PROJECT PROFILE

PRODUCT : ICE PLANT / ICE BLOCK

PRODUCTION CAPACITY

Ice block of 50 kg, 300 nos. of ice blocks / day (Season – 6 months)

15 tones in every 24 hours (or per day)

Ice block 15 tones in every 24 hours (or per day)
INTRODUCTION

Water when made into solid mass by the action of cooling is known as Ice. It is one of the essential modes for short term preservation of highly perishable commodities such as marine foods, fresh meat and poultry products, dairy products, fruits and vegetables. These goods can be stored for two to three days with ice which facilitates the transportation of these foods to the consumer market. Ice is also used in the chemical, pharmaceutical, canning and freezing industries. It is being used for chilling synthetic fruit beverages.

The complete ice making plant consists of:

- Ammonia Compressors
- Condensers / Heat Exchangers
- Ammonia Receiver
- Cooling Coil / Evaporator
- Chilling Tank
- Paneling (Electrical Equipments)

**Ammonia Compressors:**

- Ammonia compressors designed with state-of-the-art technology for industrial & commercial refrigeration and low temperature applications.

- Compressors are V belt driven and are suitable to operate with Ammonia (NH3) & Freon [12 (CCl₂ F₂), 22(CHCIF₂)] as refrigerant.

- Robust construction, excellent performance and power saving features and hallmarks of the products.
**Condensers / Heat Exchangers:**

Condenser is a heat transfer surface, generally which are divided in to three types.

- Air Cooled Condenser: Employ air as the condensing medium.
- Water Cooled Condenser: Utilize water to condense the refrigerant.
- Evaporative Condenser: Use both air and water as the condensing medium. The function of the air is to increase the rate of evaporation by carrying away the water vapor results from evaporation process.

**Ammonia Receiver:**

- Ammonia receiver can control the supply and demand relation between the condensers and the evaporator, prevent excessive liquid ammonia from staying in the condenser, and maintain a certain level in the liquid receiver to prevent gas from going into the liquid pipe line.

- The ammonia in the system can be stored in the ammonia receiver to avoid loss of the ammonia before the refrigerating system is repaired. Therefore, the volume of the ammonia storage should be considered before buying it.
**Cooling Coil / Evaporator:**

- Cooling Coil / Evaporator is used as heat transfer surface in which a volatile liquid is vaporized for the purpose of removing heat from refrigerated space.

- V shape cooling coils are available in different sizes, usually custom made to the individual applications.

**Chilling Tank:**

Chilling Tank consists of three parts:

1) Ice Tank
2) Insulation of Ice Tank
3) Ice Block

**Ice Tank:**

Ice tanks are made of such materials as wood, steel or concrete. As wooden tanks do not last long enough and are liable to leak, they should preferably be made of steel well coated with waterproof paint. Tanks made of reinforced concrete are also recommended as superior to those of wood.

The ice tank contains the direct expansion coils, equally distributed throughout the tank and these coils are submerged in brine. The tank is provided with a suitable frame of hard wood for support the ice cans and a propeller or agitator for keeping the brine in motion: the brine in the tank acts as a medium of contact only, the ammonia evaporating in the ice coils extracts the heat from the brine, which again absorbs the heat for the water in the cans.
The tank itself should not be much larger than is necessary to hold the cans, the coils, and the agitator. About two inches should be left between the moulds and three inches between the pipes and the moulds.

- **Insulation of Ice Tank:**
  Insulation of the ice tank is accomplished by using twelve to eighteen inches of good insulating material on each of the sides and not less than twelve inches under the bottom.

- **Ice Block:**
  Commercial sizes of Ice cans vary with the weight of ice cakes required. The cans are made to contain about 5% more than their rated capacity to compensate for thawing.

<table>
<thead>
<tr>
<th>Size of Ice</th>
<th>Dimensions</th>
<th>Size of Bank</th>
<th>Plain or Grooved</th>
<th>Gauge of Steel Galv.</th>
<th>Weight per can</th>
<th>Gauge of Steel Galv.</th>
<th>Weight Per can</th>
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**Paneling (Electrical Equipments):**

The Ice Making plant must be furnished with *electrical* control panel with compressor starter, all necessary *safety switches and pressostats*, Voltmeter, Ammeter, Temperature Sensor etc.