



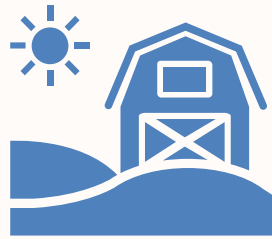
Application Dossier

FOOD & BEVERAGE

Introduction

- The Food and Beverage (F&B) industry includes all companies involved in producing, processing, packaging, transporting, and distributing edible goods - from the farm (or factory) to the fork. The F&B industry is one of the world's largest industries with regards to both revenue and employment.
- Demands on proper storage are particularly high in this sector. Food is more prone to perishing than many other products which is why an efficient workflow is key to ensure food safety.
- Complying with freshness and hygiene standards, considering various refrigeration options, establishing different temperature zones, ensuring continuous cold chains and observing best-before dates constitute challenges for the storage and handling equipment as well as for order picking.
- Ref. companies: **Coca Cola, Nestle, ITC**





DAIRY



BEVERAGES



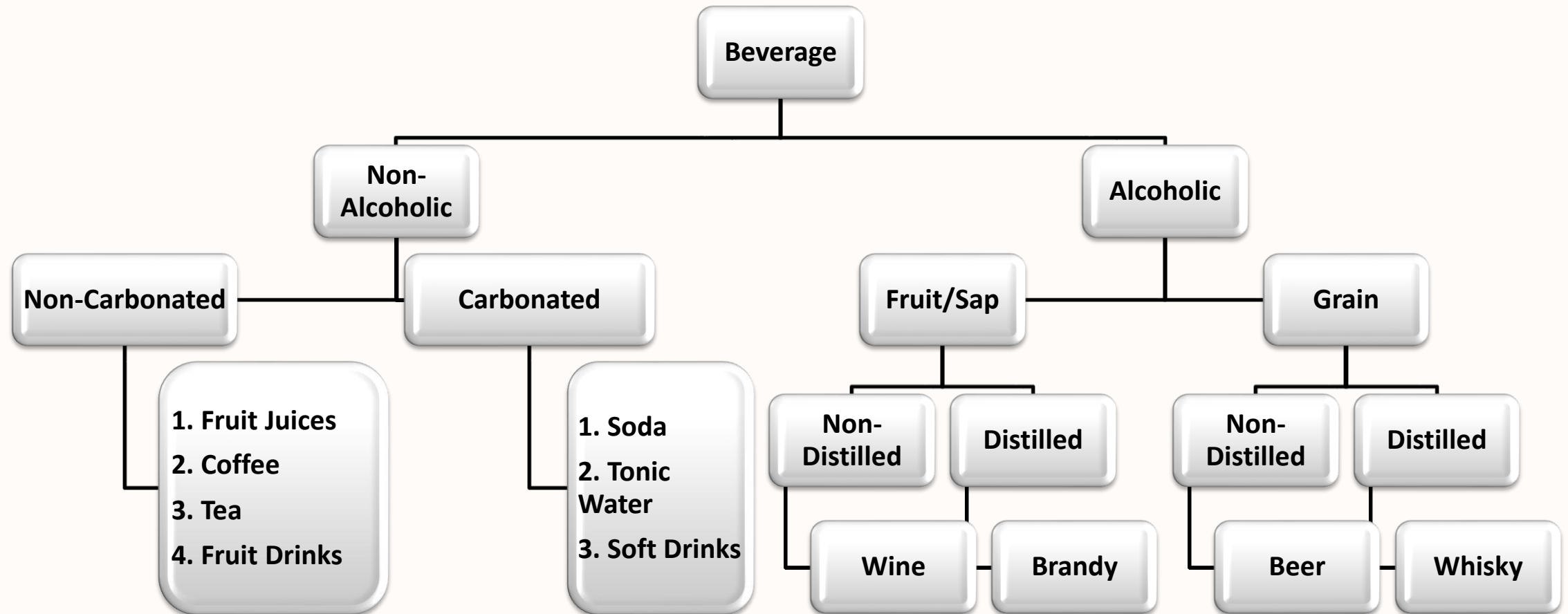
PACKAGED FOOD



Beverage Industry

- The beverage industry produces ready to drink products. Drink production can vary greatly depending on the product being made. Beverages may be canned or bottled (plastic or glass), hot-fill or cold-fill, and natural or conventional.

Ref. companies: **Coca Cola, PepsiCo, United Beverages**



We Understand You

Challenges

- Multi commodity SKU storage
- First in first out storage
- Maintain less human interaction
- Lesser cubic space utilization
- Deep-lane storage & automated replenishment for picking
- Environmental commitment



Our Value Proposition

- Configuration to address selectivity and density
- Batch FIFO storage system
- AS/RS solutions
- High CBM utilization design
- AS/RS solutions with high throughput
- Lead free & RoHS compliant

Application - 1

FG Storage In Beverage Bottling Plant

Plastic Packs



Pet bottles

Carton Packs



Tetra packs

Plastic Crates



Glass bottles

Carton/Plastic Packs



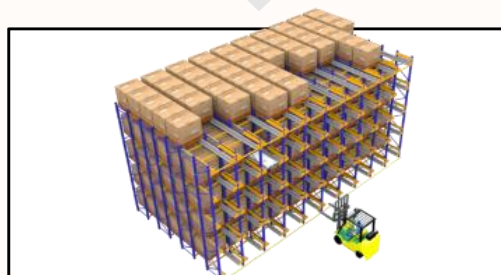
Cans

Product storage form



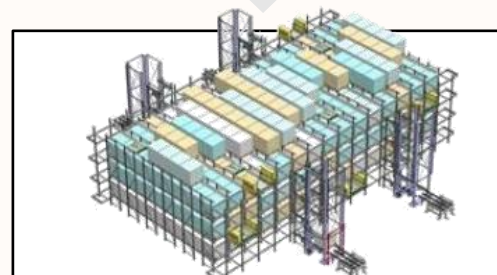
Recommended Solutions by Godrej

Shuttle racking + FLT/RT (semi automatic)



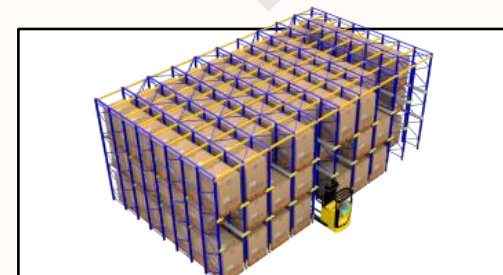
- Independent retrieval allows different FG types at each level
- FIFO enabled at single pallet level
- High throughput (~20 pallets/hour per shuttle)
- Minimal honeycombing (rear-end vacancy only)
- Wi-Fi + WMS integration; auto inventory count
- Manual put-away/picking via MHE
- Oil-repellent coating prevents shuttle slip from liquid spillage
- Liquid drip protection safeguards sensors and control boards
- Maximum building height up to 14 metres

Shuttle AS/RS (automatic)



- Different SKUs per level; independent retrieval
- FIFO at single pallet level
- ~50% higher throughput vs. semi-automatic systems
- Minimal honeycombing (rear-end vacancy only)
- Wi-Fi + WMS integration; automated inventory count
- End-of-line conveying integration possible
- Fully automated put-away/picking; no manpower needed
- Oil-repellent coating + drip protection for shuttle safety
- Utilizes building height up to 30m

Drive in racking + FLT/RT (manual)



- Same SKU per bay; only 15–25% SKU variety vs. shuttle
- FIFO only at batch level
- Low throughput (~10 pallets/hour per MHE)
- High honeycombing risk; vacant positions at retrieval end
- Manual pallet counting only
- No end-of-line conveying integration
- Skilled manpower required; high dependency
- Oil-repellent coating on pallet rail for adhesion resistance

Application - 2

PM storage in beverage bottling plant

Jumbo cartons



Pet-preform

Cartons



Closures

Rolls



Tetra packs

Rolls



Straws

Cartons



Labels

Rolls



Stretch films

Cartons



Flat sheet

Empty cans



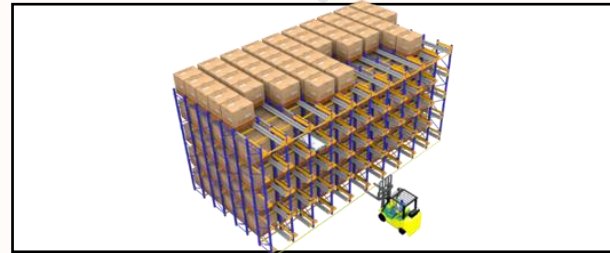
Hollow cans

Product storage form



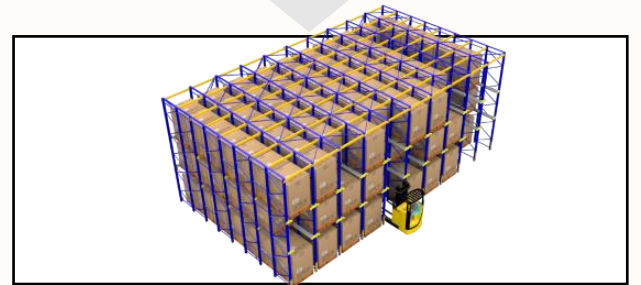
Recommended Solutions by Godrej

Shuttle racking + FLT/RT (semi automatic)



- Each level can have different types of PM as they are independently retrieved and hence shuttle can provide 3 to 6 times of unique SKU locations as compared to drive in for the same pallet positions
- Handling of pallets inside the rack is by shuttles and hence it ensures high throughput (average 20 pallets per hour per shuttle)
- Lesser possibility of honey-combing effect as we retrieve the pallet, vacant positions are created at the rear end
- Inventory count can be done by shuttle equipment
- Man-power is used for put-away and picking of pallets using MHE
- Maximum up to 14 metres

Drive in racking + FLT/RT (manual)



- All levels in a bay must be stored with same SKU and hence lesser number of PM varieties can be stored. Number of unique SKU locations will be 10 - 30% of shuttle solutions for the same pallet positions
- Throughput is comparative less since MHE is driven inside each bay. ~10 pallets per hour per MHE
- High possibility of unutilized vacant positions due to large bay capacity and due to creation of vacant positions only at the retrieving end
- Count of pallets is to be done manually
- Highly people dependent and skilled operation as the MHE is driven inside the rack
- Maximum up to 10 metres

Application - 3

RM storage in beverage bottling plant

Gunny Bags



Sugar

Drums



Concentrates

Drums



Syrups

Palletization of products



Recommended Solutions by Godrej

Selective Pallet racking + FLT/RT (Manual)



- Selectivity – 100%
- Cubic space utilization up to 23%
- Large number of SKU locations
- Require less skilled operators for storage and retrieval
- Throughput : ~15 pal/hr
- No honeycombing effect
- Lesser possibility of rack damage

Drive in racking + FLT/RT (Manual)



- Selectivity – 2 to 5%
- Cubic space utilization up to 43%
- Lesser number of SKU locations (2 to 5% of total pallet positions)
- Require skilled operators for storage and retrieval
- Throughput : ~10 pal/hr
- 60% to 70% possibility of honeycombing
- Possibility of rack damage

Application - 4

FG storage in beverage distribution depot

Plastic Packs



Pet Bottles

Carton Packs



Tetra packs

Plastic Crates



Glass Bottles

Carton/Plastic Packs



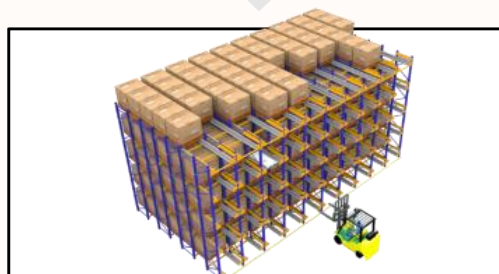
Cans

Product storage form



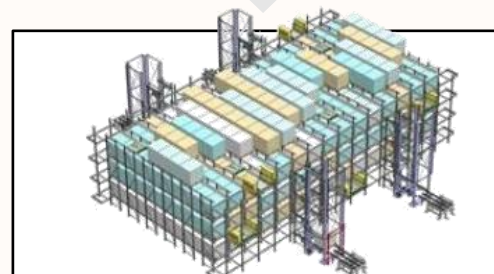
Recommended Solutions by Godrej

Shuttle racking + FLT/RT (semi automatic)



- Independent retrieval allows different FG types at each level
- FIFO enabled at single pallet level
- High throughput (~20 pallets/hour per shuttle)
- Minimal honeycombing (rear-end vacancy only)
- Wi-Fi + WMS integration; auto inventory count
- Manual put-away/picking via MHE
- Oil-repellent coating prevents shuttle slip from liquid spillage
- Liquid drip protection safeguards sensors and control boards
- Maximum building height up to 14 metres

Shuttle AS/RS (automatic)



- Different SKUs per level; independent retrieval
- FIFO at single pallet level
- ~50% higher throughput vs. semi-automatic systems
- Minimal honeycombing (rear-end vacancy only)
- Wi-Fi + WMS integration; automated inventory count
- End-of-line conveying integration possible
- Fully automated put-away/picking; no manpower needed
- Oil-repellent coating + drip protection for shuttle safety
- Utilizes building height up to 30m

Drive in racking + FLT/RT (manual)



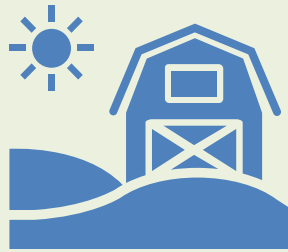
- Same SKU per bay; only 15–25% SKU variety vs. shuttle
- FIFO only at batch level
- Low throughput (~10 pallets/hour per MHE)
- High honeycombing risk; vacant positions at retrieval end
- Manual pallet counting only
- No end-of-line conveying integration
- Skilled manpower required; high dependency
- Oil-repellent coating on pallet rail for adhesion resistance

Introduction

- The Food and Beverage (F&B) industry includes all companies involved in producing, processing, packaging, transporting, and distributing edible goods - from the farm (or factory) to the fork. The F&B industry is one of the world's largest industries with regards to both revenue and employment.
- Demands on proper storage are particularly high in this sector. Foods are more prone to perishing than many other products which is why an efficient workflow is key to ensure food safety.
- Complying with freshness and hygiene standards, considering various refrigeration options, establishing different temperature zones, ensuring continuous cold chains and observing best-before dates constitute challenges for the storage and handling equipment as well as for order picking..



Sub-Segments



DAIRY



BEVERAGES



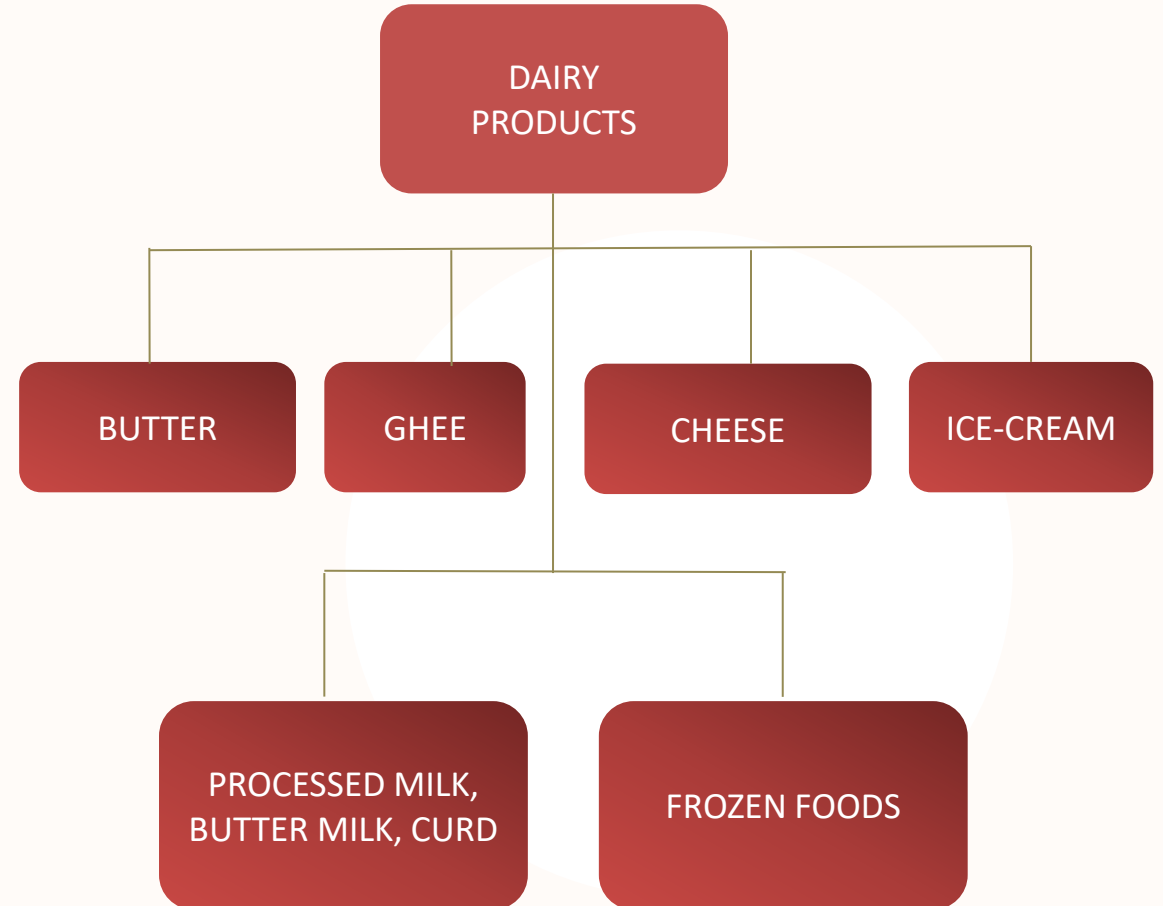
PACKAGED FOOD



DAIRY INDUSTRY

Dairy Industry

- A dairy is a business enterprise established for the harvesting or processing of animal milk into finished products such as processed milk, other by-products of milk ranging from cheese to frozen foods.
- The Dairy industry engages in the production and processing of milk & the manufacture of various dairy products like cheese, curd, yoghurt etc. The Indian Dairy Industry specializes in the procurement, production processing, storage and distribution of dairy products. India as nation stands first in its share of dairy production in the international scenario.
- Ref. Companies: **Hatsun, Amul**



We Understand You

Challenges

Varying temperature-controlled storage

First in first out storage

Product spillage

Material storage without ground contact

To maintain rust free storage environment

Frosting in cold room environment

Our Value Proposition

Storage solution to suit varying temperature range

Storage system ensuring FIFO

Sharp edge free design

Storage system with ground beam design

Galvanized racks with min 255 GSM to avoid rusting

Powder coated racks easy to clean

Application - 1

Storage Of Raw Materials In Dairy Products Production Plant

TINS



Edible Oil

SMALL BOTTLES



Sweeteners / Stabilizers

GUNNY BAGS



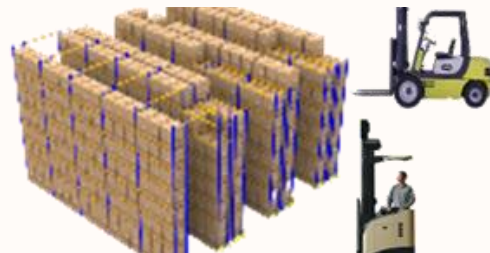
Sugar, Salt,
Coco Powder

Palletization of products



Recommended Solutions by Godrej

Selective Pallet racking + FLT/RT (Manual)



- Each level in a bay can have different variety of RM products.
- 100 % selectivity is possible since all SKU's can be accessed independently.
- High throughput – 15 pallet/hr compared to drive in.
- No possibility of honey-combing effect. As we retrieve the pallet, vacant positions are created only at single deep.
- Count of pallets is to be done only manually.
- Man-power is used for put-away and picking of pallets using MHE.

Drive in racking + FLT/RT (Manual)



- All levels in a bay must be stored with same SKU and hence lesser number of RM varieties can be stored.
- Selectivity & segregation is possible at a batch of pallets.
- Throughput is comparatively less since MHE is driven inside each bay. ~10 pallets per hour per MHE.
- High possibility of unutilized vacant positions due to large bay capacity and also due to creation of vacant positions at the retrieving end.
- Count of pallets is to be done only manually.
- More skilled man-power is used for put-away and picking of pallets using MHE.

Application - 2

Storage Of Packaging Materials In Dairy Products Production Plant



Pallets



Wrapped Packs

CAPS,
ICE CREAM STICKS



Rolls

CARTON SHEET



HDPE Bags/Carton

ALUMINUM



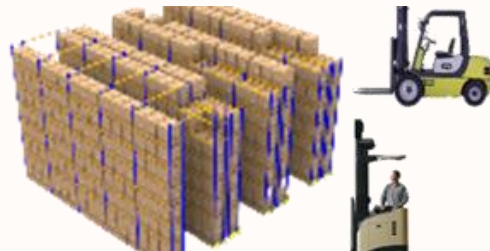
Rolls



Rolls

Recommended Solutions by Godrej

Selective Pallet racking + FLT/RT (Manual)



- Each level in a bay can have different variety of PM products
- 100 % selectivity is possible since all SKU can be accessed independently
- High throughput – 15 pallet/hr
- Up to 18 metres
- Man-power is used for put-away and picking of pallets using MHE

Long span shelving (Manual)



- Selectivity & segregation is possible at individual levels or based on aisles
- Batch storage/identification is possible with row labelling and SKU type is identified with bar coding
- Throughput is lower due to manual storage and retrieval. Horizontal & vertical movement can be aided by conveyor, VRC, etc.
- Up to 14 metres
- Put-away and picking of SKU's is done manually. Dependency on man can be reduced by using equipment like conveyor, chute, VRC, etc.

Application - 3

Storage Of Processed Dairy Products- Ambient Temp

CARTONS



Milk Tetra Packs

CARTONS



Ghee

WRAPPED PACKS



Flavoured Milk Bottles

CARTONS



Dairy Whitener

Palletization of products



Recommended Solutions by Godrej

Shuttle racking + FLT/RT (semi automatic)



- Selectivity & segregation is possible at a batch of pallets in each loading level
- FIFO at single pallet level is possible
- Handling of pallets inside the rack is by shuttles will ensure high throughput (average 20 pallets per hour per shuttle)
- Handling of pallets inside the rack is by shuttles will ensure high handling efficiency. Identification is possible with level or bay labelling.

Drive in racking + FLT/RT (manual)



- Selectivity & segregation is possible at a batch of pallets in bay
- FIFO is only possible at a batch of pallets
- Throughput is comparative less since MHE is driven inside each bay. ~10 pallets per hour per MHE
- Throughput is lesser as compared to shuttle. Identification is possible with floor marking with labelling.

Introduction

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- Demands on proper storage are particularly high in this sector. Foods are more prone to perishing than many other products which is why an efficient workflow is key to ensure food safety.
- Complying with freshness and hygiene standards, considering various refrigeration options, establishing different temperature zones, ensuring continuous cold chains and observing best-before dates constitute challenges for the storage and handling equipment as well as for order picking.



Sub-segments



DAIRY



BEVERAGES



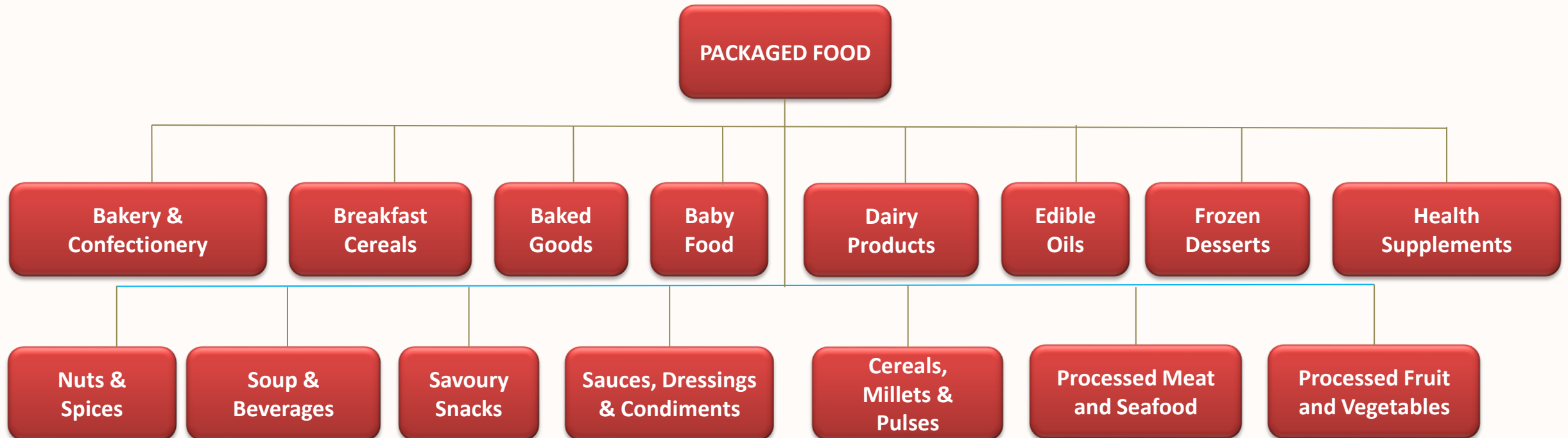
PACKAGED FOOD



Packaged Food Industry

Packaged Food Industry

- Packaged food is food that is commercially prepared (often through processing) to optimise ease of consumption. Packaged foods include ready-to-eat dry products, frozen foods such as TV dinners, shelf-stable foods, prepared mixes such as cake mix, and snack foods.
- Ex companies:- **Parle Agro, Nestle & Britannia**



We Understand You

Challenges

- Periodic stock rotation
- Raw material spillage
- Temperature controlled storage conditions
- High time for replenishment and stock accuracy
- To maintain hygiene storage environment
- Environmental commitment

Our Value Proposition

- Batch FIFO storage system
- Sharp edge free design
- Storage system withstanding varying temp range
- AS/RS solutions with high throughput
- Powder coated racks - easy to clean
- Lead free and RoHS compliance

Application - 1

FG Storage In Packaged Food Production Plant



Biscuits



Noodles/ Pasta



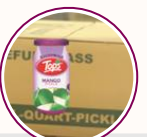
Chocolates



Snacks



Ketchups



Pickles

Palletization of products



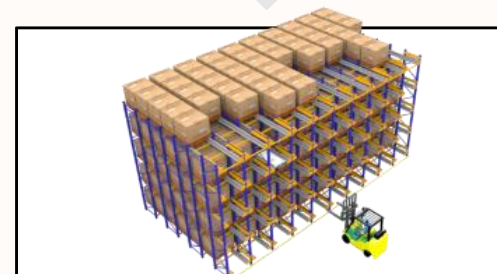
Recommended Solutions by Godrej

Mobile Pallet Racking + AFT



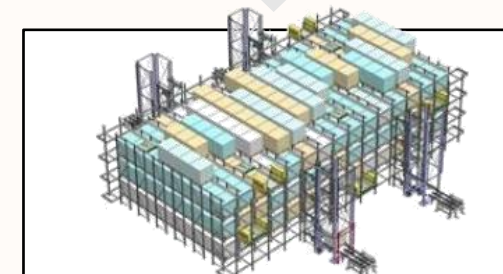
- Each level in a bay can have different variety of FG products
- 100% selectivity with FIFO
- Handling of pallet is by MHE with only one open aisle; hence throughput is slightly lesser than shuttle racking
- No possibility of honey-combing effect as we retrieve the pallet, vacant positions are created only at single deep.
- Inventory management is possible with bar coding and can be integrated with WMS
- Man-power is used for put-away and picking of pallets using MHE

Shuttle racking + FLT/RT (semi automatic)



- Independent retrieval allows different FG types at each level
- FIFO enabled at single pallet level
- High throughput (~20 pallets/hour per shuttle)
- Minimal honeycombing (rear-end vacancy only)
- Wi-Fi + WMS integration; auto inventory count
- Manual put-away/picking via MHE
- Oil-repellent coating prevents shuttle slip from liquid spillage
- Liquid drip protection safeguards sensors and control boards
- Maximum building height up to 14 metres

Shuttle AS/RS (automatic)



- Different SKUs per level; independent retrieval
- FIFO at single pallet level
- ~50% higher throughput vs. semi-automatic systems
- Minimal honeycombing (rear-end vacancy only)
- Wi-Fi + WMS integration; automated inventory count
- End-of-line conveying integration possible
- Fully automated put-away/picking; no manpower needed
- Oil-repellent coating + drip protection for shuttle safety
- Utilizes building height up to 30m

Application - 2

RM Storage In Packaged Food Production Plant – Ambient Temp



Sugar



Flour



Spices



Milk Powder



Coco Beans



Sweeteners

Palletization of products



Recommended Solutions by Godrej

Selective pallet racking + FLT/RT (Manual)



- 100 % selectivity is possible since all SKU's can be accessed independently
- SKU can be easily identified with the provision of bar-coding sticker for each bay identification with list of SKU's
- Sharp edge free design, hence, no spillage of products due to storage system
- Floor contact is avoided with bottom beam for first level of storage, hence clean and hygienic ambience
- Less human interaction inside the system
- Upto 18 metres

Drive in racking + FLT/RT (manual)



- Selectivity & segregation is possible at a batch of pallets
- Batch identification is possible with row labelling and SKU type is identified with bar coding sticker
- Sharp edge free design, hence, no spillage of products due to storage system
- Floor contact can be avoided with slave pallet for ground levels
- Highly people dependent and skilled operation as the MHE is driven inside the rack
- Up to 10 metres

Mezzanine floor



- Selectivity is only possible at a batch of pallets, Ideal for gunny bag stacking/pile-up
- Identification is possible with floor marking & labelling
- Best suitable system to avoid material spillage due to storage & retrieval since no contact between external members
- Floor contact can be avoided with slave pallet for ground levels
- Highly people dependent with combined Man + material movement vertically by lifts, loading gates, staircases
- Upto 15 metres

Application - 3

RM storage in packaged food production plant – Cold temp

BUCKETS



Butter

DRUMS



Milk

DRUMS



Tomato Syrup

CRATES



Vegetables

CRATES



Meat

GUNNY/MESH BAGS



Potato

Recommended Solutions by Godrej

Multi-tier frame based mezzanine



- Perfect Solution for dense storage application in cold store (Up to 70% of storage CBM)
- Most of the movement is in straight lines, hence, SKU's are easy to identify & handle easily but fully depend on manual labour.
- Vertical height can be split into multi floor & each bay in the floor can be provided with decking levels
- Energy saving due to lesser area to be cooled
- Highly people dependent with combined man + material movement vertically by lifts, loading gates, staircases.
- Upto 15 metres

Drive in racking + FLT/RT (manual)



- Perfect Solution for dense storage application in cold store (Up to 43% of storage CBM)
- Throughput is comparatively less since MHE is driven inside each bay. ~10 pallets per hour per MHE.
- Each item is stored in independent levels without stacking
- Energy saving due to lesser area to be cooled
- Medium human interaction since MHE is driven inside the rack
- Up to 10 metres

Shuttle racking + FLT/RT (semi automatic)



- Perfect Solution for dense storage application in cold store (Up to 43% of storage CBM)
- Handling of pallets inside the rack is by shuttles, which will ensure high handling efficiency
- Each item is stored in independent levels without stacking
- Energy saving due to lesser area to be cooled
- Less man-power is used for put-away and picking of pallets using MHE
- Upto 14 meters

Application - 4

PM Storage In Packaged Food Production Plant

CRATES



Glass Bottles

CARTON



Covers

SHEETS



Carton

CARTON



Packaging Rolls

ROLLS



Foil

CARTON



Labels

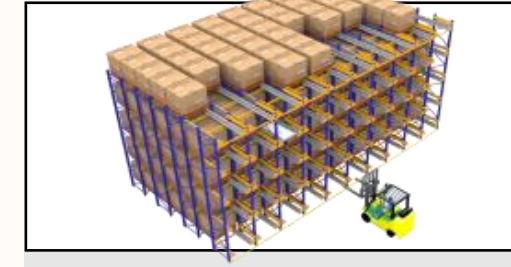
Recommended Solutions by Godrej

Drive in racking + FLT/RT (manual)



- Perfect Solution for dense storage application in cold store (Up to 43% of storage CBM)
- Throughput is comparatively less since MHE is driven inside each bay. ~10 pallets per hour per MHE.
- Each item is stored in independent levels without stacking
- Energy saving due to lesser area to be cooled
- Medium human interaction since MHE is driven inside the rack
- Up to 10 metres

Shuttle racking + FLT/RT (semi automatic)



- Perfect Solution for dense storage application in cold store (Up to 43% of storage CBM)
- Handling of pallets inside the rack is by shuttles, which will ensure high handling efficiency
- Each item is stored in independent levels without stacking
- Energy saving due to lesser area to be cooled
- Less man-power is used for put-away and picking of pallets using MHE
- Upto 14 meters

Application - 5

FG Distribution Of Packaged Food Products



BISCUITS



NOODLES/ PASTA



CHOCOLATES



SNACKS



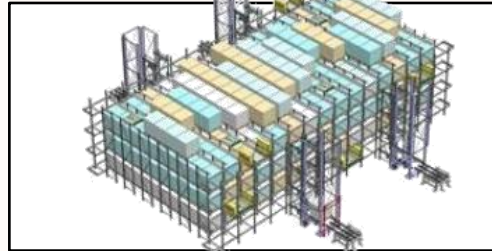
KETCHUPS



PICKLES

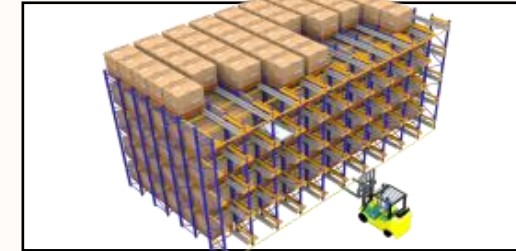
Recommended Solutions by Godrej

Shuttle AS/RS (automatic)



- Different SKUs per level; independent retrieval
- FIFO at single pallet level
- ~50% higher throughput vs. semi-automatic systems
- Minimal honeycombing (rear-end vacancy only)
- Wi-Fi + WMS integration; automated inventory count
- End-of-line conveying integration possible
- Fully automated put-away/picking; no manpower needed
- Oil-repellent coating + drip protection for shuttle safety
- Utilizes building height up to 30m

Shuttle racking + FLT/RT (semi automatic)



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- Handling of pallets inside the rack is by shuttles, which will ensure high handling efficiency
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- Energy saving due to lesser area to be cooled
- Less man-power is used for put-away and picking of pallets using MHE
- Upto 14 meters



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