ITB/2017/1381: Annex A- Supply, installation and operation of Freezing and Cooling Units for Al-Omari Customs Center

BASIC DESIGN DATA & ROOM SPECIFICATIONS

1- Basic design date:

Ambient temperature (Max.) : 45 C°

Electrical supply : 3 x 400 / 50 Hz

Heat exchange : air cooled condensers

2- Room specifications:

A- Freezing Room QTY. (2).

Dimensions Inside view (approx.) : 5×10×6 m

Application : Freezing store

required room temperature : - 35 C°

Evaporating temperature : - 42 C°

2-B cooling Rooms QTY. (2).

Dimensions Inside view (approx.) : 5×10×6 m

Application : cooling store

required room temperature : + 2 C°

Evaporating temperature : - 5 C°

2-C Duel Rooms QTY. (1).

Dimensions Inside view (approx.) : 5×10×6 m

Application : cooling + freezing store

Required room temperature (on cooling) : + 2 C°

Evaporating temperature (on cooling) : - 5 C°

Required room temperature (on freezing) : - 20 C°

Evaporating temperature (on freezing) : - 25 C°

Refrigeration system, heat load and required capacity is to be calculated depending on the room volume

Technical Description

1-Supply and install of walls and ceilings with all accessories sandwich panel with the following specifications:

i. Ready to install Sheets of sandwich panels
ii. Insulation Material : Polyurethane foam
iii. Insulation density : 38 - 42 Kg/m^3
iv. Insulation thickness : 15 cm
v. Galvanized steel sheets (both sides)

All specifications are comply to both sides of the sandwich panel
All sharped angles inside the rooms are cover with white Plated thermally galvanized steel
The Sandwich panels are connected together as Male – Female
All sandwich panels connected and all the required filling up between panels and angles are filled with anti-mould , anti-toxic silicon
All the gaps between the angles and hinges are filled up with liquid Polyurethane foam.
The sandwich panels are installed above a ground U channel complying with the thickness of the sandwich panels.
The roof sandwich panel has been consider to be hinged with a hinging Profile with the building not over the sandwich panels walls
The roof panel has been considered to be walk-able in order of being one person in average weight on the one meter square

2-Supply and install floor with all accessories with the following specifications :

i. Install heating system by heating cables in the floor of the freezing room and one of the cooling rooms
ii. Install three layers of polystyrene sheets each one with thickness of (5 cm) to Have the total thickness of (15 cm) in the floor
iii. Install a red nylon sheets above the polystyrene sheets to prepare the ground for the final layer of concrete

3-Supply and install cooling door with all accessories with the following specifications

- Sliding door

i. industrial doors produced specially for cold and freezing stores
ii. Injected with polyurethane foam.
iii. The door thickness for the freezer store (120 mm)
iv. The door thickness for the cold store (100 mm)
v. dimensions : 2 x 2.4 m
vi. Quantity are: <u>two freezer</u> door and <u>three cooler</u> doors (one for each of the three rooms)
vii. Aluminum Frame with breaks.
viii. Upper and lower rail and handles in stainless steel

ix. Full closing system with ground and leaf rubber
x. The freezing doors including hearers to avoid freezing around the door edges
xi. Each door has the ability to be opened from both sides in and out Flip flap door
xii. Two doors are two leafs flip flap doors and one door is one leaf flip flap door

4- supply and install and operate lighting system with all accessories to the rooms with the following specifications :

i. electronic – acrylic water proof lights
ii. Degree of Protection = IP 67
iii. Working With (220-240v, 50-Hz) Power Source
iv. Freezers lighting units can bear low temperature to (– 25 C°)
v. Coolers lighting units can bear temperature to (– 5 C°)
vi. The length of the lighting units not less than (1.2 m)
vii. The operation power of each unit is (2 × 36) W

1- Supply and install and operate the refrigeration system as follows :

semi hermetic Reciprocating compressor , Rigid mounted on steel supported frame on with lifting lugs , high efficiency evaporator , high efficiency condenser complying to the refrigeration system and Ambient temperature

for freezing room (QTY = 2)

TWO compressors , two stage compressor
TWO evaporator for the room

for cooling rooms (QTY = 2)

FOUR compressors , (Two for each room)
With electrical defrost system
With suitable expansion valve
TWO condensers for each room

The required components shall be added to the outside unit complying with the requirement of each unit such as :

i. liquid receiver
ii. Accumulator
iii. oil separator

Electrical power & control panels including the following :

i. IP 55 Electrical power board
ii. Control board
iii. Main and branches circuit breakers for each unit
iv. Electronic controller for stand-alone refrigeration unit
v. Digital display for temperature for each room
vi. Door ON / OFF switch for the refrigeration unit
vii. Compressor Phase failure and relays
viii. Contractors & overloads for all refrigeration components

ix. Evaporator electrical defrost system
x. expansion valve on each evaporator
xi. Signal Bulbs for all parts of the refrigeration system

Supply and install cupper Pipes for both lines suction and liquid lines , insulated with arm-flex insulation complete with cupper accessories

Supply and install cables and wiring set connecting the cooling system from the outdoor unit into the indoor unit & so to the control panel

Warrantee

Three year from operation