

ICL - Bitzer

ICL - Div. 4

Ammonia - Screw Compressor Packs

Cold Storages & Freezers - Water/Glycol Chillers - Process Cooling



ICL - India **Bitzer** - Germany

Indo-German - Strategic Alliance

ICL & Bitzer – Mission of 21st Century **Protection of Fruits, Vegetables & Energy Saving**

ICL-India & Bitzer - Established Strategic-Alliance of joint-association in 1999 to work together in the fast growing economy of India and its adjoining countries. The strategic alliance has well established the use of – Ammonia Screw Compressors & its Packages - in the cold storage & freezing industry of India.

Bitzer Ammonia screw compressors advance technology save substantial electric power, maintenance and cost of spare parts. Many Bitzer compressor packs are connected with ICL – Ammonia Air cooling Units – proving highest efficiency, most reliable for cold storage cooling systems. ICL Air Cooling Units has proven record of more than 20 years.



ICL - India

ICL – India : ICL-group established in India **since 1965** earned very rich experience, knowledge and committed for product excellence. Thousands of its products are in use all over India with excellent track record since **45 years**. ICL is ISO-9001 qualified with membership of many large institutes with numerous certificates.

ICL Five (5) business Divisions are well equipped for Product-Marketing, Engineering, Manufacturing and EPC projects. ICL offer Air Conditioning CHP, Refrigeration, Power-generation Heat-transfer, Air-cooled Cooling technology for Gas/Diesel power plants, Thermal & Nuclear power plant cooling systems.



Bitzer - Germany

Bitzer – Germany : The compressor is heart of any refrigeration or air conditioning system. It must beat dependably. For over **75 years**, the name BITZER has stood for worldwide leading compressor technology which gives you complete confidence in any refrigeration or air conditioning application.

Since 1934, the name BITZER has been synonymous with the highest degree of reliability and product quality. What this means is responsibility and dedication – and the widest spectrum of services as well as state-of-the-art manufacturing technologies. You can be sure that every system runs steadily with BITZER products.

ICL – Bitzer
Your Partner - to save Energy

ICL - Bitzer - Ammonia – Compressor Packs

Condensing Units and Water/Glycol Chiller Packages

Bitzer - Open-drive Ammonia Screw Compressors

Bitzer open type screw compressors are designed for universal use in large commercial or industrial applications and marine refrigeration systems as well as explosion protection zones.

BITZER screw compressors offer decisive advantages :

1. High cooling capacity and performance coefficient with and without economiser operation
2. Integrated, efficient capacity control: 100 % – 75 % – 50 %
3. From model OS.85, three-step or infinite slider control
4. High-quality and reliable shaft seal
5. Reliable continuous operation through patented lubrication system and generously dimensioned bearings
6. Suitable for all current refrigerants
7. Standard motors can be flanged directly to the optional coupling housing without costly alignment work. Clutches are also available as accessories.

The capacity range of single compressors covers up to ten displacement stages, parallel operation with up to six compressors is possible. Parallel circuits offer further advantages of the system:

- **High system reliability and redundancy without over-dimensioning**
- **Virtually infinite capacity control**
- **High part load efficiencies by powering compressors up and down**
- **Compact compressor system with simple maintenance and service.**

The comprehensive BITZER range of accessories – oil separators, oil coolers and monitoring modules – permits complete and cost-efficient system concepts up to large-scale compound systems

Bitzer - Open-drive Ammonia Screw Compressors



53 series



74 series



85 series

**ICL-Bitzer : Ammonia Refrigeration,
Cooling & Freezing Systems now Available in India**

ICL - Bitzer - Ammonia – Compressor Packs **Water/Glycol Chiller Packages, Cold Storage & CA plant, Machinery**

ICL-Bitzer - Open-drive Ammonia Screw Compressor Pack

ICL - discovered the technology in 1999 of using Bitzer (German) ammonia screw compressors in India. These screw compressors found most suitable for Cold storages, Ice plants, Brine chilling machines, Ice-bank systems and various and other unlimited Industrial Refrigeration applications.

The most-advanced “ **Bitzer Screw Refrigeration Compressors** “ introduced in the world market, which have only two screws and four bearings as moving parts without any gears etc.

ICL-Bitzer compressor OSKA / OSKN can be used from **+10 to -40 deg. C** evaporating temperature without any problem. These Ammonia Compressor-packs are fully protected with safety controls for smooth operation.



**ICL - Bitzer Ammonia
Screw Compressor Package**

ICL - Bitzer - Ammonia – Compressor Packs

Water/Glycol Chiller Packages, Cold Storage & CA plant, Machinery

The Outstanding Features of :- ICL-Bitzer Ammonia Screw Packs

1. **High capacity & efficiency**
2. **Simple & Robust Construction**
3. **Generously dimensioned Bearings**
4. **High quality shaft Seal with metal Bellow**
5. **Efficient capacity control with unloaded start**
6. **Built-in Check Valve**
7. **Internal pressure Relief Valve**
8. **Suction-side fine Filter**
9. **Flanged at shaft-end for direct Motor-mounting**
10. **Discharge gas temperature sensor (PTC)**
11. **Electronic Oil-flow Switch**
12. **Oil fine Filter**
13. **Low-noise and Vibration levels**
14. **Small space requirement (high-power density)**
15. **Low Weight**

ICL - Bitzer Ammonia Screw Compressor Pack Technology



Simple-strong & Life-long Screws



Pressure Gauges & Safety Controls



Bitzer Screw Compressor



ICL-Bitzer Compressor Unit



Lube-oil system & Oil Cooler



Screw Comp-unit Electric Panel

ICL - Bitzer - Ammonia - Compressor Packs

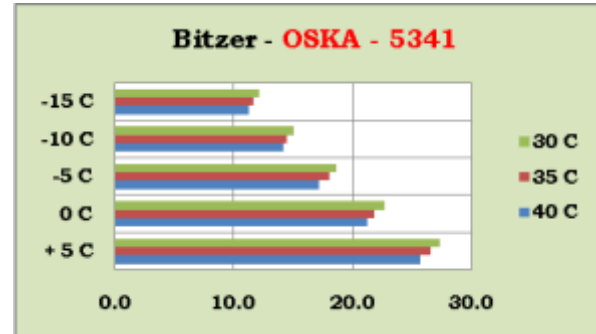
Water/Glycol Chiller Packages, Cold Storage & CA plant, Machinery

53 - Series : ICL - Bitzer - Ammonia Screw Packs

Model - OSKA - 5341 Capacity - T.R

Evaporating Temperature	Condensing temperature deg.		
	40 C	35 C	30 C
+ 5 C	25.7	26.5	27.3
0 C	21.2	21.8	22.7
-5 C	17.2	18.0	18.7
-10 C	14.2	14.4	15.1
-15 C	11.2	11.7	12.1

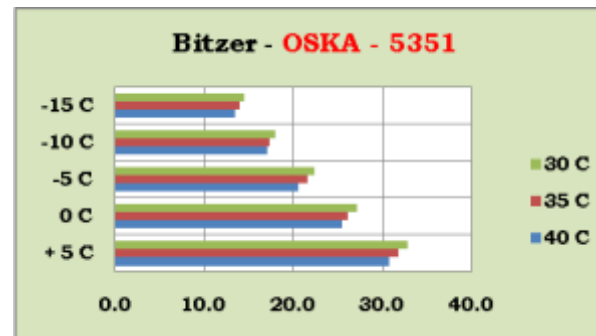
(1 TR = 3.000 K. Cal)



Model - OSKA - 5351 Capacity - T.R

Evaporating Temperature	Condensing temperature deg.		
	40 C	35 C	30 C
+ 5 C	30.7	31.8	32.8
0 C	25.4	26.2	27.2
-5 C	20.6	21.6	22.4
-10 C	17.0	17.3	18.0
-15 C	13.5	14.0	14.5

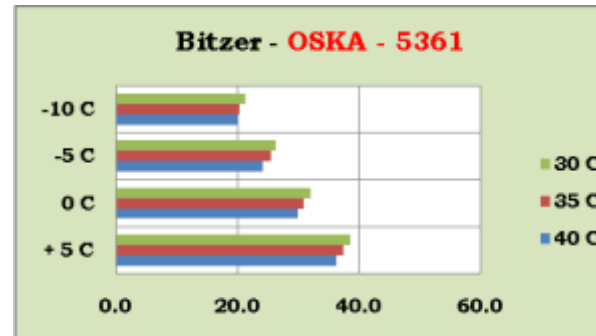
(1 TR = 3.000 K. Cal)



Model - OSKA - 5361 Capacity - T.R

Evaporating Temperature	Condensing temperature deg.		
	40 C	35 C	30 C
+ 5 C	36.2	37.4	38.6
0 C	29.9	30.8	32.0
-5 C	24.2	25.4	26.3
-10 C	20.0	20.3	21.2
-15 C	15.8	16.4	17.0

(1 TR = 3.000 K. Cal)



ICL - Bitzer

**World-class
Energy Efficient**

- Model - 5341
- Model - 5351
- Model - 5361

**Ammonia - Screw
Compressor Packs**



ICL - Bitzer - Ammonia - Compressor Packs

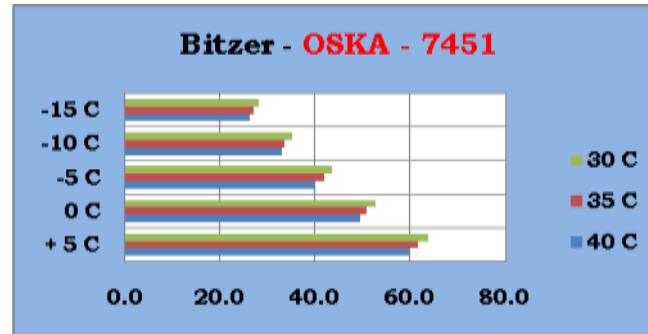
Water/Glycol Chiller Packages, Cold Storage & CA plant, Machinery

74 - Series : ICL - Bitzer - Ammonia Screw Packs

Model - OSKA - 7451 Capacity - T.R

Evaporating Temperature	Condensing temperature deg.		
	40 C	35 C	30 C
+ 5 C	59.8	61.8	63.7
0 C	49.4	50.9	52.9
-5 C	40.0	42.0	43.5
-10 C	33.1	33.6	35.1
-15 C	26.2	27.2	28.2

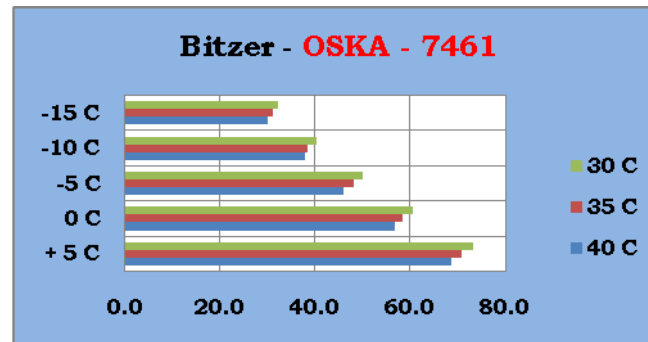
(1 TR = 3.000 K. Cal)



Model - OSKA - 7461 Capacity - T.R

Evaporating Temperature	Condensing temperature deg.		
	40 C	35 C	30 C
+ 5 C	68.6	70.9	73.1
0 C	56.7	58.4	60.7
-5 C	45.9	48.2	49.9
-10 C	38.0	38.6	40.3
-15 C	30.1	31.2	32.3

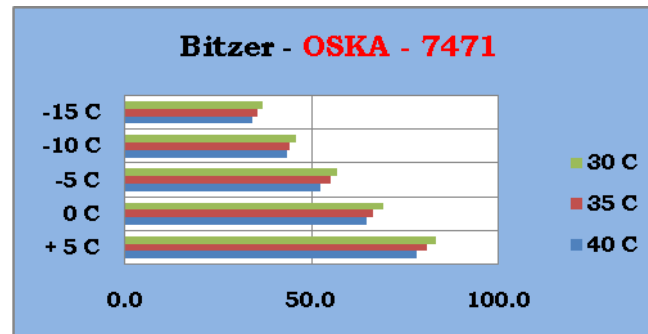
(1 TR = 3.000 K. Cal)



Model - OSKA - 7471 Capacity - T.R

Evaporating Temperature	Condensing temperature deg.		
	40 C	35 C	30 C
+ 5 C	78.3	80.9	83.5
0 C	64.7	66.6	69.2
-5 C	52.4	55.0	56.9
-10 C	43.3	44.0	45.9
-15 C	34.3	35.6	36.9

(1 TR = 3.000 K. Cal)



ICL - Bitzer

**World-class
Energy Efficient**

- Model - 7451
- Model - 7461
- Model - 7471

*Ammonia - Screw
Compressor Packs*



ICL - Bitzer - Ammonia - Compressor Packs

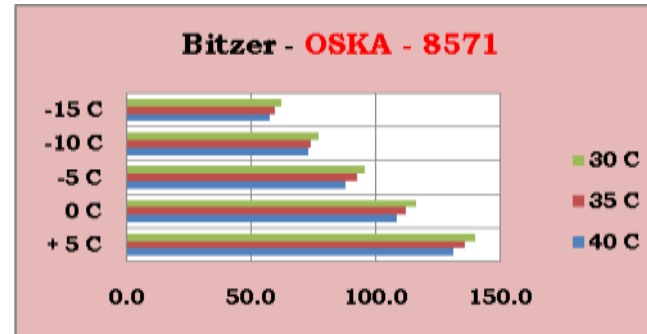
Water/Glycol Chiller Packages, Cold Storage & CA plant, Machinery

85 - Series : ICL - Bitzer - Ammonia Screw Packs

Model - OSKA - 8571 Capacity - T.R

Evaporating Temperature	Condensing temperature deg.		
	40 C	35 C	30 C
+ 5 C	131.4	135.8	140.1
0 C	108.6	111.9	116.2
-5 C	88.0	92.3	95.6
-10 C	72.8	73.8	77.1
-15 C	57.6	59.7	61.9

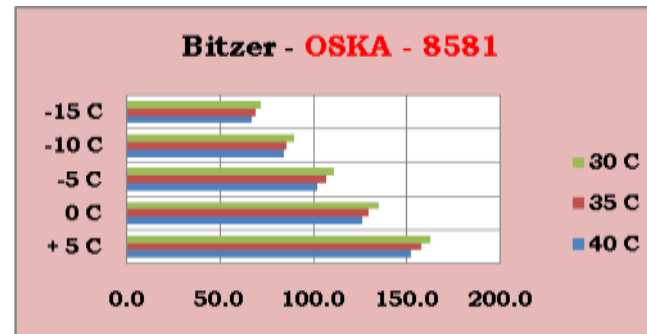
(1 TR = 3.000 K. Cal)



Model - OSKA - 8581 Capacity - T.R

Evaporating Temperature	Condensing temperature deg.		
	40 C	35 C	30 C
+ 5 C	152.5	157.5	162.5
0 C	126.0	129.8	134.8
-5 C	102.1	107.1	110.9
-10 C	84.4	85.7	89.5
-15 C	66.8	69.3	71.8

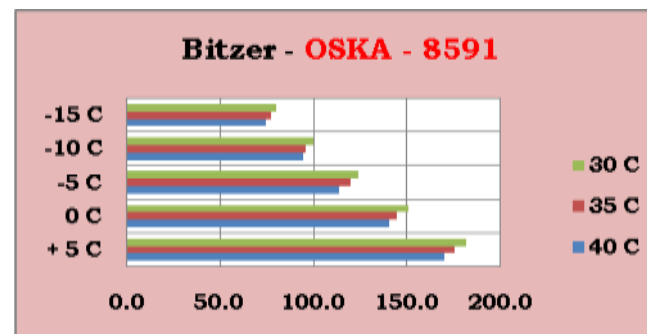
(1 TR = 3.000 K. Cal)



Model - OSKA - 8591 Capacity - T.R

Evaporating Temperature	Condensing temperature deg.		
	40 C	35 C	30 C
+ 5 C	170.2	175.9	181.5
0 C	140.7	144.9	150.5
-5 C	114.0	119.6	123.8
-10 C	94.3	95.7	99.9
-15 C	74.6	77.4	80.2

(1 TR = 3.000 K. Cal)



ICL - Bitzer

**World-class
Energy Efficient**

- Model - 8571
- Model - 8581
- Model - 8591

**Ammonia - Screw
Compressor Packs**



ICL - Bitzer - Ammonia - Compressor Packs
Water/Glycol Chiller Packages, Cold Storage & CA plant, Machinery

ICL - Refrigeration

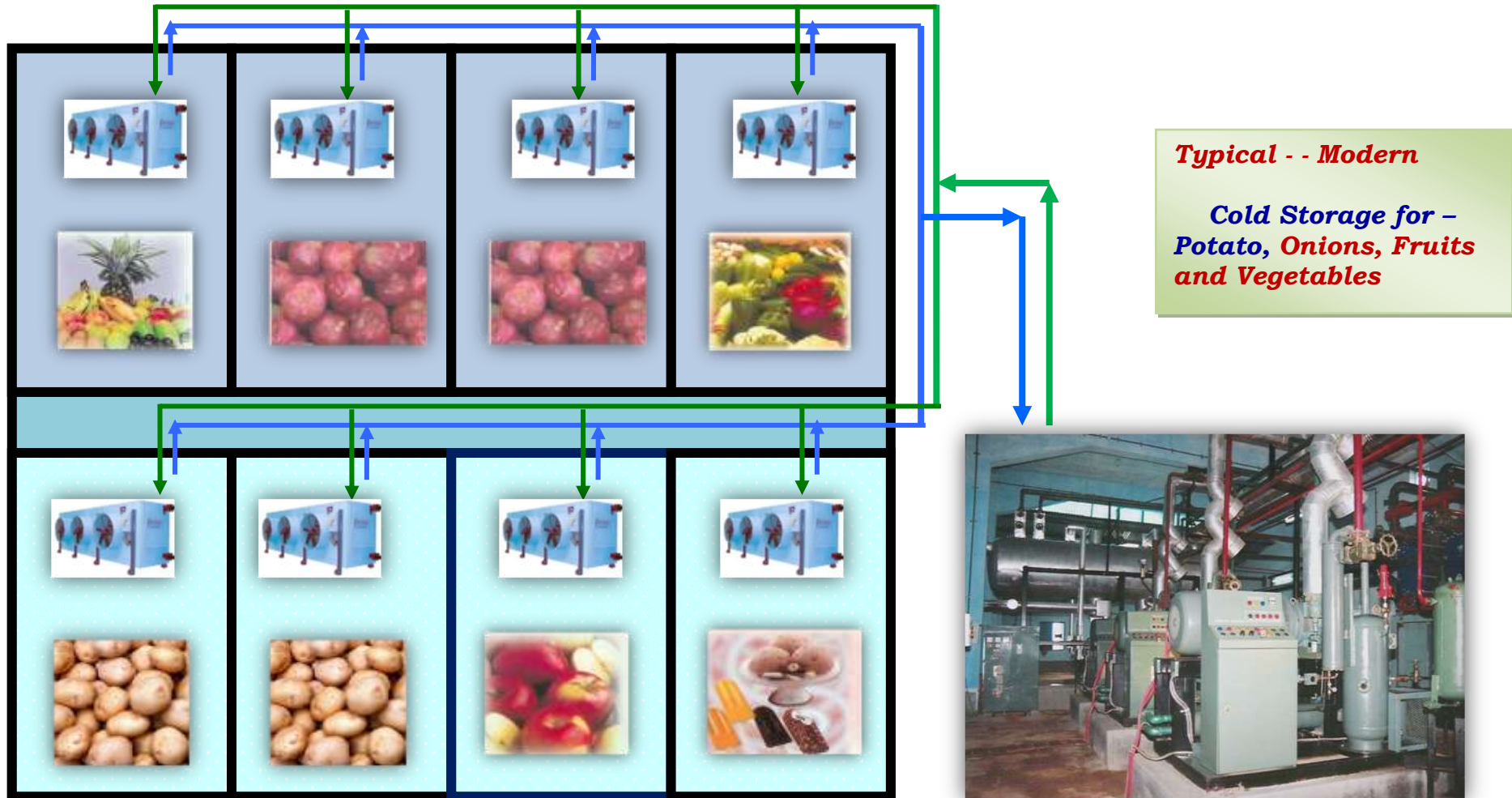
**ICL-Bitzer Ammonia
Compressor Packs - Applications :-**

- | | |
|--------------------------------------|-------------------------------|
| 01. Cold Storages - Potato | 09. Meat Plant |
| 02. Cold Storages - Onion | 10. Ice Cream |
| 03. Cold Storages - Apple | 11. Dairy Plants |
| 04. Cold Storages - Fruit | 12. Pharmaceuticals |
| 05. Cold Storages - Vegetable | 13. Breweries |
| 06. Freezing Plants | 14. Beverages |
| 07. Fisheries - Sea Food | 15. Petrochemicals |
| 08. Poultry | 16. Marine - Ships etc |



**ICL - Refrigeration Division - provide complete Cold Storages with
Insulated Panel Buildings & Refrigeration Machines**

ICL - Bitzer - Ammonia - Compressor Packs
Water/Glycol Chiller Packages, Cold Storage & CA plant, Machinery



ICL - Ammonia / Brine Air Cooling Units (ACU) maintain Precise-control of Temperature & Humidity in Cold Storages - More than 12,000 ACU in operation all over India

ICL - Bitzer - Ammonia - Compressor Packs **Water/Glycol Chiller Packages, Cold Storage & CA plant, Machinery**

ICL - Air Cooling Units (Ammonia, Brine & Freon)

ICL American-technology Air Cooling Units have been particularly designed for Cold Storages storing Potatoes, Apples, Fruits and Vegetables in India. These air-cooling units maintain precise control of temperature and relative "Humidity" for product freshness.

ICL - Cooling Coils (the American-technology) : ICL-Coils are with sine-wave plate aluminium fins and being produced on our CNC machines. Tube-to-fin contact is excellent though our modern tube expansion equipment, which ultimately makes the high-efficiency heat-transfer system. Coils are factory tested at 300 PSIG (20 Kg/sq.cm) pneumatic test pressure under water.

ICL-Cooling Units are available with stainless steel tubes, copper and aluminium fin cooling coils. These ACU are being produced in our most modern plant of international standard. The selection, construction of ACU is on CAD/CAM system which is unique feature of the technology.

Fans & Motors : Cooling units are equipped with direct drive Axial flow fans imported from Germany. The motors used are totally enclosed for protection against dust/moisture.

Casing (Galvanized Steel Sheets) : Casing of our air-cooling units is of die-formed, heavy gauge galvanized steel sheets. The sheet metal is being processed on our most modern CNC Amada turret machines. The casing is painted with electrostatic paint for protection against moisture, rust and has very long life.

Mounting & Electric Connections : ICL ACU are complete with foot mounting legs, which can be used for wall, ceiling or floor for multi-floor application. The internal electric wiring is complete up to electric junction box.

Installation (Air Cooling Units) : The Installations of ICL cooling unit has been made most simplified. It only needs electric connection and fluid line connections after mounting. The maintenance cost of ICL ACU's air-cooling unit is almost negligible.

ICL - Largest - Manufacturer of Air Cooling Units in India



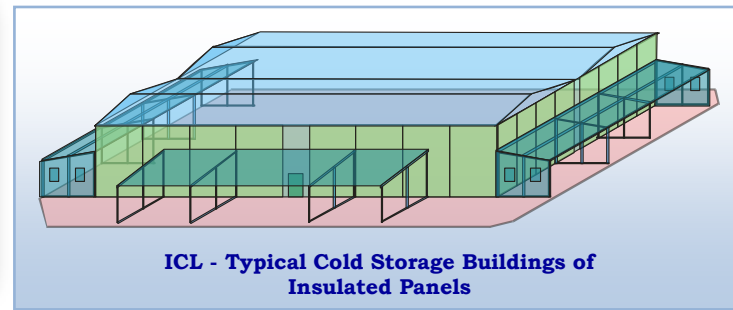
Ammonia or Brine - Air-cooling Cooling Units - the Heart of Refrigeration system - in Cold Storages

ICL - Bitzer - Ammonia - Compressor Packs

Water/Glycol Chiller Packages, Cold Storage & CA plant, Machinery

ICL - Advance Refrigeration Technologies

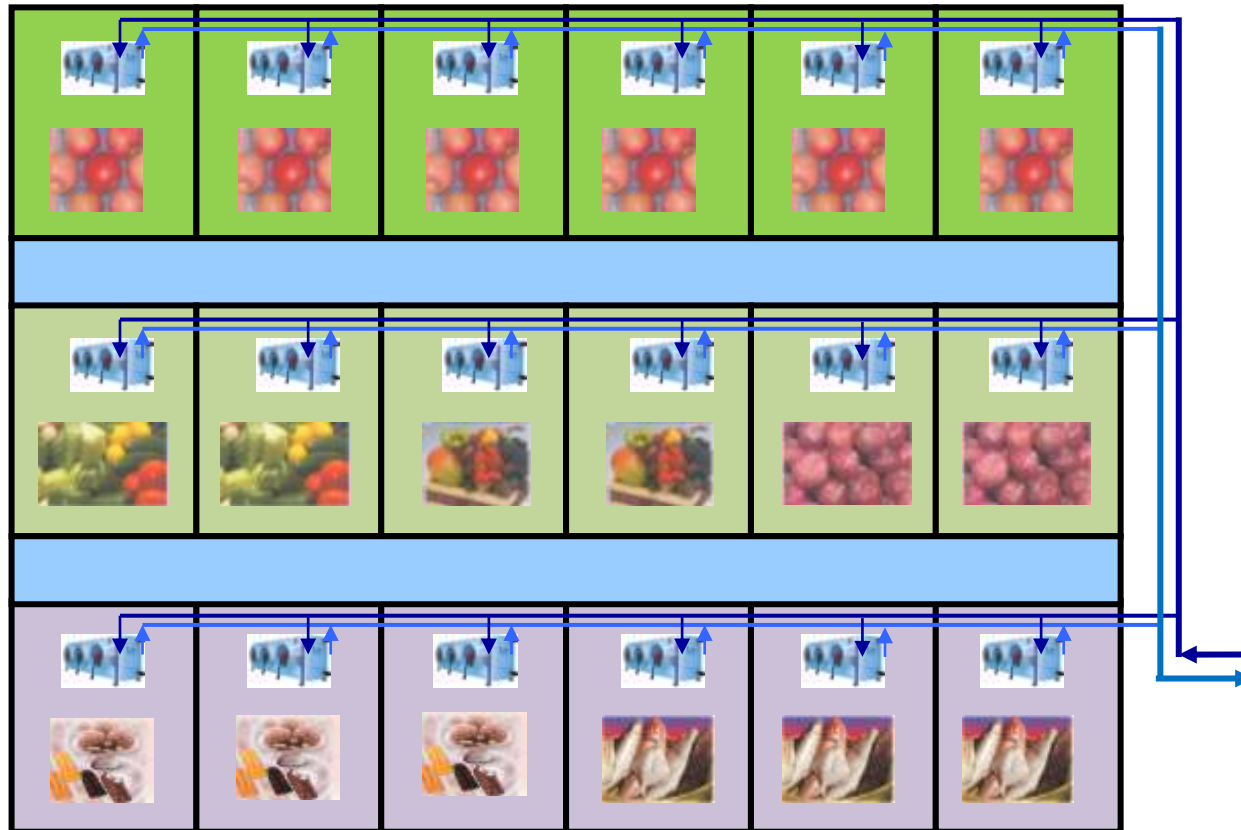
CA (Controlled Atmosphere) Cold Storages



ICL - Bitzer - Ammonia - Compressor Packs

Water/Glycol Chiller Packages, Cold Storage & CA plant, Machinery

ICL - Advance-technology Refrigeration Systems
Multi-purpose - Multi-product - Cold Storages



*Controlled Atmosphere
CA - Special type*

*Cold Storages and
Freezing plants*



ICL - Refrigeration CA (Controlled Atmosphere) for Apples
and Technology of Cold Storages, Freezing Rooms

ICL- Div. 2 - Refrigeration

Cold Storages & Freezers (Room Temperature +2 to -40 deg. C)



ICL-India - offer complete Turnkey Cold Storage projects (including Building)
from 500 MT to 40,000 MT (Fruit, Vegetable, Food etc) Storage capacity

ICL - India

The Leader in Technology

- Div. 1** - **Air Conditioning** : **CHP & Distt Energy**
- Div. 2** - **Power Generation** : **Thermal - Gas-turbine with Co-generation**
- Div. 3** - **Heat transfer** : **Air-cooled Cooling systems**
- Div. 4** - **Refrigeration** : **Cold Storages & Freezing plants**
- Div. 5** - **EPC Projects** : **Engineering Procurement Construction**



**ICL - Membership of – most-important
Institutes of the World**

**Brief information - - about
ICL-India Business Divisions**

Division - 1

Air Conditioning 100 to 50,000 TR
CHP : Cooling / Heating & Power



GT & Broad – Absorption Chillers
Save more than 80 % Electricity using
Natural Gas, Waste-heat etc.

VAM -Applications

1. DFA – Direct Fired Chillers
2. IFA – Indirect Fired Chiller
3. CHP – Waste-Heat Chillers

Division - 2

Refrigeration – Systems



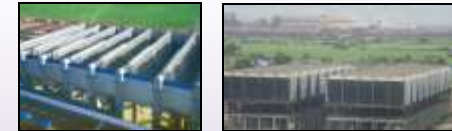
**Cold Storages and Freezing
Plants 100 to 40,000 MT**

Applications

1. Potato, Apples, Onions
2. Fruits & Vegetables etc.
3. Meat - Seafood & Dairy Foods
4. Industrial Chillers – (Ammonia)

Division - 3

Heat-transfer - Systems



**5 to 5,000 Mw - Air-cooled
Power-plant Cooling Systems**
Save 100 % Water

Applications

1. ACFC for Diesel, Thermal plants
2. Air-cooled Lube-Oil Coolers
3. Process Water Cooling systems

Division - 4

Power Generation (Thermal, G.T)



Power Generation

- Gas Turbine, CHP - Co-generation
Up to 2,000 Mw capacity
- Thermal-power Plants
5 Mw -to- 5,000 Mw

Save 100 % with Air-cooled system
Use 80 % Gas-turbine Energy with
ICL-CHP & District Energy

Division - 5

- EPC -

**Engineering Procurement
Construction**

- Air Conditioning – CHP and Distt. Energy
- Cold Storages Equipment and Freezing Plant
- Heat Transfer – Air-cooled systems ACFC & ACC
- Power Generation – Thermal, Gas Turbine / Diesel

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