TIPPMANN INNOVATION

Market-Driven Solutions to 'Distributed' Cold Chain Challenges

June 11,2019

Global Cold Chain Alliance Expo

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Evolving Demand for Distributed Cold Storage

- The future is upon us as we see the blending of digital and physical supply/cold chains. We will discuss how to leverage what already exists as a catalyst to a more efficient and distributed cold chain.
- Market demand is being driven by the urbanization of U.S. distribution combined with changing consumer demands for healthier, specialty foods, as well as surging ecommerce requirements calling for foods at your doorstep in a day or two.
- The steep barriers to entry for the traditional model of cold storage capacity, i.e. supply, continues to create a shortage of capacity.
- A distributed cold chain with customized functionality addresses some of these challenges but is not a single point solution, as all the components must be in sync for an effective and efficient strategy.

Today, There is an Imbalance between Cold Storage Supply and Demand

- Available cold storage capacity in many markets across the US is at a premium.
- According to JLL, the refrigerated storage sector is forecasted to grow 3.4 percent annually between 2014 and 2019.
- Yet, the number of facilities across the United States will only grow by 1 percent annually for the next five years, creating a gap between supply and demand. (Food Logistics LARA L. SOWINSKI **MARCH 19, 2018)**

CHICAGO	
Available SF	747,755
Vacancy Rate	8.3%
Total Existing SF	8 MSF
Under Construction	183,000

MIAMI	
Available SF	352,660
Vacancy Rate	22.7%
Total Existing SF	1.6 MSF
Under Construction	0

DALLAS	
Available SF	551,256
Vacancy Rate	6.1%
Total Existing SF	8.2 MSF
Under Construction	0

NEW YORK	
Available SF	287,400
Vacancy Rate	3.3%
Total Existing SF	3.6 MSF
Under Construction	0

LOS ANGLES	
Available SF	149,889
Vacancy Rate	0.6%
Total Existing SF	9.9 MSF
Under Construction	0

NEW JERSEY	
Available SF	91,237
Vacancy Rate	0.3%
Total Existing SF	4.2 MSF
Under Construction	0

Source: CoStar

Source: Avison Young National Food Services Group 2019 Market Outlook

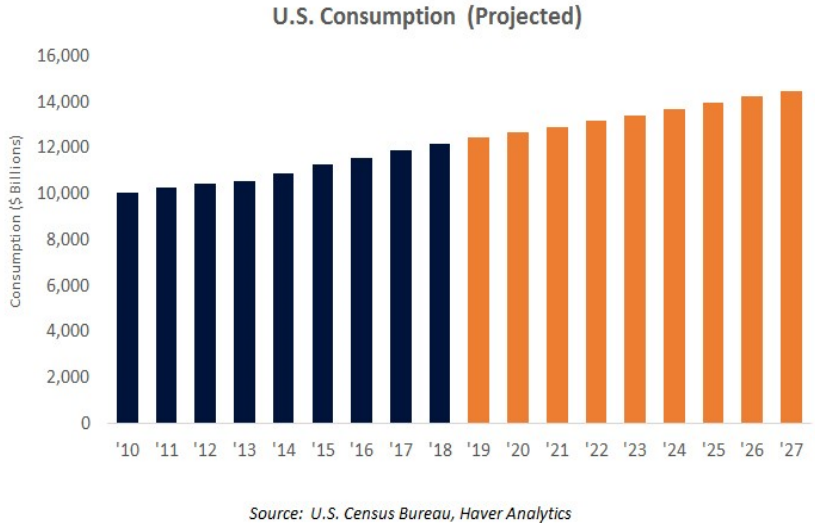
New Consumer Demands

Cold Storage Demand Factors

- Ecommerce and online grocery sales are placing increasing pressures on cold storage demand through the demand for temperature controlled products. 2017 online grocery sales represented $19 billion or about 3% of total grocery sales in 2017, with projected growth to reach $100 billion (13%) by 2024, according to FMI/Nielsen.
- Millennials as well as other consumer demographic groups are driving evolving demand requiring temperature controlled storage and handling:
  - Demand for fresh food offers as well as fresh produce availability all twelve months of the year
  - Convenience for dual-income households and millennials, who cook less and shop online more for fresh food, meal kits and frozen, convenient offerings
  - Mass customization resulting in increasing SKU requirements
  - Consumer expectation of quick response with faster deliveries requiring cold storage to be located in urban areas closer to the consumer
  - Not only new demand pressures but demand requirements in new urban center locations, resulting in the urbanization of distribution

Cold Storage Demand Factors

- Population growth as well as the increasing amount of discretionary income consumers spend on fresh and organic foods will continue to drive demand. These growth factors alone could outstrip the projected growth in cold storage capacity.



Source: U.S. Census Bureau, Haver Analytics

- Demand is also impacted by functionality issues, such as ceiling heights, temperature capabilities, processing requirements, etc., caused by obsolescence of older cold storage facilities in many markets.

- Nearly 48% of all active refrigerated American warehouse facilities were built prior to 1980, the advent of automated cold storage warehouses. As an example, the average ceiling height of a cold storage warehouse has increased from 23 feet in 1980 to 38 feet in 2010. (Source: Datex)

Why Doesn't the Market Supply Adjust to the Demand Requirements?

- With the case made for higher demand for the foreseeable future, it would be expected that investors would respond with significant cold storage investments.
- This has not happened because of the steep barriers to entry:
  - Facility construction and equipment costs may be twice as much as a conventional warehouse.
  - Annual operating costs are significantly higher than dry storage due to the climate-controlled requirements.
  - Operating requirements can be complex and may include compliance with FMSA or FDA regulations. In addition, ecommerce requirements create fulfillment challenges of handling smaller orders with quick turns within a cold operating environment.
  - Long-term customer contracts are not generally the norm with customers seeking the flexibility to switch providers.
- As a result, investors tend to seek tenants with a large commitment before investing in new cold storage capacity (e.g., single anchor tenant, multiple small commitments, etc.).

How Can the Demonstrated Demand Requirements be Better Matched to Marketplace Supply Requirements?

- A solution is required to address the smaller groupings of demand that is often distributed over multiple customers within a geographic area.
- The investment requirements must be better matched to the smaller demand so that facilities meet the needs of today's digital, urban consumers – all with the required ROI. This can be done through a two-phased approach:
  - **Market-level demand assessment utilizing multivariate data-centered methodologies.**
  - **Innovative ROI-focused facility and equipment design to allow more efficient access to markets.**

Tippmann Market-level Demand Assessments

Qualification of Market Potential

- Market Level Forecast Study Overview
  - Quantification of market potential
  - Qualitative assessments of market supply, demand and infrastructure
  - Based on proven market research and data collection techniques
- Assessment of market supply and demand and how the market's demand should drive infrastructure supply requirements
- Development of key cold storage market demand and supply indicators

Market Supply and Demand Assessment

- Market determination assessment
  - Projected number and types of customers
  - Channel partners such as distribution or specialty providers – or lack thereof
  - Number of current and projected competitors (competitive landscape)
  - Other possible surrogates (e.g., centers of influence) that predict market demand and consumption behavior
- Primary and secondary research

Proven Methodology

Market Supply and Demand Assessment

- Market Feasibility Assessment (MFA) Tool - Proprietary multivariate data-centered methodology that considers the amount of customer demand in combination with critical variables tied to infrastructure and market supply availability
- Development of Key Cold Storage Market Demand and Supply Indicators
  - Supply market capacity assessment
  - Market demand projections
  - Projected demand growth for market
  - Infrastructure requirements and availability assessment
    - Types of cold storage requirements most needed in the market
    - Best ways to approach market in terms of services and capabilities

Efficient market access through innovative ROI-focused facility & equipment design

Once market supply and demand is assessed, the needs may be addressed through new approaches allowing more efficient access to markets

The Components of a Distributed Cold Chain

- It is a network of freezers and coolers with high functionality, such as:
    - Traditional and E-fulfillment
    - Quick Freeze, Quick Chill and Quick Temper
    - Light processing
    - Cross dock
- It is a network that can use existing building infrastructure to reduce cost and time
- The ability to customize these facilities in more exacting ways, better accommodates product and demand characteristics

A Key Component of the Distributed Cold Chain is a Modular Box in a Box.

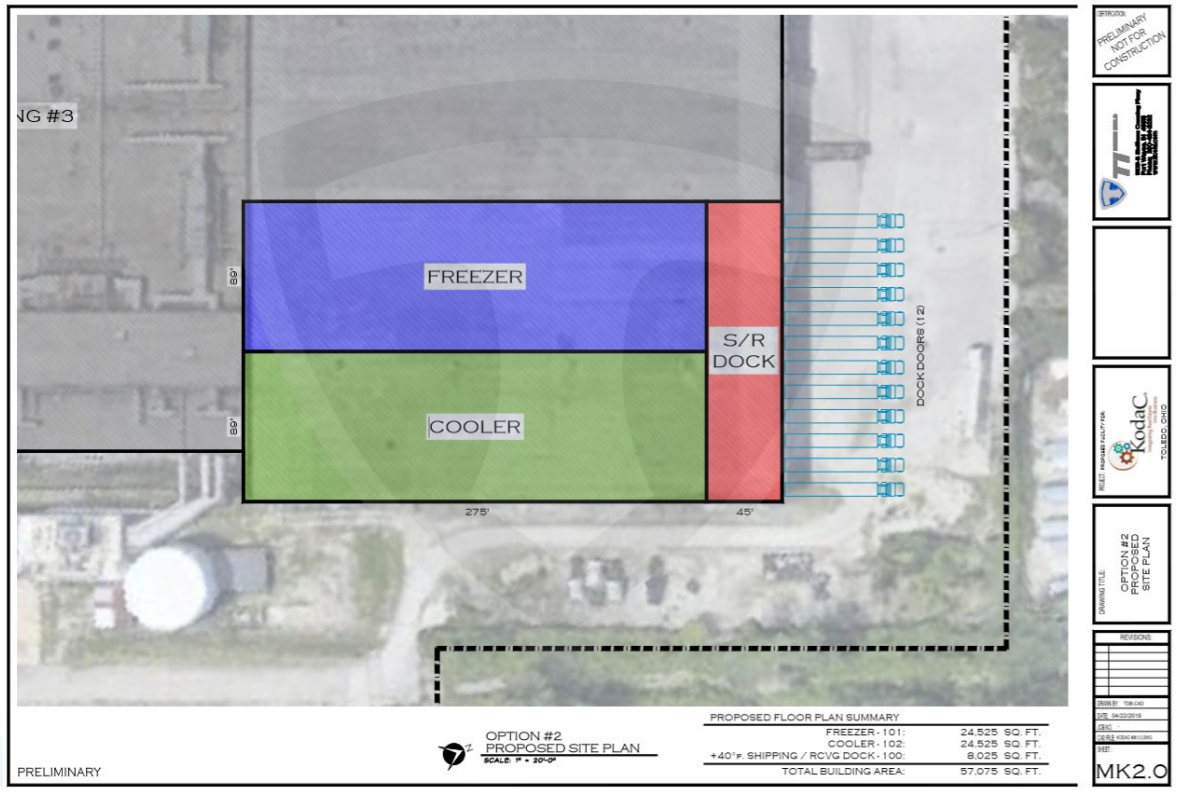
The Approach is COOL

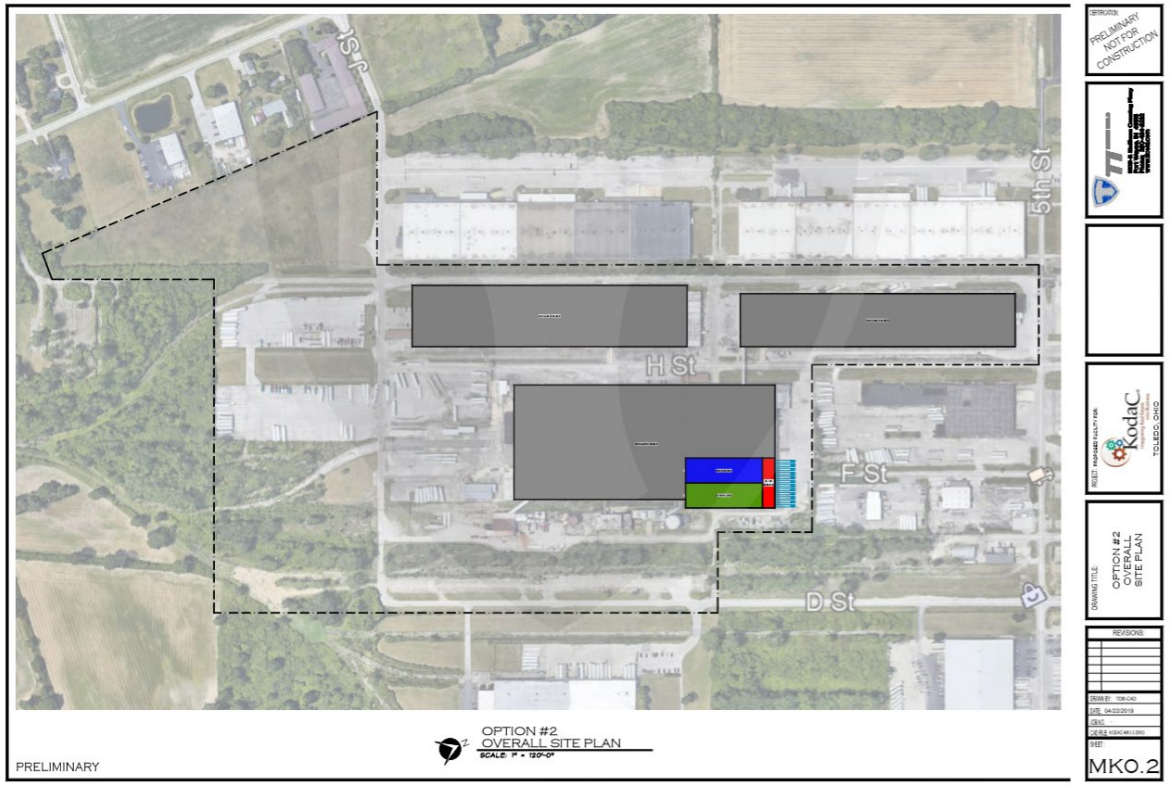
- Customized – for a specific use
- Optimized – easier to locate in congested urban areas or further out
- Organized – due to ease of installation and flexibility
- Logistics – facilities can accommodate multiple approaches from micro distribution to more efulfillment through to traditional approaches

Modular Box in a Box Addresses Requirements Needed by Smaller Demand Commitments and Urban Locations

- Cost can be less than 50% of traditional cold storage investment requirements, providing target ROIs at a lower scale.
- Construction time can be as little to three to four months before facility is operating and rents are being generated.
- Since footprints can be relatively low compared to traditional cold storage space, urban locations can be targeted to meet needs of urban consumer demand.
- Since the design is modular in nature, the components can be taken out and reused in other locations.

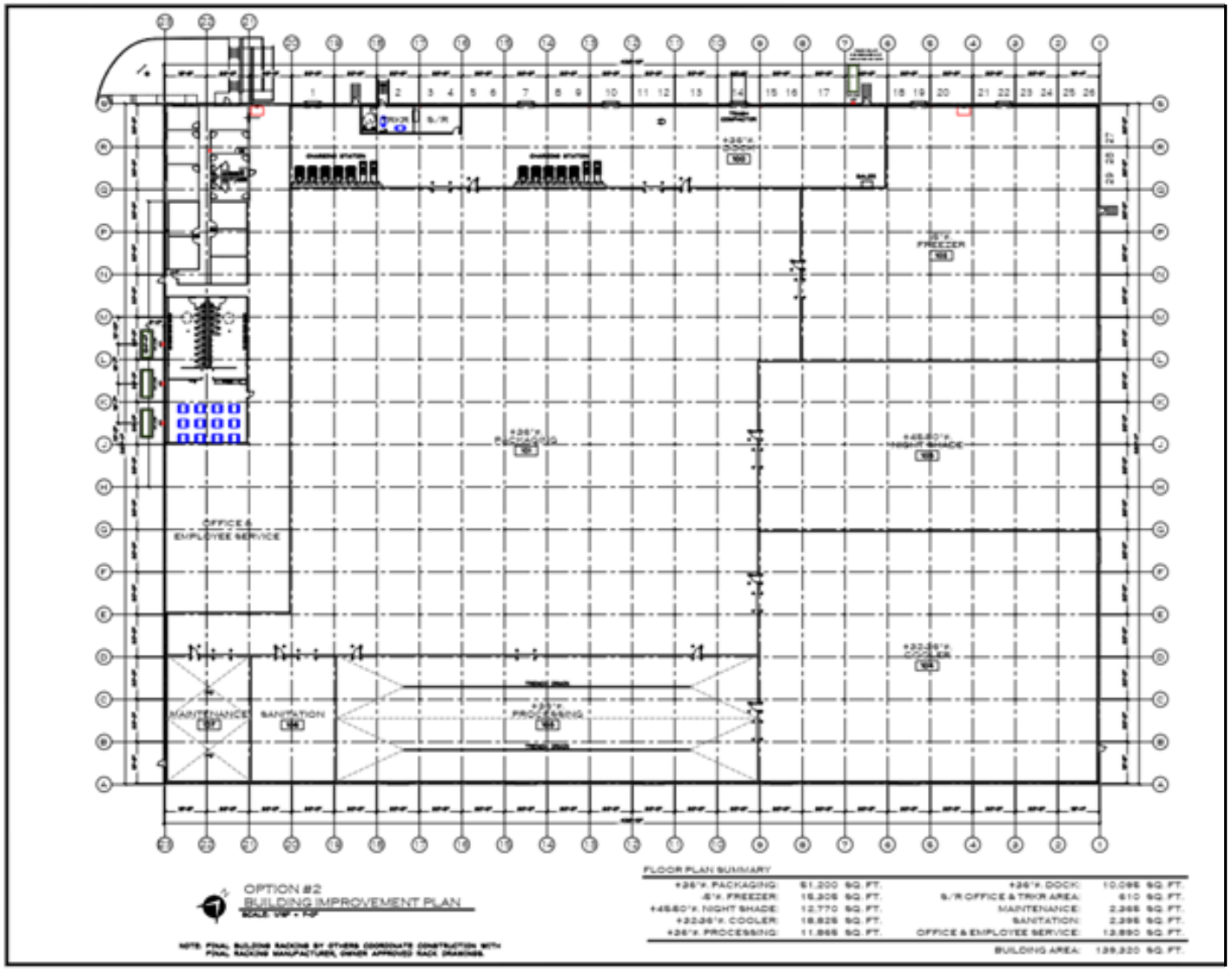
A Modular Box in a Box Can be Small





25,000 sf each

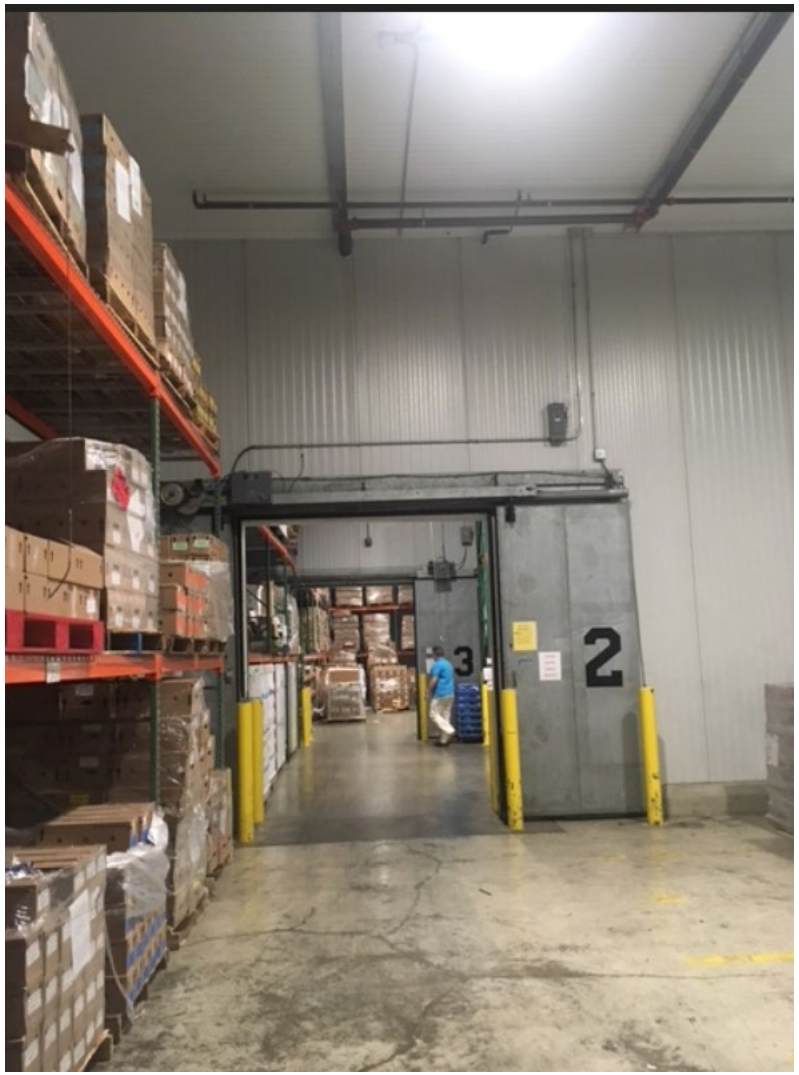
A Modular Box in a Box Can be Large



140,000 sf

A Modular Box in a Box Can be Tall

A Modular Box in a Box Can be Multi-Temp



A Modular Box in a Box Can Easily be Part of a Light Industrial Park

With Changing Demands, Existing Cold Storage Buildings Also Need to Maximize Flexibility

As an example the ability to use existing space in more ‘value added’ ways such as:

- Quick Chill
- Quick Freeze
- Quick Temper
- E-fulfillment and quick response storage and pick designs for DTC and similar requirements

These functions can be added to a building with minimal modifications.

① Fan Discharge (Fans Draw/Pull Air From The Aisle Through the Pallet/Spacer Areas).

② Pallets Loaded “Single-Deep” Against Plenum Openings.

① Differing Pallet Heights Are Accommodated.

② Pallet Discharge Air Enters Plenum.

③ Room Air Enters Pallet

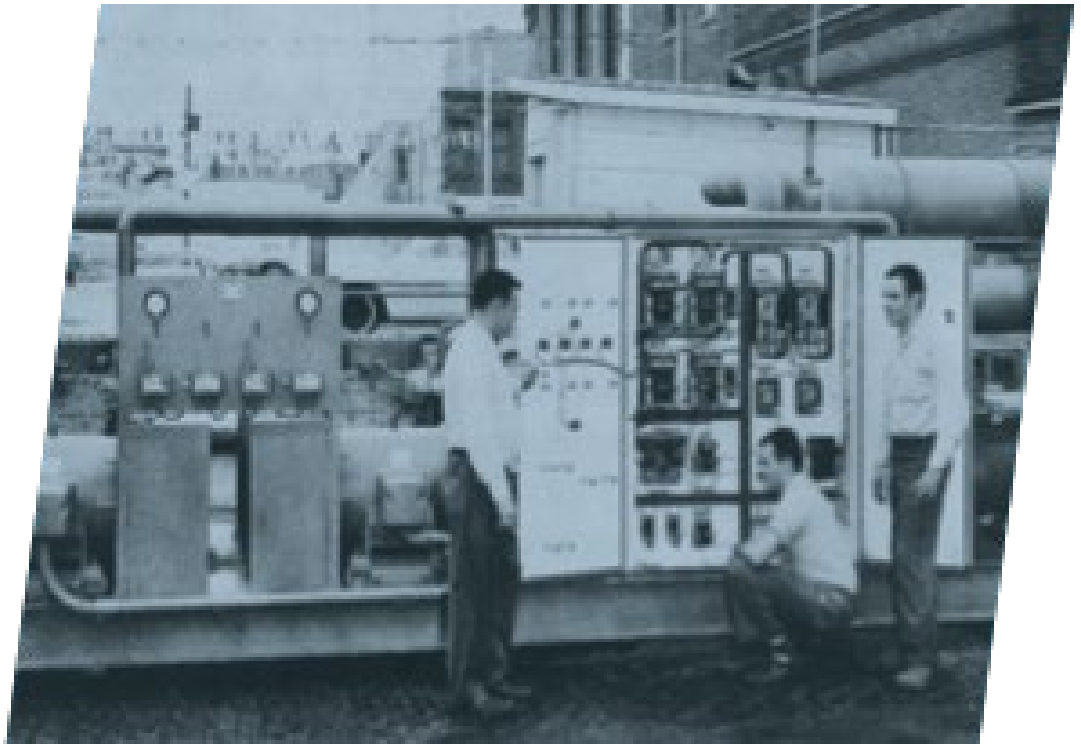
④ “The Path of Least Resistance” Becomes the “Ideal” Path (Through The Spacer Area).

QF+ FREEZING SYSTEM™

Flexibility of Design Includes Ability to Accommodate Non Traditional Uses

- Cross Dock for Local Inventory and Deliveries
- Cross Dock for Rail Locations
- Marketing support for new product launches
- Return Centers
- Smaller Consolidation Centers for Specialty Products

Five generations of unrivaled expertise in refrigerated cold construction and equipment innovation



https://vimeo.com/digitalstoriesmediagroup/review/328407832/daa35dc32e

Questions and Answers?