



Automated Mixed Case Palletising Solution



We **Optimise** your Supply Chain

DEMATIC

About Dematic

Dematic is one of the world's leading suppliers of logistics automation systems and solutions. With a global knowledge network of highly skilled logistics professionals, Dematic provides its customers a unique perspective in world class materials handling solution design.

What this means for you: Even in international projects, you have a single point of contact. Dematic takes responsibility for throughput and system uptime in logistics projects.

A large industrial warehouse with a yellow robotic arm and a control cabinet labeled 'DEMATIC'. The background shows a complex network of white metal structures and shelving units, typical of a modern logistics facility.

EFFICIENT
ACCURATE
SCALABLE

Dematic AMCAP® – Automated Mixed Case Palletising

The fully automated high performance palletising system for mixed pallets and roll cages.

Grocery retailers face the problem of receiving thousands of different products on single and multiple SKU-pallets and then turning them into mixed case orders for their shops. In traditional warehouses considerable labour resources are required to fulfil this manual process, and with that comes all the known disadvantages.

The considerable labour resources needed to fulfil non-ergonomic jobs, along with inaccurate manual order picking, results in excessive planning and high costs, which ultimately leads to competitive disadvantages.

Dematic has developed a whole new sub-system concept to automate mixed case order fulfilment which helps the customer become cost effective and competitive again. AMCAP® is our new fully automatic, high-performance palletising system which meets today's customer requirements and seamlessly integrates some of the industry's best new advancements.

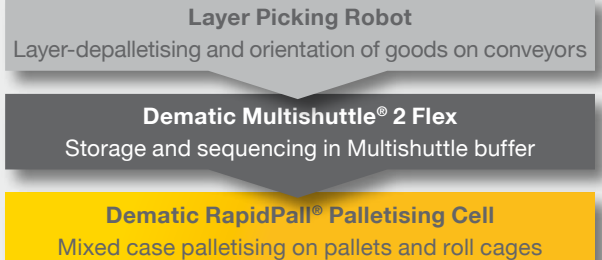
The new design concept combines scalability with a small footprint and therefore enables integration into existing brownfield installations. The scalable design allows flexible throughput variations up to several thousand cases per hour. The Dematic Multishuttle® 2 Flex engine allows multiple-deep storage, perfect sequencing, and a wide range of SKUs. The Dematic iQ Warehouse Control Software incorporates all AMCAP® business processes for the highest performance and system precision.

AMCAP®, as a fully automated system, enables multiple shift operation. In combination with the small footprint it achieves the lowest costs per case and therefore a rapid return on invest. The new system concept reduces the amount of handling steps and compared to all competitors, AMCAP® achieves the best floor space utilisation (throughput/m²) and offers the lowest floor space costs. Through fully automated handling and high availability, the number of required operators is reduced to a minimum, order picking accuracy is

Benefits Dematic AMCAP®

- Small system footprint
- Trayless transport and storage of cases
- Scalable system throughput by modular design
- Increased performance and profitability
- Automated and efficient palletising on pallets and roll cages
- Substantial reduction of labour costs
- Best price/performance ratio in the market
- Best performance/footprint ratio in the market
- Ability to handle the widest SKU range

AMCAP® Process steps



The entire sub-system is designed for case handling without expensive system trays and dedicated equipment for tray-merge, detraying and tray buffering. Straight in- and outbounding of cases from depalletiser to palletiser lowers the risk of accidental case damaging and saves additional cost due to footprint minimisation.

A substantial reduction of transport costs is achieved by boosting outbound pallet density with Dematic's PackBuilder Software. Based on the case attributes, PackBuilder generates volume-optimised, stable, and store friendly pallets or roller cages. This significantly lowers freight costs through maximising the use of available transport space and leads to optimised shop-route planning.

The RapidPall® cell is the heart of Dematic's AMCAP® sub-system for automatic palletising at highest accuracy and availability.



AMCAP® Distribution Warehouse

To better illustrate Dematic's fully automated warehousing, palletising and distribution approach, the AMCAP® sub-system is shown in its typical grocery retail distribution centre environment.



2 Depalletising

Pallets are transferred from the high-bay warehouse to an automated layer depalletiser. The layer is placed on a special conveyor for descrambling and further singulation and then sent directly to the Dematic Multishuttle®. The cases are oriented for optimal storage space. Damaged cases will be recognised and rejected automatically. Trays are no longer required for the transport.



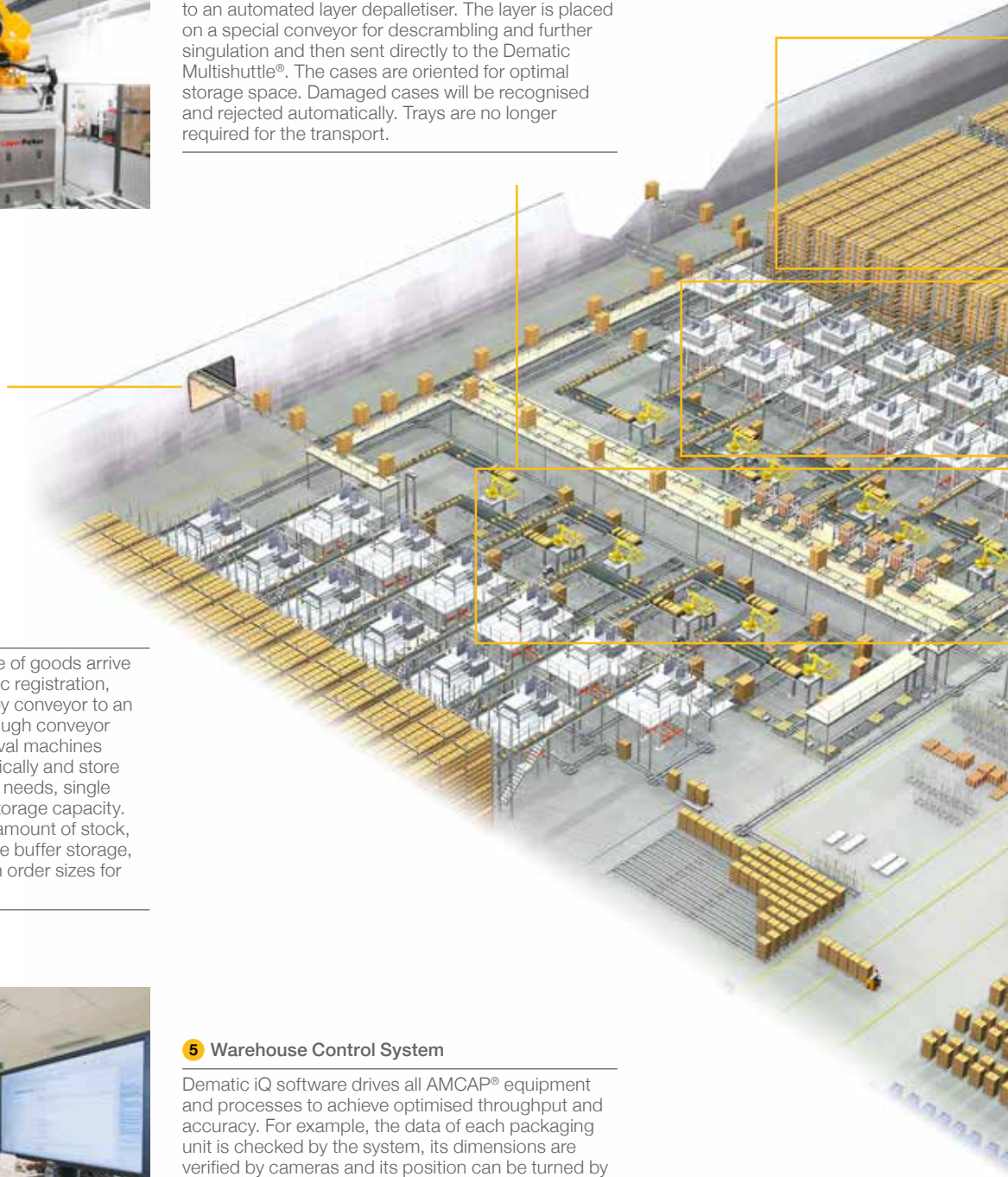
1 High-Bay Warehouse

Primarily pallets containing one type of goods arrive at the receiving area. After electronic registration, the complete pallet is transported by conveyor to an automatic high-bay warehouse through conveyor lines. Automated storage and retrieval machines (ASRS) handle pallet loads automatically and store them, in line according to customer needs, single or double deep, for a customised storage capacity. According to a specified minimum amount of stock, the high bay warehouse supplies the buffer storage, where goods are stored in common order sizes for retailing – so called trading units.



5 Warehouse Control System

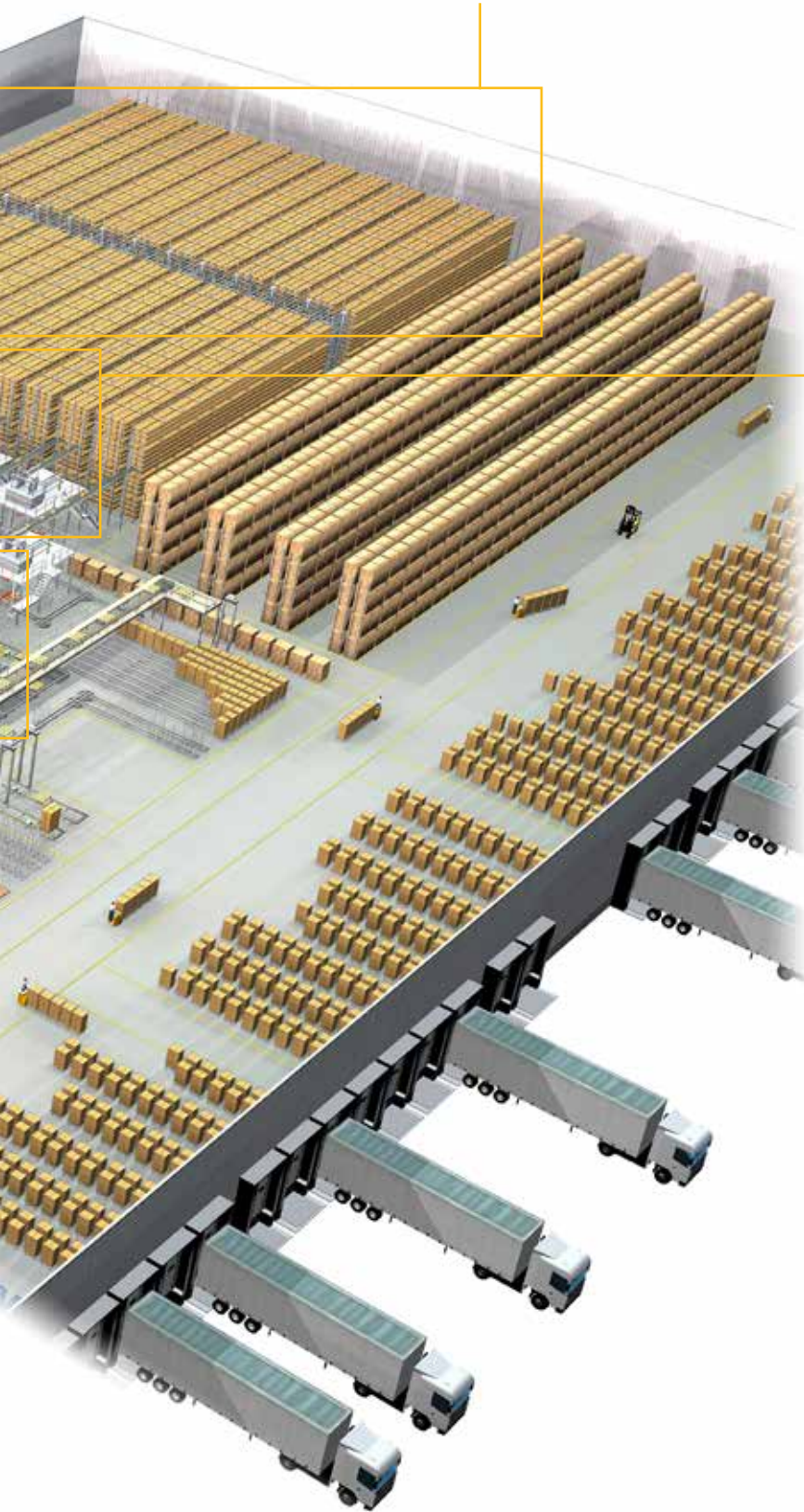
Dematic iQ software drives all AMCAP® equipment and processes to achieve optimised throughput and accuracy. For example, the data of each packaging unit is checked by the system, its dimensions are verified by cameras and its position can be turned by included devices. Goods which can't be handled by the automatic depalletiser can be separately inserted into the system.



3 Dematic Multishuttle® 2 Flex Buffer

The Dematic Multishuttle® 2 is the second generation of shuttle technology. The all new design incorporates outstanding engineering, halving of weight, doubling of speed, higher payload capacity, and multi-deep storage capability.

The Dematic Multishuttle® 2 Flex option allows flexible load handling technology, enabling high performance storage and retrieval of variable case sizes and packaging formats, without the use of trays. Together with Dynamic Slotting – another key feature – the storage density can be increased dramatically, which also reduces cost and increases return on investment.



4 Dematic RapidPal® Palletising Cell

Once the system has received a palletising order, the inhouse PackBuilder palletising software builds the pallets according to family groups, store planogram, and pallet stability.

Cases are then delivered trayless and in precise sequence from the Dematic Multishuttle® 2 directly to the RapidPal® cell. A fully automated, labour free dynamic packing process guarantees highest availability. Furthermore Dematic RapidPal® automatically verifies the stacking process in roll cages or on different pallet sizes for the highest accuracy.

An integrated ring stretch wrapper stabilises the pallet directly after palletising for safe transportation. During the wrapping of one pallet, the next one is already built through the use of slider plates.



RapidPall® Benefits

- Automated, labour free palletising on international pallet sizes or roll cages
- Highest palletising rates
- Handles a wide range of packaging units
- Stable, accurate and error-free pallet building
- Ambient and freezer version available



DEMATIC RAPIDPALL

Dematic RapidPal®

Reliable palletising of a wide range of packaging types

In the newly developed Dematic RapidPal® palletiser cell, the packaging units are efficiently slid onto the pallets or roll cages. This method ensures reliable palletising of a wide range of packaging types.

Cases are delivered to the RapidPal® cell in precise sequence – e. g. heavy items first, fragile items last, by family group or in whatever sequence that business needs dictate. RapidPal® automatically verifies palletising during the stacking process. Due to the enhanced mechanical design, RapidPal® supports palletising onto pallets and roll cages in one cell and is able to palletise with a very high accuracy. With improved load density compared to manually stacked pallets the customer can reach better usage of truck space and therefore lower transport cost.

A retractable cell design allows manual finishing of the palletising process in case of operation failures or error handling. In case of an error the integrated pallet monitoring function helps rapidly analyze the cause and the built-in redundant systems correct it swiftly.

With additional performance improving features, RapidPal® offers the best price-performance (cost/stacked case) ratio in the market. Cases are individually palletised with adapted speeds according to physical properties.

As soon as all cases are stacked, the pallet is lowered and automatically stretch-wrapped, resulting in a dense, store-friendly pallet that is stable and ready to transport.

The integrated Ring Stretch Wrapper allows wrapping of semi-/ completed pallets/roll cages in order to increase system availability and reduce transport accidents compared to systems with external stretch wrapper. To prevent lost time during pallet exchange, Dematic RapidPal® uses the integrated slider plate functionality to continue palletising. The layer that is formed is then handed over to the new pallet.

The RapidPal® cell is designed for sustained productivity. In automatic operation RapidPal® eliminates the need for operators (no more human errors) and achieves substantial reduction of ergonomic disadvantageous jobs (health & safety legislation) and therefore labour costs. The trouble-free and simplified mechanical design realizes the highest throughput and operation efficiency and increases profitability.

Benefits of automatic palletising:

- Lower transport costs thanks to higher, more densely pallets
- Ability to handle a very wide range of articles
- Shipping pallets palletised according to the customer's requirements
- Reduced personnel costs thanks to fully automatic system
- Short amortisation time
- High accuracy and high throughput rates

Specifications

Automated mixed case palletising on different pallet sizes and in roll cages

Automatic monitoring and verification of the palletising process

Optimal pallet stability through integrated stretch wrapper

Pallet dimensions

Max. height of stacked load unit: 2200 mm / 87"

Max. payload of stacked load unit: 1250 kg / 2750 lbs

Case types

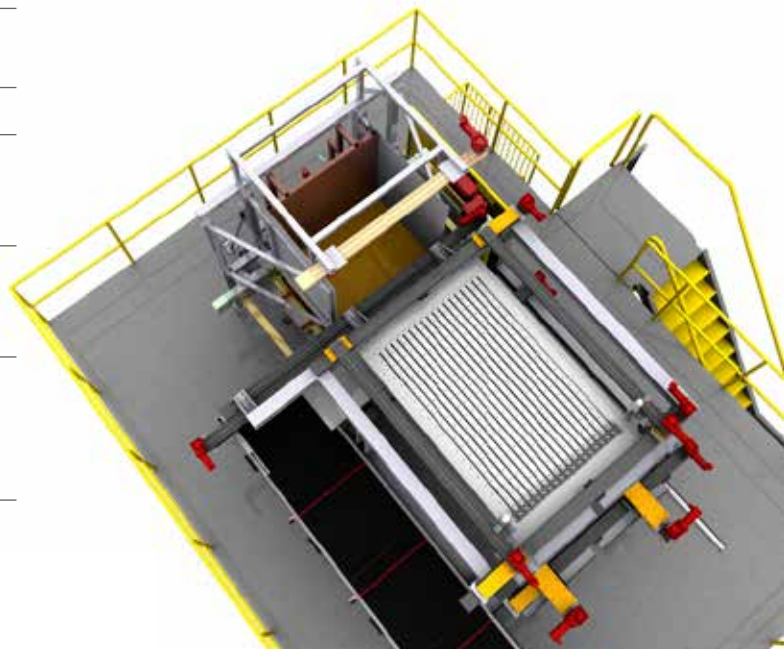
Load: typical grocery cases like cartons, cardboard trays, bottles, cans, boxes, etc.


Operating temperature & humidity

Ambient: 1 °C to 40 °C (34 °F to 104 °F)

Freezer (opt.): -30 °C to 0 °C (-22 °F to 34 °F)

Humidity: 0 % – 95 % relative, no condensing





Multishuttle 2 Flex – Compact with high rate capacity

- Load types: typical grocery cases like cartons, cardboard trays, bottles, cans, boxes, etc.
- Load weight: up to 50 kg
- Flex-Variant:
Telescopic load extractor; expands/
contracts, accommodates a range
of load sizes
- Suitable for chilled storage
- Storage density:
single or multiple-deep

DEMATIC MS 2 FLEX

Dematic Multishuttle® 2 Flex

The most efficient shuttle in the market

Designed with flexibility and efficiency in mind, the Dematic Multishuttle® 2 offers standard modular components and the flexibility to be scalable, especially for companies experiencing rapid growth and change in product demand profiles.

The Dematic Multishuttle® 2 is the second generation of shuttle technology. The all new design incorporates outstanding engineering, a flexible load extractor, halving of weight, doubling of speed, higher payload capacity, and multi-deep storage capability. This makes the Dematic Multishuttle® 2 an extremely high-performance, compact handling unit for mixed packaging units of different sizes.

For AMCAP® the Dematic Multishuttle® 2 Flex model incorporates flexible load handling technology, enabling high performance storage and retrieval of variable case sizes and package formats – such as cartons, trays, shrink-wrapped bottle packages and many more. Without the use of trays the Flex Shuttle can minimise the space between cases and therefore maximise storage density which lowers the cost per storage location.

The innovative eight finger design of the load extractor and telescope arms allow products to be stored single, double, or multi-deep. The load capture fingers are plastic cast, carbon fibre reinforced for robust long term performance.

Thanks to the flex capabilities of the shuttle, many different case sizes can be handled in the system without additional re-packing onto trays and additional machinery and processes. Consequently the Dematic Multishuttle® 2 Flex minimises the amount of handling steps throughout the system and reduces the order processing time significantly. This leads to a lower investment cost.

Specifications

Load types

Cardboard carton, trays, bundles, shrink wraps

Load weight

Capacity: Up to 50 kg

Configuration Multishuttle Flex

Telescopic load extractor; expands/contracts, accommodates a range of load sizes

Load storage density

Standard: Multiple deep

Multishuttle Flex load range

Cases	mm	inch
Length	150 - 650	17.7" - 25.6"
Width	150 - 650	17.7" - 25.6"
Height	50 - 450	1.7" - 17.7"

Operating temperatures

Ambient: 0 °C - 40 °C
Freezer (optional): Up to -30 °C

Relative air humidity: 5% - 90%, no condensation

The Dematic Multishuttle® sub-system

The Dematic Multishuttle® 2 sub-system as part of the AMCAP® consists of multiple levels of racking, shuttles, lifts, buffer conveyors, controls and Warehouse Control System Software. Each level includes input/output conveyors and a shuttle that travels horizontally to access cases stored in the rack structure. An extraction device on each shuttle accesses the loads in the rack. Since there is a shuttle captive in each aisle, on each level, ultra high throughput can be achieved. A vertical lift is used to bring the load to the input/output conveyor. Load sequencing occurs as loads are retrieved in

Benefits of the Dematic Multishuttle® system

- Throughput: 10 x higher than conventional stacker cranes
- Scalability: Variable for optimal throughput and storage locations
- Layout: Fittable to existing building
- Flow: Precise sequencing
- Operator walkway: Manual access to inventory
- Storage density: Ultra-high due to multi-deep storage and handling without trays
- Availability: High redundancy with back-up, carriers are interchangeable



Dematic iQ Benefits

- Efficient location management by dynamic slotting
- Information & statistics
- Optimised Multishuttle strategies
- PackBuilder extensions
- Packaging Variant Management
- Ergonomic web-enabled user interface

A person is shown in profile, wearing a headset with a microphone, working at a computer workstation. The workstation includes a laptop and several large monitors displaying data and charts. In the background, there are more monitors and a rack of blue binders. The overall scene is a control room or office environment.

DEMATIC IQ

Dematic iQ

The software for efficient warehousing

Thanks to a comprehensive range of functions and numerous strategies stored by default, Dematic iQ ensures resource efficiency and a transparent flow of goods. This means that the Warehouse Control System modules form the corner stones for efficient AMCAP® processes.

Dematic iQ has proven its capabilities as a Warehouse Control System across a comprehensive range of sectors in numerous implementations with a number of high-profile users. For AMCAP® various new features were included into the software. Dematic iQ covers special storage and retrieval strategies for Multishuttles, sequencing and pallet building functions as well as monitoring, tracking and reporting. It is also available on mobile devices.

Once a palletising job is initiated, the Dematic PackBuilder software first calculates how to arrange the cases on the pallet or roll cage to suit the customer's needs - for example, keeping family groups together. The pallets are planned to achieve store friendliness to reduce handling time within the stores. A further criterion is secure and space-saving placement on the pallet.

To calculate the loading sequence, essential data such as the dimensions of the articles, their weight and packaging characteristics are taken into consideration.

Dematic iQ directs the Dematic Multishuttle® to deliver the required articles in the correct sequence so that the pallet can be prepared swiftly and efficiently according to the customer's requirements.

Benefits of the Dematic iQ Warehouse Control

- Full support of the AMCAP®-specific equipment, workstations and processes
- Efficient location management for highly varying case sizes by dynamic slotting
- Information & statistics: palletising statistics, KPIs, status monitoring, dashboards for mobile devices
- Optimised Multishuttle strategies: sequencing, chaotic storage principle
- PackBuilder extensions for efficient and stable pallet building
- Packaging Variant Management for teaching and handling
- Support of new Teach-In Station with semi-automatic mechanical measurement

Dematic Services

With our full service and support packages you can always be sure to exhaust your investment at any time perfectly. That means: to increase the operational time of your investment, to minimise downtime and to have the security that you can always rely on your system – even if you need to operate at full capacity.



Maintenance Services

- Technical phone support 24/7, remote maintenance
- Diagnostic inspection and troubleshooting
- Software updates, system support
- Emergency services
- Supplemental resident support
- Consulting & training

Maintenance Based Services

- Handling of change requests
- Modernisation and upgrading
- Service consulting

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For more local offices, service locations and partners please refer to our homepage www.dematic.com/contact

* Germany: Costs for a national call per minute: 9 ct, from mobile phones: 42 ct. Calling costs from other countries depend on the respective providers.