

Door Considerations for Operational Efficiency



An article by Padam Garg, Director & CEO of Metaflex Doors India Pvt. Ltd., a fully owned subsidiary of Metaflex group Netherlands.

The development of the Indian cold chain market promises to be one of the most lucrative in the world.

Currently, India is the top producer of fruits and second largest producer of vegetables in the world. However, due to lack of cold chain infrastructure, approximately 40 percent of the country's produce gets wasted. This is solely due to the cold chain industry still at a budding stage in India coupled with only few players operating in the space together with the current cold storage infrastructure and capacity being grossly inadequate. Post-harvest technology, particularly controlled environment facilities for extended storage, and transportation are critical for processing perishable foods prior to packaging them. There are immense opportunities for temperature-controlled, Atmosphere controlled storages and logistics companies in India. With government providing ample support by way of subsidiaries, there are greater opportunities for organized players to enter the Indian cold storage industry.

Improvement and development of the cold chain infrastructure is crucial for the Indian economy.

The cold chain operators in the Indian market face a number of challenges. The challenges include high cost of operations due to inefficient technology, subpar postharvest handling techniques, dependence on single commodities, locational disadvantages etc. In addition, there is a lack of trained personnel, integrated warehousing and logistics operations in India.

This will require adoption of modern post-harvest technology in a well integrated cold chain which includes automated approaches for sorting, packing, and forwarding perishable produce into intermediate storage facilities before transporting in temperature-controlled containers to the destinations, including processing factories.

The first and foremost step is to build a world class infrastructure with the technologies of the future We must build upon our core competencies in each area and synergize with every contributor , stake holder in making available the latest technology within India. This will require creating awareness, sharing knowledge and regular engagement between the various players.

Metaflex recognized these needs and created its presence by manufacturing and offering the **complete Door solutions** including designing, manufacturing, installations, after sales and annual maintenance being its core competency area, in India. The company was set up to bring the Dutch technology to offer our built to last products in India. Metaflex has its core competency in door solutions with in house R & D department continuously working on solutions for the future. It services customer requirements on a pan India basis.

The Metaflex Group is the only one in the world which is capable of building the most advanced, sophisticated, high engineering, radiation proof, insulated hot and cold boxes for uranium enrichment and has knowhow & exceptional engineering capabilities in house. All the Uranium enrichment companies in the world only entrust this work to the Metaflex group. We are humbled by this confidence and strive to provide the best, safest and long lasting products, a reason our products are benchmarked for quality. The group ethos is on building products to last. Metaflex Netherlands are recognized as global leaders in special applications door technology with expertise gained over last 35 years, with presence in over 30 countries and over 1 million installations globally.

At Metaflex India our core competency is doors and we are committed to contribute to this process.

Doors -“The most used and abused function of the cold storage with least importance attached.”

Doors in a conventional cold storage were never considered to be anything more than a cover on the opening of the cold storage required for access to remove or store the perishables. Not much importance has ever been paid to the role of the door in efficiency of a store.

Doors have evolved over a long period of time.



The early doors were made out of wood and designed to be hinged doors for small openings. As the requirements for larger storage grew the size of the hinge door also grew and materials changed to metal doors with wood or other local material as infill for insulation. These doors had low thermal efficiency, did not seal properly and were tedious to operate.

The further evolution was manual sliding doors for larger storage; however the material, insulation was still primitive. The doors totally compromised on the operational efficiency and profitability of the storages.

An efficient and profitable modern technology based cold storage recognizes the importance of a door as playing an important and integral role in the efficiency and profitability of all types of storages in the entire cold chain including but not limited to controlled atmosphere , Temperature controlled cold storage, ripening chambers , warehouse operation , food processing etc.

The Metaflex technology based Doors allow a combination of high-efficiency insulation, effective perimeter hermetic sealing, ease and speed of operation, wider applications. This results in high operational efficiency and quick ROI.

Type of doors

Metaflex Horizontal Sliding doors - The most popular choice since it offers many operational benefits:



Horizontal Sliding door, automated with pull cord or sensor or remote operation and manual doors are the most efficient in regulating flow of traffic and control of temperature by ensuring minimum time for opening and closing of the door and should be selected for Freezers, Chillers, Deep Blast freezers, ripening areas where movement cycle is high. Metaflex sliding doors are based on a 3D movement while closing to ensure full hermetic sealing and while opening, a rising movement to ensure seals is not damaged in use. These are Ideal for regular fork lift and trolley traffic. The automatic doors are more efficient than Manual Sliding doors and can save enough energy costs to pay back for themselves within a year.

Metaflex Hinged doors



Metaflex hinged doors are with rising hinges and high quality rubber seals to ensure long lasting hermetic sealing, For manual carriage of goods, for personnel entry points, for small storages ,for areas where traffic is minimal, space availability is a constraint and door openings are not large.

Metaflex Hatch doors



Hatch doors for small openings and all temperature applications. Metaflex has an ideal Hatch door.

Metaflex Vertical sliding & overhead sectional Doors



Vertical sliding or over head sectional doors for saving floor space.

Overhead Sectional doors for dock areas, ante rooms.

Metaflex provides the best solutions.

Metaflex in India as total door Solution Company also provides solutions Under exclusive marketing arrangement with the Global leaders SALCO for CA doors and BG Doors for Ripening doors

Metaflex MA / CA / ULO Doors under special distribution arrangement with world leaders SALCO.

A gas tight room is an obvious prerequisite for achieving a good controlled atmosphere. Thus it is necessary to ensure CA room gas -tight.




For CA storage choose the Salco CA door being distributed in India by Metaflex as MAK APPLE. It allows very quick operation, has both hermetic and gas tight sealing. Salco are the world's renowned manufacturers of these doors and they have their core competency in CA Store doors. Their design of inflatable gasket to achieve gas tight sealing is a patented technology. The leading CA storage equipment suppliers and consultants like SCS USA and ICA UK recommend the SALCO CA doors. Metaflex in India sells installs and services CA doors from SALCO. Available in horizontal sliding & vertical sliding & hinged. These doors ensure equal and effective gas tight sealing all along the perimeter. It is very quick to open and close the door and effective gas tight sealing is achieved in two stages

First stage ensures full hermetic sealing on the perimeter

Second stage ensures effective gas tight sealing through an inflatable gasket.

Metaflex Ripening Doors

	<p>For Ripening doors choose the doors of global leaders in ripening doors, BG Doors being distributed in India by Metaflex as MAK BANANA, with hermetic sealing to ensure no gas leakage; available as horizontal sliding, vertical sliding and overhead sectional.</p>
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At Metaflex doors are always designed for the purpose and built to last providing continuing efficiency in the operations. The challenge in the design of an efficient cold storage doors is to address the problems of loss of energy due to conduction, infiltration, slow and tedious opening & closing of doors and improper sealing. Our doors are designed, manufactured and installed for the role they are expected to play in maintaining required parameters such as temperatures, handling traffic, gas tight sealing, preventing loss of energy , speed and cycle of operation etc. We recommend all doors should have good hermetic sealing to ensure loss of temperature and energy in every area of application.

The designing process ensures functionality and durability depending on the door weights and movements, framework, insulation values required and so on. The design and construction of a door must provide for durability to withstand the rigors of the industrial use and should have stable and heavy duty framework.

The insulation in panels is calculated for ambient and cold room operating temperatures. For Freezer rooms a self regulating heater tape is fitted. The door frame is rugged and robust. The hardware of the door like rising Hinges, Locks, seals, rollers fittings and moving parts are of high quality and tested to withstand regular and extensive rigors of industrial use over a ,long period of time.

The door assembly process ensures precision assembly and quality of the built door to be tested for sealing, movement before it is installed in a total quality driven environment. That is why Metaflex doors are benchmark in quality and are built to last...

A quick guide below will help you select the type of a door for your application:

Metaflex Recommends				
Application Area	Temperature	Suitable for Application / Use	Thickness(MM) of PUF Insulation	Door type
				SLIDING
Ante Room/process Hall	Upto +1 degree	Chiller Room	80	MAK Chiller Horizontal sliding
Freezing room	Upto -28 degree	Freezer Room	120	MAK freezer Horizontal sliding
Blast freezing room	Upto -40 degree	Blast Freezer Room/Plate Freezer	150	MAK freezer(Blast) Horizontal sliding
				HINGED
Ante Room/process Hall	Upto +1 degree	Ante Room	80	MAK Swing Chiller
Freezing room	Upto -28 degree	Freezer Room	120	MAK Swing Freezer
Blast freezing room	Upto -40 degree	Blast Freezer Room/Plate Freezer	160	MAK Swing freezer (Blast)
				HATCH
Chiller areas	Upto +1 degree	Sample Inspection & Extraction from Anteroom	80	HATCH Chiller
Blast freezer room	Upto -28 degree	Sample Inspection & Extraction for freezer room	120	HATCH Freezer
Blast freezer room	Upto -40 degree	Sample Inspection & Extraction	160	HATCH BLAST Freezer
				CA / ULO ROOM
ULO /CA area	Positive	apple storage	100	MAK Apple Horizontal Sliding
ULO /CA area	Positive	apple storage	80	MAK Apple Hinged
				INDUSTRIAL
Dock Area/ warehousing/ Shop floors	Positive	Loading-unloading/production	40	MAK Industrial (Overhead Sectional)
				RIPENING CHAMBERS
Ripening areas	Positive	Banana ripening	80	MAK Banana Horizontal Sliding
Ripening areas	Positive	Banana ripening	40	MAK Banana Overhead

STANDARD Sizes available										
Metaflex recommends/Door type		Size in Meters								
	STANDARD SIZES							LARGE SIZES		
SLIDING	0.9X0.9	0.9X2.0	1.2X2.1	1.5X2.1	1.5X2.4	1.8X2.4	2.4X2.4	1.8X3.0	2.4X3.0	3.0X3.0
MAK Chiller Horizontal sliding	X	X	X	X	√	√	√	√	√	√
MAK freezer Horizontal sliding	X	X	X	X	√	√	√	√	√	√
MAK freezer(Blast) Horizontal sliding	X	X	X	X	√	√	√	√	√	√
HINGED										
MAK Swing Chiller	X	√	√	X	X	X	X	X	X	X
MAK Swing Freezer	X	√	√	X	X	X	X	X	X	X
MAK Swing freezer (Blast)	X	√	√	X	X	X	X	X	X	X
HATCH										
HATCH Chiller	√	X	X	X	X	X	X	X	X	X
HATCH Freezer	√	X	X	X	X	X	X	X	X	X
HATCH BLAST Freezer	√	X	X	X	X	X	X	X	X	X
CA / ULO Room										
MAK Apple Horizontal Sliding				√					√	
MAK Apple Hinged		√	√							
INDUSTRIAL										
MAK Industrial (Overhead Sectional)								√	√	√
RIPENING CHAMBERS										
MAK Banana Horizontal Sliding					√	√	√	√	√	√

MAK Banana Overhead								√	√	√
√- Available x - Not Available										

Installation of a door is very important.

A good door badly installed will render the good door useless. Installation on the site is as precise and skilled job as making of a door and should be done by trained people. The installation should be checked for full hermetic sealing, smooth movement of the door, all operating systems like locks, automation etc .Doors must be protected from accidental damages by fixing checking plates and bumper bars. Automation should be protected against Power fluctuations by fixing a ups.

Well manufactured and correctly installed doors will need lesser maintenance, depending upon the frequency of operation at the application areas. Still regular maintenance schedules and servicing will ensure longevity and trouble free use of the doors.

In case of repair requirements, the damaged parts should be replaced immediately with o e m spares under the supervision of a trained door specialist, ideally by the authorized person.

We recommend that the installation repairs and annual maintenance should ideally be done by the authorized and trained personnel of the door company who has supplied the door.

Metaflex services all such requirements of installation, repairs and services of doors sold by Metaflex on pan India basis.

Be wise

While choosing a door it pays to do some homework and compare . Take a close look at the intended application and estimate both the upfront investment and long-term operating costs as total cost over the lifetime of the door. The total life time costs of a good quality door should be the lowest may be with upfront investment higher and long term operating costs being the lowest. Good quality doors may come at a high price but will be in expensive in the long term due to benefits of saving on long term operating costs.

Key is Energy & operational Efficiency that a door can contribute

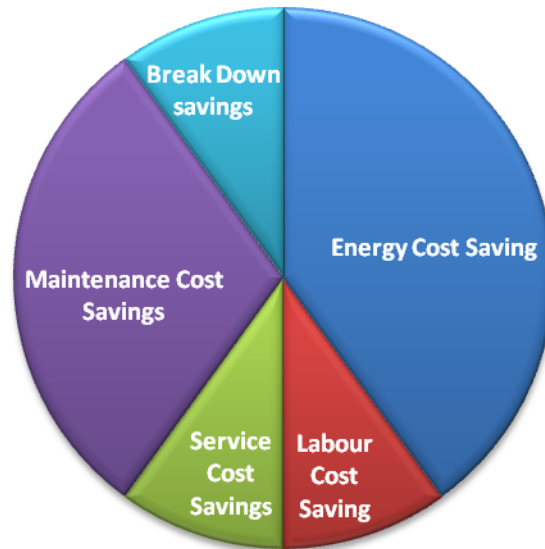
The key to low long-term costs is energy efficiency. A thorough energy analysis can predict with considerable accuracy which type of door system is the most economical choice. A complete cold storage door analysis also must factor in door maintenance and repair costs, employee safety and comfort, handling productivity and the quality of manufacturer service support and warranty. As door technology advances, cold storage facilities can lessen the compromise between handling productivity and energy efficiency.

An important factor to remember while doing energy analysis is to look for recurrent energy costs - Energy losses will occur due to improper hermetic sealing , conduction ,infiltration , which is due to design , quality of material , quality of manufacturing , improper installation , tedious and slow operation of the door . In a hermetically sealing, smooth, high speed and good quality door the recurrent energy costs will be minimal due to low or negligible conduction and infiltration.

In addition to the price of the door itself, start-up costs include the price of defrost systems and the calculated product storage loss due to the operating space the door system requires. A thorough energy analysis can pinpoint which type of door system is the best economical choice. They would still do well to compare systems and calculate both the short and long term costs.

Metaflex High performance Doors lead to high savings due to Energy costs, Maintenance Costs, Labor costs, Service Cost, Breakdowns which results in faster ROI.

High Performance Doors Lead to faster ROI



For any other information and technical queries, please feel free to get in touch with us, we will be pleased to share the information with you info@metaflex.in alternatively write to us or contact us at **Metaflex Doors India Pvt Ltd, A7, Phase 2 Noida -201305. UP. Telephone: 0120 - 4751000, Fax: 0120- 4751016.**