Dematic GTP: Overview

How Goods-to-Person Piece Picking Works

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HOW GOODS-TO-PERSON PIECE PICKING WORKS

Dematic Goods-to-Person Piece Picking is designed to support your omnichannel strategy by optimizing e-fulfillment, retail store replenishment, and wholesale B2B order fulfillment.

As a system integrator and solution provider, Dematic is responsible for all aspects of the solution:

- Current state analysis
- Solution development
- System design & engineering
- Installation (mechanical & electrical)
- Controls & software
- Overall system performance
- Life cycle support

We analyze the elements of your **activity profile** while addressing **operational considerations** to create the ideal order fulfillment configuration for your operation.

SYSTEM OVERVIEW

The solution is based on the *SKUs-to-Worker* or *Goods-to-Person* principle: The order picker stays in one place, and the system brings the stock keeping units (SKUs) to the worker. The worker picks the need items and sends the unpicked SKUs back to a storage location.

The basic system components consist of **Receiving & Put-Away**, **Inventory Storage**, **Picking**, and **Pack & Ship**, with **Warehouse Execution Software (WES)** to manage the operation.

Dematic iQ WES

| Receiving & Put-Away | → | Inventory Storage | → | Picking | → | Pack & Ship |
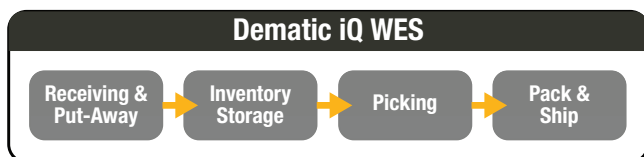
ACTIVITY PROFILE ANALYSIS	OPERATIONAL CONSIDERATIONS
• Daily unit volume • Units per order • Lines per order • Packing sequence • Unit cube & cube movement • Unit structure • Cartons per order • Total SKUs • Percentage daily SKUs active • Order download method	• Availability of warehouse space • Order processing time • Order cut off time • Controlled access • Peaks in order volume • SKU growth • Worker ergonomic • Manageability • Total labor • Initial investment

OPERATIONAL BENEFITS

- Eliminates picker travel time, use less labor
- Omits the dedicated pick face
- Omits slotting, re-slotting & manual replenishment
- Reduces system footprint, increases density
- Assures product security
- Provides ergonomic workstations for picking & packing

- Operates with de-coupled workstations
- Enables high utilization picking workstations
- Speeds order processing
- Facilitates order & inventory accuracy
- Accommodates SKU and volume variations
- Supports expansion and business growth

Receiving & Put-Away

SCAN VALIDATION ASSURES INVENTORY ACCURACY

Rows of decant workstations are directed by user interface software screen. Workers decant inventory into blue totes.

Supply of empty totes are available at each workstation. Empty carton removal conveyor is overhead.

Cases of inventory arrive at decant workstations on pallets.

DECANTING

Dematic iQ WES manages and synchronizes the inbound process of decanting and put-away. The decanting process includes re-packaging into plastic totes to facilitate automated storage and support inventory and picking accuracy.

The decanting activities are managed using a workstation with an operator interface to direct the transfer of inventory from cases to plastic tote box.

Put-away directs flow to storage locations:

- **Decant processing**
- **Re-pack inventory to totes**
- **Workstation user interface directs process**
- **Scan inbound case**
- **Verify quantity, inspect**
- **Empty tote supply and management**
- **Put-away rules for returns**

WORKSTATION DESIGN

The decanting workstation is designed to support productivity efficiencies and worker ergonomics. A continuous supply of empty totes is provided via inbound conveyor.

A flat-screen monitor at each workstation provides decanting instructions and inventory count information. Conveyor to take-away cardboard packaging materials is provided.

Full inventory totes depart the decanting workstations via conveyor that is connected to the Inventory Storage module.
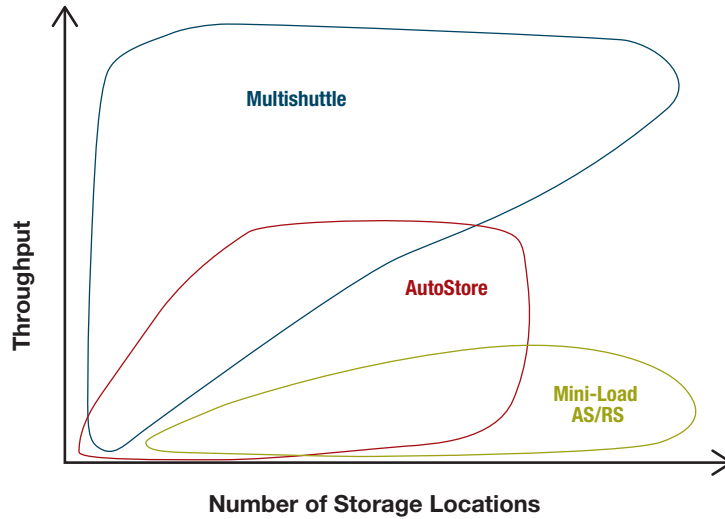
Inventory Storage

SCALABLE, MODULAR & HIGH-DENSITY

SUBSYSTEM TYPES

The Goods-to-Person Piece Pick Solution is supported by an automated storage subsystem. Dematic offers multiple subsystem types:

- Multishuttle
- AutoStore
- Mini-Load AS/RS

The automated storage subsystem that is most appropriate for each application is determined by the Activity Profile and Operational Considerations. For example, high throughput applications are best served by Multishuttle. Ulta-high density requirements are served well by AutoStore. Applications with a high number of storage locations and heavier loads are ideal for Mini-load AS/RS.

STORAGE MANAGEMENT

Dematic iQ Warehouse Execution Software (WES) optimizes the inventory storage process.

The storage location management strategies include:

- Random
- Distance from picking
- Velocity
- Family Groups
- Cube, weight
- Temperature

The business rules for storage management location include:

- FIFO, LIFO, FEFO
- Buffer, hold
- Duplicate SKU storage locations
- Strategic separation of SKUs

MULTISHUTTLE
HIGH THROUGHPUT CAPACITY

The Multishuttle subsystem consists of multiple levels of racking, shuttles, buffer conveyors, and controls. Each level includes input/output conveyor and a shuttle that travels horizontally to access loads stored in the rack structure — typically totes, cartons, or trays.

Designed with simplicity in mind, the Multishuttle offers standard modular components and the flexibility to be scalable, especially for companies experiencing rapid growth and change in product demand profiles.

Key Attributes

- Fast in/out capacity
- Direct access to inventory totes, cartons
- Handles totes, cartons, trays in various load sizes
- High usage: Feeds workstations with high rates to keep workers fully engaged
- More layout options: Fits into overhead spaces, under/over obstructions
- Precise sequencing: Presents loads to pick stations in exact sequence
- Energy efficient: Low voltage DC (no batteries) on-board each carrier uses less energy, quiet operating
- Redundancy with back-up: Identical carriers provide duplicate service; carriers are interchangeable
- Access to stock: Work platforms in the rack aisles allows manual access to inventory & service to shuttles
- Scalability: Add more shuttles in future to provide more throughput
- Operates in temperature-controlled environments: cooler, freezer
- Small piece sizes, small cases (110 pounds/50 kg per tote)
- Supports picking from outside of rack structure

AUTOSTORE™
HIGH DENSITY

The AutoStore subsystem is standardized using modular components. The robot, bin, and grid are pre-engineered and manufactured as a standard component.

The robots drive on the top of the grid to access inventory stored in the bins below. The bins are put-away, retrieved, and delivered to the workstations as required. There are no dedicated access aisles so the entire cube can be used to store product. The system can be installed in oddly shaped buildings, around pillars, or on several levels to fill out warehouse space to its maximum potential.

Key Attributes

- Ultra-high density
- Compact footprint
- Fits into all building shapes and around obstructions
- Inside the grid fire suppression *not* required
- One bin size: 600 x 400 mm
- Two bin height options: 200 mm & 310 mm
- High number of SKUs (many thousands vs hundreds)
- Low/mid velocity SKU storage and picking
- Small piece sizes, small cases (65 pounds/30 kg per tote)
- Ability to modify system during ongoing operations
- Reusable asset (ability to relocate system to new site)
- Batteries on-board — automatic opportunity charging
- Storage capacity scales up by adding to the grid
- Throughput capacity scales up by adding robots and workstations

MINI-LOAD AS/RS

HIGH STORAGE AND WEIGHT CAPACITY
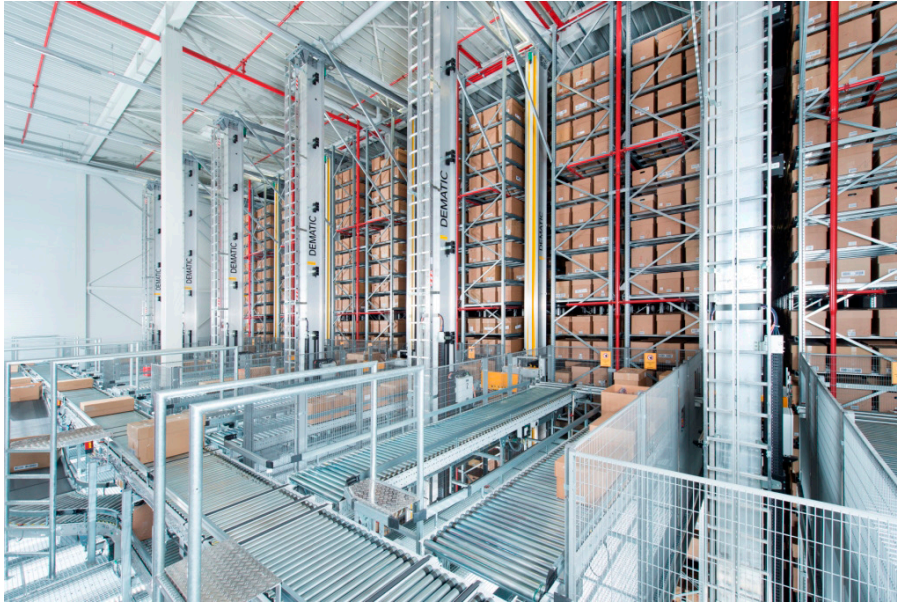
The Dematic Mini-Load is a "machine-in-aisle" storage and retrieval subsystem. It is designed to accommodate large quantities of inventory.

The Mini-Load is optimized for order fulfillment applications and uses a flexible load handling device that supports a wide range of tote and carton sizes. The load handling device can accommodate up to six loads.

Key Attributes

- Maximum storage cube height (up to 60 feet)

- Accommodates totes, cases, trays

- Highest weight capacity, up to 750 pounds

- Direct access to inventory totes, cartons

- No batteries required

- Modular construction design with standardized components for readily available maintenance materials and spare parts

- Compatible with current and future load suspension equipment, scalable for all Dematic solutions

- Controls based on existing Storage and Retrieval Machine (SRM) control software and proven international communication standards

- Operates in temperature-controlled environments: cooler, freezer

- Supports side port picking (from side of rack structure using automatic replenishment)

Picking

HIGH PRODUCTIVITY, ERGONOMIC, ACCURATE

RapidPick workstation presents inventory tote (blue) to the worker. There are two order totes (gray) on each side.

ORDER PICKING WORKSTATION

The order picking workstation includes a position for the inventory tote (donor tote) and the order tote. Configurations are modular and range from 1:1, 1:4, 1:6, 1:12, and 1:24. The contents of the order can be placed into a cardboard shipping container, plastic bag, or tote.

Touch screen interface directs piece picking.

Workstation port directly accesses inventory totes in from the Inventory Storage subsystem.

PUT-TO-TOTES

The picking workstation is configured with a "put-to-plastic tote" design when packing or additional order consolidation is required downstream. The put-to-plastic tote process optimizes the picking process and allows a specialized packing function with additional efficiencies and packing flexibility.

Modular workstation presents inventory tote (blue tote on lower conveyor) to worker. Items are picked to gray totes above.

PICK-TO-SHIPPING CONTAINERS

The picking workstation can be configured with a pick-to-shipping carton or pick-to-shipping bag design. This arrangement allows for combined pick and pack functionality. Packing equipment, label printer, and various size packing materials are incorporated into the workstation layout.

Pack & Ship

VOICE, LIGHT, SCREEN-DIRECTED

This light-directed packing workstation supports order consolidation, document inserts, and bag or carton sealing activities.

Packing workstations are connected to the picking workstations with a conveyor network.

Packing workstations are taken in and out of service depending on the daily order volume. Packing supplies (such as an assortment of box sizes) and void fill are available at each workstation.

Engineered workstations are designed to make the packing process efficient, accurate, and flexible, while supporting worker comfort and ergonomic principles.

Packing workstations supports outbound flow:

- Packing workstation management
- Inbound tote conveyor
- Outbound bag/carton conveyor
- Anomaly resolution, quality check
- Pack wall and containerization
- Void fill, document insert
- Label print and apply

Shipping strategies:

- Sort: by stop sequence, staging lane
- Sort: door per store, geography, carrier
- Parcel manifest, rate shop, loading
- Prioritization, special handling
- Load staging/sequencing at shipping

Warehouse Execution Software

SOFTWARE PLATFORM FOR GOODS-TO-PERSON PIECE PICK SOLUTION

DEMATIC iQ SOFTWARE

Dematic iQ is the scalable software platform responsible for controlling and synchronizing workflows. As a unified, fully integrated software platform, Dematic iQ allows you to dynamically manage processes, inventory, labor, and material handling automation in real time.

The Operations Management Center provides managers and supervisors with a comprehensive, real-time view of their system to identify trends and fine-tune operations:

- Dashboards with key performance indicators
- Graphical system layout
- Alert monitoring of events
- Diagnostics and maintenance scheduling

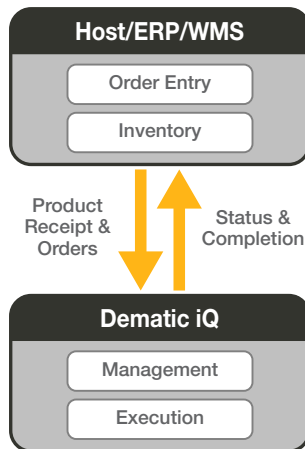## BENEFITS FOR YOUR OPERATION

Handle peak volumes:

- Pull-based strategies increase throughput, reduce cycle time, and address priority orders
- Real-time analytics help identify trends and issues
- Prepositioned inventory to optimize fulfillment

Process more orders:

- Improved labor and equipment productivity
- Scalable, flexible order handling
- Configurable decision engines that constantly balance work flows

Provide faster, more accurate picking:

- Intuitive, persona-based user interfaces
- Simple, easy-to-follow commands
- Configurable, rule-based strategies
- Dynamic pull-based systems that optimize resources

```
Host/ERP/WMS
  Order Entry
  Inventory
```

Product Receipt & Orders → ← Status & Completion

```
Dematic iQ
  Management
  Execution
```

Dematic iQ at a Glance:

- Single, integrated platform for Goods-to-Person Piece Picking solution
- Modular framework, configurable by function
- Standardized modules, tested, refined, revision control
- Real-time performance visibility & control
- Intuitive dashboards on desktops, laptops, mobile devices

Key Attributes:

- Enables high order & inventory accuracy
- Facilitates labor productivity & order processing speed
- Accommodates variations in order volume & profile
- Prioritize tasks, balance workload, on-demand processing
- Scalable & reconfigurable design allows change & growth

About Dematic

Dematic is an intralogistics innovator that designs, builds and supports intelligent, automated solutions for manufacturing, warehouse and distribution environments for customers that are powering the future of commerce. With engineering centers, manufacturing facilities and service centers located around the world, the Dematic global network has commissioned thousands of customer installations for some of the world's leading brands.

Headquartered in Atlanta, Dematic is a member of KION Group, one of the global leaders in industrial trucks and supply chain solutions, and a leading provider of warehouse automation.

Power the Future of Commerce.

▷ **If you are interested in learning more about this topic and how we can help, please contact us.**

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