

INTEGRATED COLD CHAIN SOLUTIONS

www.climatechangers.in



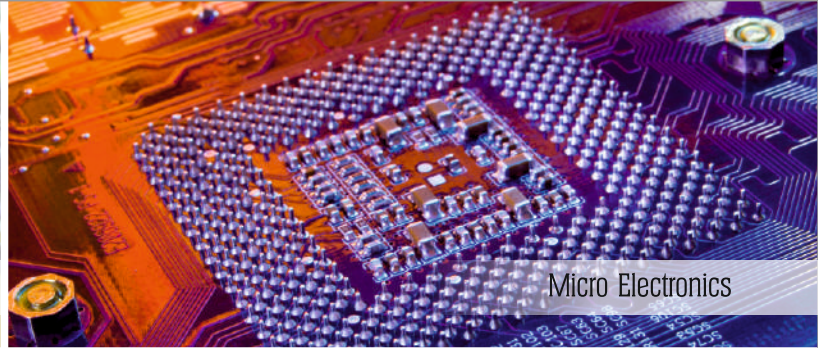
Integrators: Refrigeration systems & Industrial HVAC

Climate Changers™
Technology Solutions Private Limited





Beverage



Micro Electronics



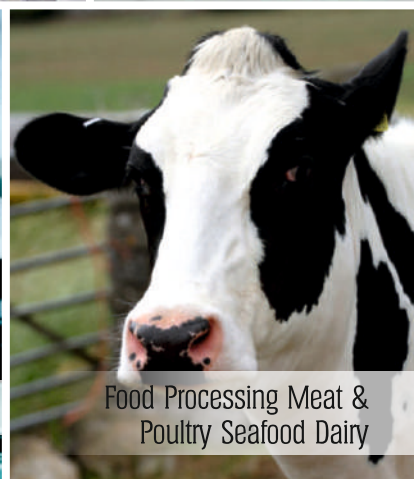
Refrigerated Storage & Warehousing



Ice Rinks & Arenas



Pharmaceuticals



Food Processing Meat & Poultry Seafood Dairy



Petro-chemical, Gas Compression

INDUSTRIAL REFRIGERATION SYSTEMS





DESIGN CONSULTING

Our Expertized team offers you their knowledge and experience from the very beginning of your project. We take the lead by developing project specific engineering, refrigeration design, architectural engineering and permitting.

CONSTRUCTION

From Project Management and equipment procurement to general construction and quality assurance, Climate Changers can provide you turnkey service that ensures the success of your project with the most innovative and technologically advanced products.



RETROFIT SOLUTIONS

Climate Changers constantly works towards delivering better energy optimized solutions and in order to support this term. We provide Retrofit solutions for an existing/old systems to upgrade and enhance in terms of Efficiency, Power Savings and modernization of systems. We render this services with the help of the advanced instruments in measuring the performance parameters without disturbing the operations and provide customers a detailed solution on enhancement with minimal cost.

PROACTIVE SERVICE SCHEME

Our proactive service system installation at your project sites, makes you feel relaxed & hassle free operations. Any alarms/troubles is notified well in advance response to the complaint is addressed faster.



CUSTOM ENGINEERED REFRIGERATION SYSTEM

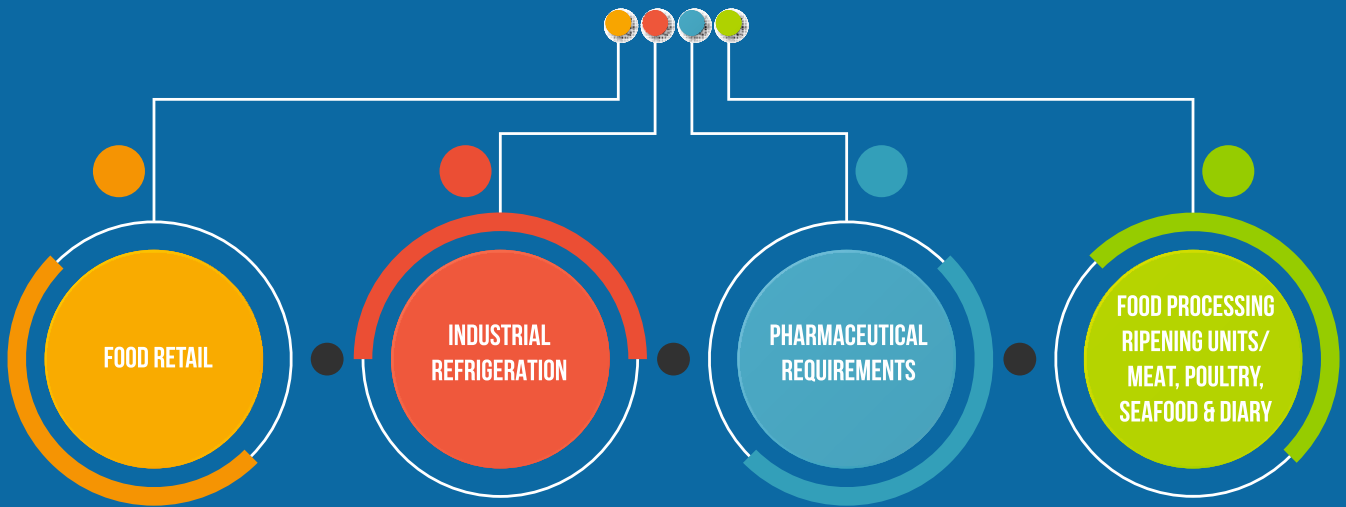
Whatever your Industrial Refrigeration needs.. Either a complete new system or a single add on unit.. Ammonia or Freon based systems, Climate Changers provides engineering, design and product selection to provide optimal refrigeration system. We offer the latest technologies and options to maximize dependability and performance on every Project.

COMPLETE COLD STORAGE FACILITY

From Evaporators and Condensers to Insulated panels and doors - Climate Changers can design and build a complete environmentally controlled space for cold storage with in an existing ware house or distribution center.



CLIMATE CHANGERS COLD CHAIN INTEGRATION SOLUTIONS



- » Hyper Market
- » Cash & Carry
- » Convenience store
- » Super Market

- » Ware House
- » Distribution Centers
- » Processing Centers
- » Pack House

- » Labs/Vaccine storage
- » Specialized Cold Rooms
- » Ware House

- » Banana/ Mango Ripening Chambers
- » Large Cold Stores
- » IQF
- » Blast Freezer
- » Plate /Spiral Freezers

SECTOR	CONSTRUCTION	REFRIGERATION SYSTEM	HUMIDIFICATION	ELECTRONICS	
Floriculture (Multi Temperature Rooms)	80mm thick PUFF Panels	R 404 A	Ultrasonic/ Adiabatic / Fog System (VFD Based)	Electronic Expansion Valves	
	Swing/Sliding doors	Slim line Evaporators		VFD's	
		Less Air Flow		LED's	
		Condensing Units		Central Monitoring System	
		Compressor Racks		SMS/Email Alerts	
				HACCP Approved	
Horticulture	60/80/100 mm thick PUFF Panels	R 404 A/R 134 A / R 407 C			Electronic Expansion Valves
Fruits/Vegetables/Greens/ Beverages/Dairy/Processed foods/Canned Foods/Exotic Vegetables/Hospitality (Multi Temperature Rooms)	Swing/Sliding doors	Dual Discharge/Blow Through			VFD's
		High/Med Air Flow			LED's
		Condensing Units			Central Monitoring System
		Compressor Racks		SMS/Email Alerts	
		Inverter Based System		HACCP Approved	
		Digital Compressors			
Poultry/Industrial/Sea food/Frozen foods/Ice Cream/Processed Foods/ Blast Freezing/Blast Chilling	80/100/120/150 mm thick PUFF Panels	R 404 A/R 134 A / R 407 C		Electronic Expansion Valves	
	Swing/Sliding doors/manual/Automated	Dual Discharge/Blow Through		VFD's	
	Dock Levelers	High/Med Air Flow		LED's	
	Dock Shelters	Condensing Units		Central Monitoring System	
	Roll up Doors	Compressor Racks		MIMIC Diagrams	
		Inverter Based System		SMS/Email Alerts	
		Digital Compressors		HACCP Approved	
		Hot Gas / Electric Defrost systems		Product Sensor Based controls	
		Water Cooled/Air Cooled Systems			
Seed Storage/LOW RH rooms	80/100 mm thk PUF Panels	R 404 A/R 134 A / R 407 C	Dehumidifiers	Electronic Expansion Valves	
Pharma/ Spices /Ginger	Swing/Sliding doors/manual/Automated	Dual Discharge/Blow Through	Electric	VFD's	
	Dock Levelers	High/Med Air Flow	Dessicant rotors	LED's	
	Dock Shelters	Condensing Units	Heat Recovery Systems	Central Monitoring System	
	Roll up Doors	Compressor Racks		MIMIC Diagrams	
		Inverter Based System		SMS/Email Alerts	
		Digital Compressors		HACCP Approved	
			Water Cooled/Air Cooled Systems		Product Sensor Based controls



**RIPENING CHAMBERS
TO MAKE YOUR BUSINESS**

Ripe With Profits

**ENERGY EFFICIENT PRESSURIZED RIPENING CHAMBERS FROM
CLIMATE CHANGERS**

through nature's ripening process



RIPENING CHAMBERS BY CLIMATE CHANGERS

Climate Changers — Complete Solutions on Pressurized Fruit Ripening Chambers with High End Integration with global technologies which is running exceptionally well all over India. With our Expertized solutions across the full spectrum on Cold Chain Solutions — Refrigeration System, Climate Changers provides Solutions on Design, Integration & Construction of Cold Infrastructure needs.

Climate Changers offer Hi Tech Banana Ripening Chambers with Temperature/Humidity/Ethylene/Co2 Management systems. Turnkey solutions - Civil/Electrical/PEB/Refrigeration/Racking solutions/Docking /Receiving/Storage/Operating & Maintenance.

RIPENING PROCESS & PRINCIPLES

Ripening is the process by which fruits attain their desirable flavour, quality, colour and other textural properties. On the basis of ripening behaviour, fruits are classified as (i) Climacteric, (ii) Non Climacteric. Mango, Banana, Papaya, Guava, Sapota, Kiwi, Persimmon, Fig, Apple, Passion Fruit, Apricot, Plum and Pears are Climacteric Fruits. Citrus, Pineapple, Grape, Strawberry, Pomegranate, Lichi, Watermelon and Cherry are Non Climacteric Fruits.

NOTE: Cold Rooms are different from Ripening Rooms

SALIENT FEATURES OF OUR RIPENING CHAMBERS

- Customized Walls, Ceiling & Air tight Specially Designed doors from Globally Present Suppliers.
- An Compact, Modular, Light Weighted, Food Grade Casing, High Air flow, Low Noise & Vibration Sleek Fans Coolers Specially designed for Banana Ripening Chambers up to 150 Pa ESP.
- An Energy Efficient High Performance Refrigeration system with multiple options on Customization with all green gases.
- Intelligent Control system on Ethylene Injection, Co2 Extraction, Fresh air Supply, Accurate temperature, Humidity Controls.
- Centralized Ethylene Injection System with Precise dozing by Ethylene Sensors & Co2 Extraction with High Static Modular Inline fans and sensors.
- An Automated Humidification system using Ultrasonic /Fog based Humidifiers
- Pulp based Control systems.
- A Complete automation with ease of access across globe on Web based system.
- HACCP approved Controls/Sensors/Electronic Devices.
- An Customized Air flow distribution system to enhance the quality of Ripening—using CFD Analysis.
- ssured results on Fruit ripening — in terms of Pulp Temperature, Lowest Weight Loss, Glossy texture, Fruit holding Quality.

CUSTOMIZED OPTIONS FOR RIPENING CHAMBERS

FOR REFRIGERATION SYSTEM

No.	System	Advancement	Type	Feasibility
01.	Direct Expansion Ref. System with R134A/R22/R407C	Reciprocating/Scroll Compressors - Fixed Speed/ Digital Scroll Compressors / Inverter Compressors. Dual Discharge / Front Discharge Coolers	One to One Condensing Units / Compressor Racks	Modular Type Chambers - Up to 30 MT storage in Single Chamber
02.	Chilled Water System	Primary Fixed & Secondary Variable & Inverter / Digital Compressors / Dual Discharge / Front Discharge Coolers	Compressor Racks - Air cooled / Water Cooled	Centralized Solution - Range Starts with 30 MT & above

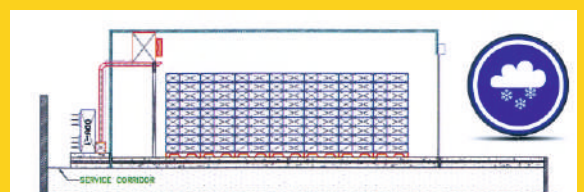
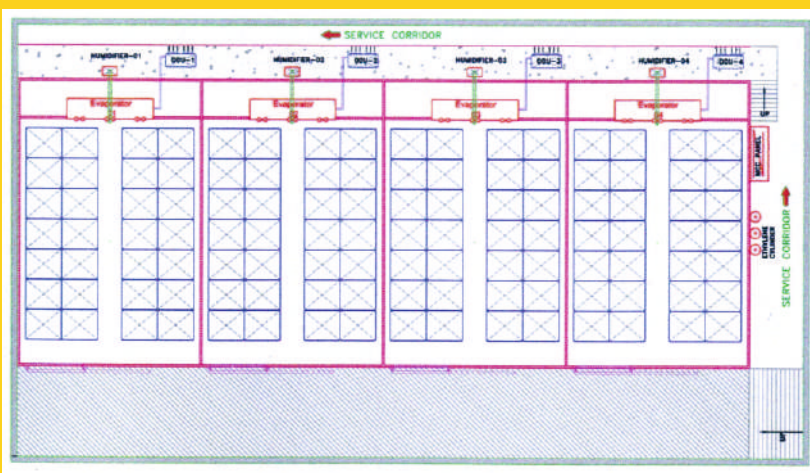
FOR REFRIGERATION SYSTEM

No.	System	Feasibility	Type
01.	Adiabatic	Independent / Multi Rooms	Microprocessor Controlled Heating system
02.	Ultrasonic	Independent / Multi Rooms	High Frequency Mechanical Oscillation
03.	Fog Pumps	Multi Rooms	Centralized Inverter based Pumping system with Fog Diffusion Nozzles

FOR ETHYLENE INJECTION & CO2 EXTRACTION

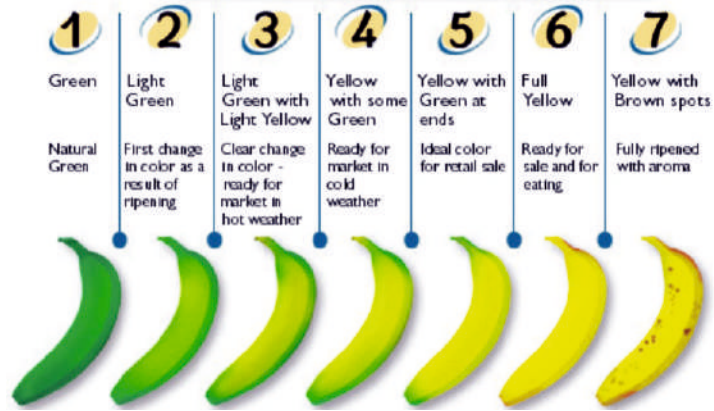
No.	System	Feasibility	Type
01.	Gasified Cylinder Based System	Independent / Multi Rooms	Microprocessor Based Control & Sensing system for Precise Ethylene Injection
02.	Ethylene Generators	Independents Rooms	Timer based Heating system
03.	Cabinet Exhaust with Energy Recovery and Absorbers	Multi Rooms with 30 MT & more	Inverter Based Centrifugal Fans & Energy Recovery Wheels - Ducted System fir Both Fresh air & Exhaust Air
04.	High Static Inline Fans	Independents / Multi Rooms	Room Mounted In line with Fans for Motorized control of Exhaust & Filtered Intake

TYPICAL PALLET ARRANGEMENT & RIPENING CHAMBERS LAYOUT (25 MT X 4 CHAMBERS)

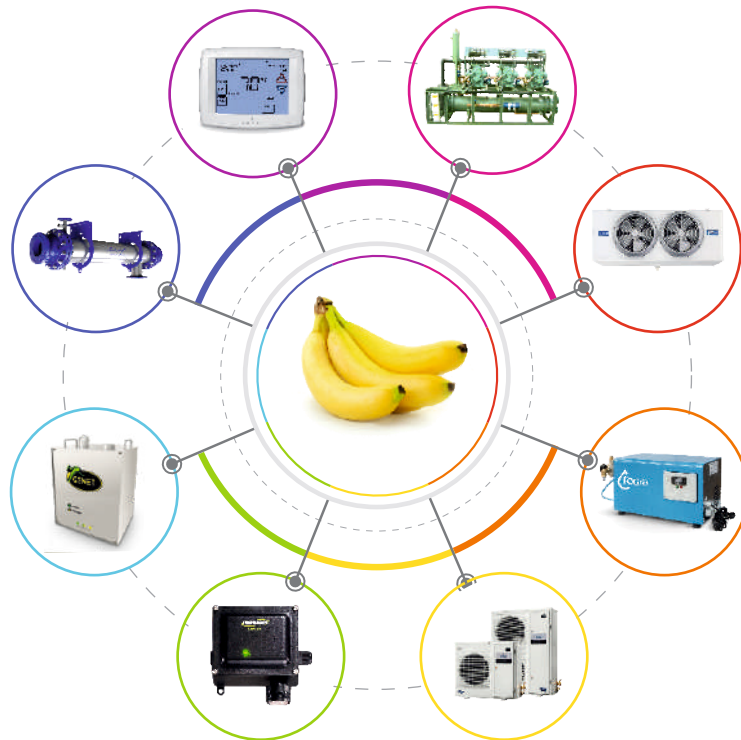


Banana Ripening Chart

Temperature in Ripening Period	Daily Ripening Chart							
	Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7	Day 8
4 Days	18°	18°	16 1/2°	15 1/2°	14 1/2°			
5 Days	16 1/2°	16 1/2°	16 1/2°	16 1/2°	15 1/2°	14 1/2°		
6 Days	16 1/2°	16 1/2°	15 1/2°	15 1/2°	14 1/2°	14 1/2°	14 1/2°	
7 Days	15 1/2°	15 1/2°	15 1/2°	15 1/2°	14 1/2°	14 1/2°	14 1/2°	14 1/2°
8 Days	14 1/2°	14 1/2°	14 1/2°	14 1/2°	14 1/2°	14 1/2°	14 1/2°	14 1/2°



Integrated Cold Chain Solutions By Climate Changers



Climate Changers™

Technology Solutions Private Limited

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