaint any components that show corrosion.
8. Clean the condenser coils.
9. Clean the condenser fans. Check the fan assemblies for proper clearance in the fan shroud openings and for motor shaft misalignment or abnormal end-play, vibration and noise.

Modular Chiller:

Annually

1. Disconnect power source and lock out. Check electrical wiring and connections; tighten loose connections.
2. Inspect all electrical connections to check that they are not damaged and terminals are tight. Inspect all contactors for pitting and corrosion replace as necessary.
3. Inspect all cabinet screws nuts and bolts, fan motor mount bolts, fan blade set screws, shell and tube evaporator mounting, end cap bolts and connection bolts, brazed plate evaporator mounting bolts as well as compressor and pump mounting bolts for tightness as well as anti-vibration and isolator pads.
4. Check all fuses to make sure that they are sized correctly with proper amp rating.
5. Check all refrigerant pressures and inspect compressor in operation – look for signs of overheating, oil leaks or refrigerant leaks.

6. Conduct "sniffer" leak check of entire refrigerant piping system. Inspect compressor terminals when powered down for pitting, corrosion and loose connections.
7. Check that pressure switches and thermostats have correct cut-in and cut-out settings.
8. Check that the oil level is visible in each compressor and not discolored or bubbled. Take oil sample and analyze for destructive acids, corrosive materials and metal deposits.
9. Check that the pump(s) overload settings match the nameplate(s) and that they work properly.
10. Ensure that the condensing unit is clean and clear of surrounding debris and that panels are clear.
11. Check and record the compressor amperage draws and voltage.
12. Check and record the fan motor amp draws and voltage. Make sure of proper rotation and lubricate if required.
13. Check and record amp draw of the pumps and voltage. Check for signs of leakage at pump seal and suction and discharge connections.
14. Record G.P.M. water flow and compare to design specifications.
15. Check the glycol level of the chilled water.
16. Check that there is a sufficient Glycol level in feeder tank and check for proper operation.
17. Tighten all Rota-Lock nuts at the Compressors, Receivers and accumulators. Torque is per manufacturer's recommendations.
18. Inspect all control capillary tubing to ensure that the lines are separated and not vibrating against each other or any part of the frame or housing.
19. Inspect all other refrigeration lines for secure mountings. Take corrective measures necessary to prevent piping from rubbing the frame etc.
20. Inspect all insulation on piping and control sensors. Repair and replace as necessary. Inspect entire plumbing system for leaks and clean any strainers on the system. Replace as necessary.
21. Check crank case heaters to verify proper operation. Keep spares in stock.
22. Take a refrigerant sample and analyze for moisture, acid, and rust.
23. Check operating pressures and temperatures and evaluate whether the system has a full refrigerant charge.
24. Review logged alarms and look for repeat trends.
25. Document the preventive maintenance task that have been completed and submit to the Government.

Motor Starter /Variable Frequency Drive (5 HP to Less Than 100 HP):

MAINTENANCE PROCEDURES:

Annually:

1. Vacuum dust and dirt from heat sink fins
2. Check ventilation fans for proper operation and clean as needed.
3. Check line voltage, motor & output phase balance
4. Complete RCM Procedure CM-0002 (Qualitative Infrared Testing).
5. Visually inspect for broken parts, contact arcing, or any evidence of overheating.

Spare Parts and Expendables Inventory. N/A

6. Check motor nameplate for current rating and controller manufacturer's recommended heater size (report discrepancy to supervisor).
7. Check line and load connections for tightness (check manufacturer's instructions for torque specifications).
8. Check heater mounting screws for tightness.
9. Check all control wiring connections for tightness.
10. On units equipped with motor reversing capacity, check mechanical interlock.
11. On units equipped with two-stage starting, check dash pots and timing controls for proper operation. Adjust as required.
12. On units equipped with variable speed starters:
    a. Record the VFD parameter settings using MCT-10
    b. Confirm the VFD doors and covers are in place and properly closed.
    c. Check tightness of connections to resistor bank.
    d. Check resistor coils and plates for cracking, broken wires, mounting and signs of overheating. Clean as required.
    e. Check tightness of connections to drum controller.
    f. Check contacts of drum controller for arcing and overheating. Apply a thin film of lubricant to drum controller contacts and to rotating surfaces.
13. Check starter contact connections by applying a thin film of black contact grease to line and load stabs, operate contacts and check surface contact.
14. Lubricate all moving parts with proper lubricant.
15. Clean interior of cabinet.
16. Clean exterior of cabinet.
17. Energize circuit and check operation of starter and any pilot lights. Replace as required.

Panel, Electronic Controls:

Annually

1. Clean panel interior.
2. Verify functionality of supported devices.
3. Clean ventilation filter and fan (if applicable).
4. Record and report equipment damage or deficiencies.
5. Record results in the equipment history log

Bi-Annually

1. Replace battery where applicable.

Hydronic Pump Preventive Maintenance (Semi-Annual)

1. Clean, inspect and lubricate the centrifugal pump
2. Check piping and valves

3. Clean inspect and lubricate motor
4. Check electrical connections and tighten when necessary

Hydronic Pump Preventive Maintenance (Annual)

1. Check pump and motor operation for excessive vibration, noise and overheating
2. After shutdown, drain pump housing, check suction, discharge and check valve for holding
3. Clean and inspect exterior of centrifugal pump
4. Drain pump housing; remove bearing covers, housing cover, gland and packing. Clean interior of pump
5. Clean exterior accumulated dirt and grime from pump casing, shaft coupling, and motor
6. Clean pump suction strainers and pump packing water seal filter
7. Check for evidence of leaks. For stuffing box sealing adjust packing and maintain 40 water drops per minute out of stuffing box. Replace mechanical seals if leaking
8. Check drive shaft coupling for wear
9. Check security of base-plate mounting bolts
10. Check alignment of pump and motor
11. Lubricate centrifugal pump
12. Lubricate the pump shaft bearings. Do not over-lubricate
13. On pumps with oil ring lubricated bearings check oil level and fill to proper oil level with approved type oil
14. Start and stop pump, noting vibration, pressure, and action of check valve, record differential pressure across pump
15. Inspect piping and valves for leaks; tighten connections as required
16. Remove and clean Y-Strainers in hydronic piping primary and secondary systems.
17. Clean up work area
18. Return Unit to service

Special Instructions

1. Review the manufacturer's operation and maintenance instructions
2. All maintenance actions will be performed in accordance with the manufacturer’s O&M instructions

3. Perform applicable lock out/tag out steps of site safety procedures to ensure machinery will not start
4. Schedule outage with operating personnel
5. Follow site safety procedures and safety procedures concerning the maintenance of pumps and electrical equipment
6. Record and report to COR any equipment damage or deficiencies found while performing these maintenance tasks
7. Record all test results in the component maintenance log

End of Statement of Work

Equipment List (see below)

Unit	Location	Name	Location 2	Manf.	Model Number	Serial Number
Chiller Modules	Chiller Pad West	Module 1	CPAD	Multistack	ASP030XN13E2ASAAHEN	AG 12-007
Chiller Modules	Chiller Pad West	Module 2	CPAD	Multistack	ASP030XN13E2ASAAHEN	AG 12-011
Chiller Modules	Chiller Pad West	Module 3	CPAD	Multistack	ASP030XN13E2ASAAHEN	AG 12-012
Chiller Modules	Chiller Pad West	Module 4	CPAD	Multistack	ASP030XN13E2ASAAHEN	AG 12-008
Chiller Modules	Chiller Pad West	Module 5	CPAD	Multistack	ASP030XN13E2ASAAHEN	AG 12-010
Chiller Modules	Chiller Pad West	Module 6	CPAD	Multistack	ASP030XN13E2ASAAHEN	AG 12-009
Chiller Modules	Chiller Pad West	Free Cool 1	CPAD	Multistack	FCP3ESAHE	AG 12-013
Chiller Modules	Chiller Pad West	Free Cool 2	CPAD	Multistack	FCP3ESAHE	AG 12-016
Chiller Modules	Chiller Pad West	Free Cool 3	CPAD	Multistack	FCP3ESAHE	AG 12-014
Chiller Modules	Chiller Pad West	Free Cool 4	CPAD	Multistack	FCP3ESAHE	AG 12-015
Pump Modules	Chiller Pad West	Pump 1	CPAD	Multistack	XJ400SS-700-21212	178717
Glycol Feeders	Chiller Pad West	Feeder	CPAD	Multistack	SF100	16-12477-SF
Chiller	COB	Chiller	MBP	Carrier	30RY "B"	017-080 B

HRC	COB	Heat Recovery	D-Wing Basement	Multistack	(MS(30X/50X)6H2H0-R134A	202-L007
Chiller	COB	Chiller	Warehouse Roof	York	YCAL0173EB50XCABXTCLXXRNXCXX45S	RLNM009592
Chiller	COB	Chiller	Warehouse Roof	York	YCAL0173EB50XCABXTCLXXRNXCXX45S	RLNM009593
Chiller	COB	Chiller	Penthouse Roof	York	YCAL0173EB50XCABXTCLXXRNXCXX45S	RLNM009590
Chiller	COB	Chiller	Penthouse Roof	York	YCAL0173EB50XCABXTCLXXRNXCXX45S	RLNM009591
Pump	COB	Pump 1	Penthouse Roof	KSB	KSB EFF2	1053432
Pump	COB	Pump 2	Penthouse Roof	KSB	KSB EFF2	1053431
Pump	COB	Pump 1	Warehouse MR	KSB	ETN 050-032	AA11GD20030
Pump	COB	Pump 2	Warehouse MR	KSB	ETN 050-032	AA11GD2003X
Glycol Feeders	COB	Glycol Feeder	Warehouse MR	Nalco		
Glycol Feeders	COB	Glycol Feeder	Penthouse MR	Nalco		
Glycol Feeders	COB	Glycol Feeder	Penthouse MR	Nalco		

END OF STATEMENT OF WORK