Part 1 General

1.1 REFERENCES

.1 Air-Conditioning, Heating and Refrigeration Institute (AHRI)

.1 ARI-550/590-(I-P) 2011, Performance Rating of Water Chilling Packages Using the Vapor Compression Cycle.

.2 CSA International

.1 CSA B52-13, Mechanical Refrigeration Code.

.3 Environment Canada, (EC)/Environmental Protection Services (EPS)

.1 Environmental Code of Practice for Elimination of Fluorocarbons Emissions from Refrigeration and Air Conditioning Systems SOR/2003-289.

1.2 ACTION AND INFORMATIONAL SUBMITTALS

.1 Submit submittals in accordance with Section 01 00 10 - General Instructions.

.2 Product Data:

.1 Submit manufacturer's instructions, printed product literature and data sheets for rotary-screw water chillers and include product characteristics, performance criteria, physical size, finish and limitations.

.3 Shop Drawings:

.1 Indicate:

.1 Equipment including connections, piping and fittings, valves, strainers, control assemblies and ancillaries, identifying factory and field assembled.

.2 Wiring as assembled and schematics.

.3 Dimensions, construction details, recommended installation and support, mounting bolt hole sizes and locations and point loads.

.4 Type of refrigerant used.

1.3 CLOSEOUT SUBMITTALS

.1 Submit in accordance with Section 01 00 10 – General Instructions.

.2 Operation and Maintenance Data: submit operation and maintenance data for - modular water chillers for incorporation into manual.

.3 Data to include:

.1 Description of equipment giving manufacturers name, model type and year, capacity and serial numbers.

.2 Provide part load performance curves.

.3 Details on operation, servicing and maintenance.

.4 Recommended spare parts list.

1.4 DELIVERY, STORAGE AND HANDLING

.1 Deliver, store and handle materials in accordance with manufacturer's written instructions.

.2 Delivery and Acceptance Requirements: deliver materials to site in original factory packaging, labelled with manufacturer's name and address.

.3 Storage and Handling Requirements:

.1 Store materials indoors and in accordance with manufacturer's recommendations in clean, dry, well-ventilated area.

.2 Store and protect modular water chillers from nicks, scratches, and blemishes.

.3 Replace defective or damaged materials with new.

.4 Packaging Waste Management: remove for reuse of pallets, crates, padding, packaging materials as specified in Section 01 00 10 - General Instructions.

Part 2 Products

2.1 GENERAL

.1 Provide complete water cooled, modular water chiller package. The package shall consist of two modules, each including: tandem compressors in series; evaporator; water-cooled condenser, motors and motor starters, controls; control centre, piping; wiring; refrigeration and oil change ready for connection to chilled water circuit, condenser water circuit, and electric power source, installed in welded steel frame with heavy gauge panels and access doors finished to manufacturer’s standard.

.2 The chiller shall be capable of remaining in-service without interruption of one module while the other module is isolated and removed from the site.

.3 Due to constrained space, the overall dimension of each chiller module excluding allowances for service and housekeeping pads cannot exceed 1390 mm in length by 690 mm in width.

2.2 CAPACITY PER MODULE

.1 Certified ratings based on AHRI 550/590:

.1 143 kW, when cooling 6.14 L/s of water from 12.2 degrees C to 6.7 degrees C.

.2 Water cooled condenser supplied with 7.48 L/s of water at 29.4 degrees C, pressure drop not to exceed 15.2 Pa.

.3 Power input, including electrical components: 30.8 kW.

.4 Fouling resistance coefficient: 0.000045 m^2K/W

.5 Refrigerant: 410a.

2.3 COMPRESSOR

.1 Hermetic scroll design..

.2 High and low pressure ports

.3 Crankcase heater

.4 Anti-vibration isolation mounts

.5 Unitary frame for tandem compressors

.6 Manifold pipe for tandem compressors

.7 Liquid line solenoid and ball valve

.8 Sealed filter-drier

.9 Liquid line site glass

.10 Thermal expansion valve

.11 Provide nameplate to show capacity at design temperature, type of refrigerant used and total weight in system.

2.4 COMPRESSOR MOTOR

.1 Hermetic type with overload protection and manual restart: 575 V.

2.5 EVAPORATOR

.1 Brazed-plate heat exchanger.

2.6 CONDENSER

.1 Water cooled:

.1 Brazed-plate heat exchanger.

2.7 CONTROL CENTRE

.1 To EEMAC standard and include:

.1 Control circuit ON/OFF switch.
.2 Oil pressure safety switch.
.3 High and low pressure safety switch.
.4 Water temperature controller.
.5 Component over current protection.
.6 High and low pressure switches.
.7 Freeze stat.
.8 Flow switches for both evaporator and condenser circuits.
.9 Anti-cycling.
.10 Compressor rotation based on first-in, first-out for run-time normalization.
.11 Dry contacts for evaporator pump and either condenser pump.
.12 Remote alarm contact.
.13 Remote enable.
.14 Field power and control circuit terminal blocks.

Part 3 Execution

3.1 COMPLIANCE

.1 Environmental Code of Practice for Elimination of Fluorocarbons Emissions from Refrigeration and Air Conditioning Systems SOR/2003-289.

3.2 EXAMINATION

.1 Verification of Conditions: verify conditions of substrates previously installed under other Sections or Contracts are acceptable for water chiller installation in accordance with manufacturer's written instructions.

.1 Visually inspect substrate in presence of Departmental Representative.

.2 Inform Departmental Representative of unacceptable conditions immediately upon discovery.

.3 Proceed with installation only after unacceptable conditions have been remedied and after receipt of written approval to proceed from Departmental Representative .

3.3 APPLICATION

.1 Manufacturer's Instructions: comply with manufacturer's written recommendations, including product technical bulletins, product catalogue installation instructions, product carton installation instructions, and data sheets.

3.4 GENERAL

.1 Provide appropriate protection apparatus.

.2 Install unit as indicated, to manufacturer’s recommendations, and in accordance with EPS 1/RA/2.

.3 Ensure adequate clearances for servicing and maintenance as indicated.

.4 Manufacturer to approve installation, to supervise start-up and to instruct operators. Include 3 days per unit.

3.5 CLEANING

.1 Progress Cleaning: clean in accordance with Section 01 00 10 – General Instructions.

.1 Leave work area clean at end of each day.

.2 Final Cleaning: upon completion remove surplus materials, rubbish, tools and equipment in accordance with Section 01 00 10 – General Instructions.

.2 Waste Management: separate waste materials for reuse and recycling in accordance with Section 01 00 10 – General Instructions.

.1 Remove recycling containers and bins from site and dispose of materials at appropriate facility.

3.6 PROTECTION

.1 Protect installed products and components from damage during construction.

.2 Repair damage to adjacent materials caused by chiller installation.

END OF SECTION