

MWPVL International
Supply Chain | Experience

A Primer on Automation Systems for Distribution Operations

Marc Wulfraat
information@mwpvl.com
www.mwpvl.com
May, 2013



Agenda





Background Information on MWPVL International

Distribution Automation Solutions

About MWPVL International

- We are consultants in Supply Chain and Logistics
 - Founded in 2006
 - Privately-held partnership
 - Debt-free and profitable growth over 7 years
 - Seasoned and tenured resources averaging over 15+ years experience in supply chain and logistics industry
 - 200+ projects completed
 - Develop innovative solutions for high volume distribution operations

Consulting Services

Supply Chain Strategy	<ul style="list-style-type: none">• Distribution Network Optimization• Self-Distribution / Flow-Path• Product Sourcing• Outsourcing	
Distribution Center Design & Engineering	<ul style="list-style-type: none">• Facility Design & Reset• Conventional and Automated DCs• Materials Handling Systems• Specification, RFP, Implementation	
Operations Assessment	<ul style="list-style-type: none">• Procurement• Warehouse• Transportation• People, Processes and Systems	
SCE Technology	<ul style="list-style-type: none">• Supply Chain Execution Software• WMS / TMS / YMS / LMS / DMS / OMS / Purchasing / Slotting• Evaluation, selection, deployment	

- **MWVPVL.com** is now a leading web site for the supply chain consulting industry
- Knowledge center – relevant content
 - 70+ White Papers & Articles
 - Distribution network strategies of leading companies
 - Automation technologies under the microscope
 - Who is doing what?
 - WMS/TMS/YMS Industry Directories, etc.
 - No registration required



Why Hire MWPVL International?

- Extensive supply chain & logistics experience
- Develop innovative and proven solutions
 - Hands-on detailed analytical approach
 - Based on company-specific operational profiles
 - Real-world practical solutions
 - Trustworthy fact-based advice
- Practice ESI(Early Supplier Involvement)
 - Enhances solution design
 - Improves budget accuracy
- 100% unbiased consulting services
 - Competitive bid process critical to project success
 - We do not sell equipment or software
 - No hidden agendas

Agenda

Background Information on MWPVL International

Distribution Automation Solutions by Supplier

Company	<ul style="list-style-type: none">▪ HQ in Neunkirchen, Germany▪ Founded in 1937▪ \$US 2.2 Billion▪ 8000 employees
Automation Solutions	<ul style="list-style-type: none">▪ Schaefer Case Picking▪ Schaefer Tray System▪ SSI Robo-Pick: Picking Robot▪ A-frames▪ Cross belt sorters▪ Multi channel distribution▪ SSI Autocruiser▪ Schaefer Quad System (SQS)▪ Schaefer Miniload & ASRS Cranes▪ Schaefer Carousel System
Customers	<ul style="list-style-type: none">▪ Key retail installations include:<ul style="list-style-type: none">• Harrods(UK)• Walgreens (USA)• ES3 (USA)• Coop (Denmark)
More Information	<ul style="list-style-type: none">▪ SSI Video (ES3) and SSI Robo-Pick

Schaefer Case Picking

Photos courtesy of SSI Schaefer

Depalletizing



Tray Layer System



Schaefer Case Picking

Photos courtesy of SSI Schaefer

- Fully automated case picking system for Grocery distribution
- Deployed at ES3 LLC in York, PA
- High Bay ASRS
- ASRS Miniload Tray System used to move pallet layers
- Gantry robot palletizers
- Handles cases and totes



Palletization

- Introduced in 2011
- A Breakthrough technology for automated split case picking
- Picks up to 2,000 - 2,400 line items/hour
- Uses visual technology with 3D and 2D image processing to recognize SKUs
- Deposits required quantity into order totes
- Distribution and returns processing applications



Company	<ul style="list-style-type: none">▪ HQ in Luxembourg▪ Founded in 1819▪ \$ 1.2 Billion▪ 4000 employees (2000 in North America)
Automation Solutions	<ul style="list-style-type: none">▪ Multi-shuttle 2 (Captive & Roaming) for goods to person handling of cartons, totes & trays<ul style="list-style-type: none">✓ RapidPick System▪ RapidStore Mini-Load ASRS▪ RapidStore Pallet Load AS/RS▪ FlexTruck Voice – Driverless vehicle▪ PickDirector - Pick to Light, Put to Light▪ Automated Guided Vehicles▪ Automated Layer Picking▪ Conveyor & Sortation Systems
Customers	<ul style="list-style-type: none">▪ Key retail installations for multi-shuttle include:<ul style="list-style-type: none">• Big W (Australia)• Safeway (USA)• Halfords (UK)• Tesco (UK)
More Information	<ul style="list-style-type: none">▪ Dematic Video

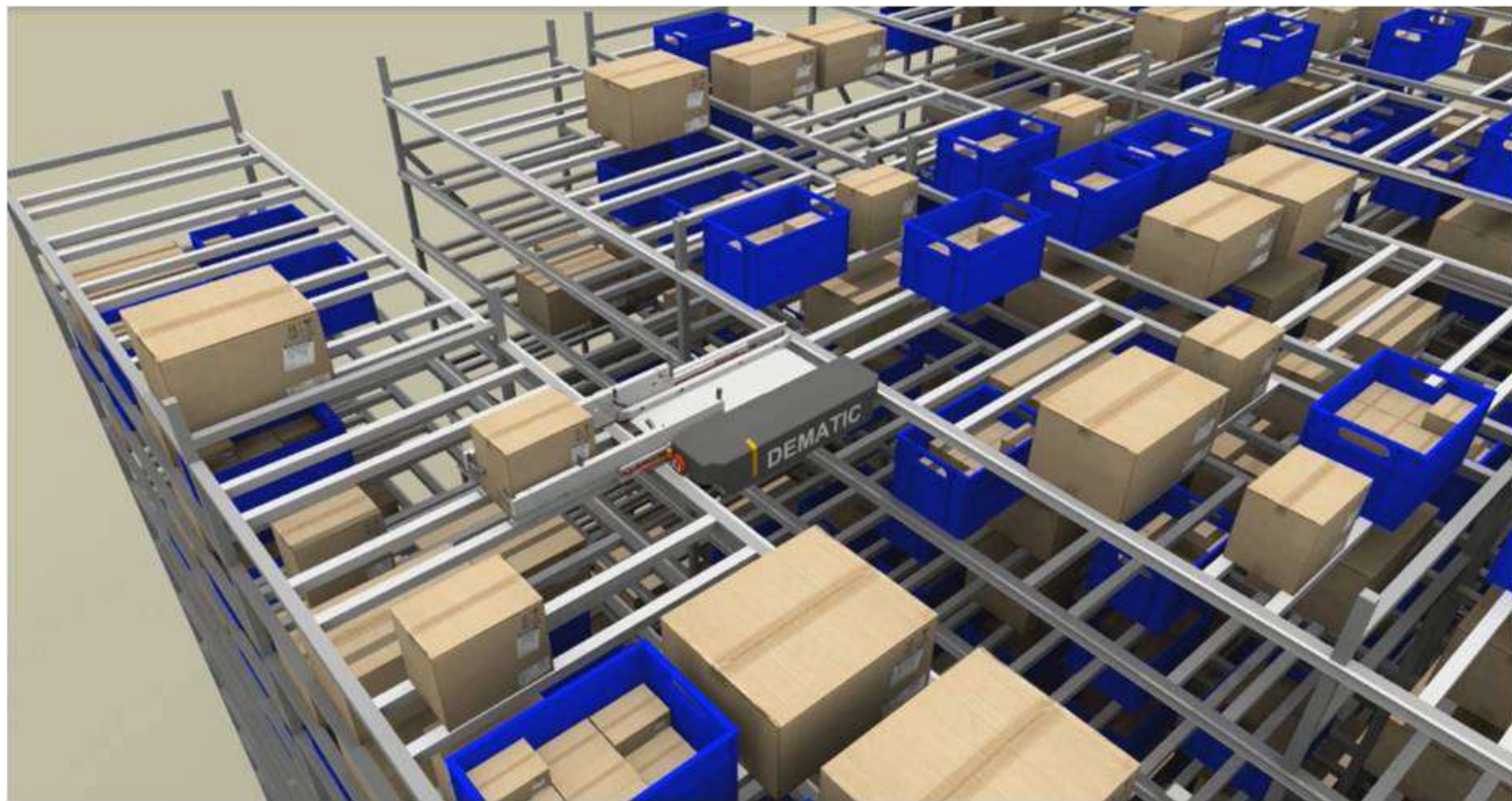
Multi-Shuttle System Overview

Photos courtesy of Dematic



Multi-Shuttle Carrier Close-Up

Photos courtesy of Dematic



Multishuttle / RapidPick Retail Work Station

Photos courtesy of Dematic





<p>Company</p>	<ul style="list-style-type: none"> ▪ HQ in Veghel, The Netherlands ▪ Founded in 1949 ▪ \$ 730 Million ▪ 2350 employees
<p>Automation Solutions</p>	<ul style="list-style-type: none"> ▪ Zone Picking System ▪ Automated Case Picking (ACP) ▪ Automated Tote Picking Systems ▪ Batch Picking / Multi Order Picking System ▪ Automated Crossdocking System ▪ Automated Sortation Systems ▪ Parcel & Postal Systems ▪ Baggage handling Systems
<p>Customers</p>	<ul style="list-style-type: none"> ▪ Key retail installations for multi-shuttle include: <ul style="list-style-type: none"> • Edeka (Germany) • Tesco.com (UK) • Amazon (Germany) • ASDA .com (UK)
<p>More Information</p>	<ul style="list-style-type: none"> ▪ Automatic Case Picking

ASRS Miniload System With Extractor

Photos courtesy of VenDerLande



ASRS Miniload Picking System

Photos courtesy of VenDerLande



Integrated Order Picking / Order Fulfilment System

Photos courtesy of VenDerLande



Automated Cross Docking System

Photos courtesy of VenDerLande



Company	<ul style="list-style-type: none">▪ HQ in Buchs/, Switzerland▪ Founded in 1898▪ \$ 631 Million▪ 2100 employees
Automation Solutions	<ul style="list-style-type: none">▪ CaddyPick▪ StackRunner▪ WarehouseRunner▪ AutoStore▪ SmartCarrier shuttle system▪ Tornado miniload crane▪ Vectura ASRS stacker crane▪ Automated Guided Vehicles
Customers	<ul style="list-style-type: none">• Key retail installations for multi-shuttle include:<ul style="list-style-type: none">• Boots (UK)• ASDA (UK) - Autostore• Migros (Switzerland)• Target (US) Grocery• Walmart (US) Grocery• Woolworths (Australia)
More Information	<ul style="list-style-type: none">• ASDA and CaddyPick and AutoStore





USA Mechanized Distribution Center – Semi-automated

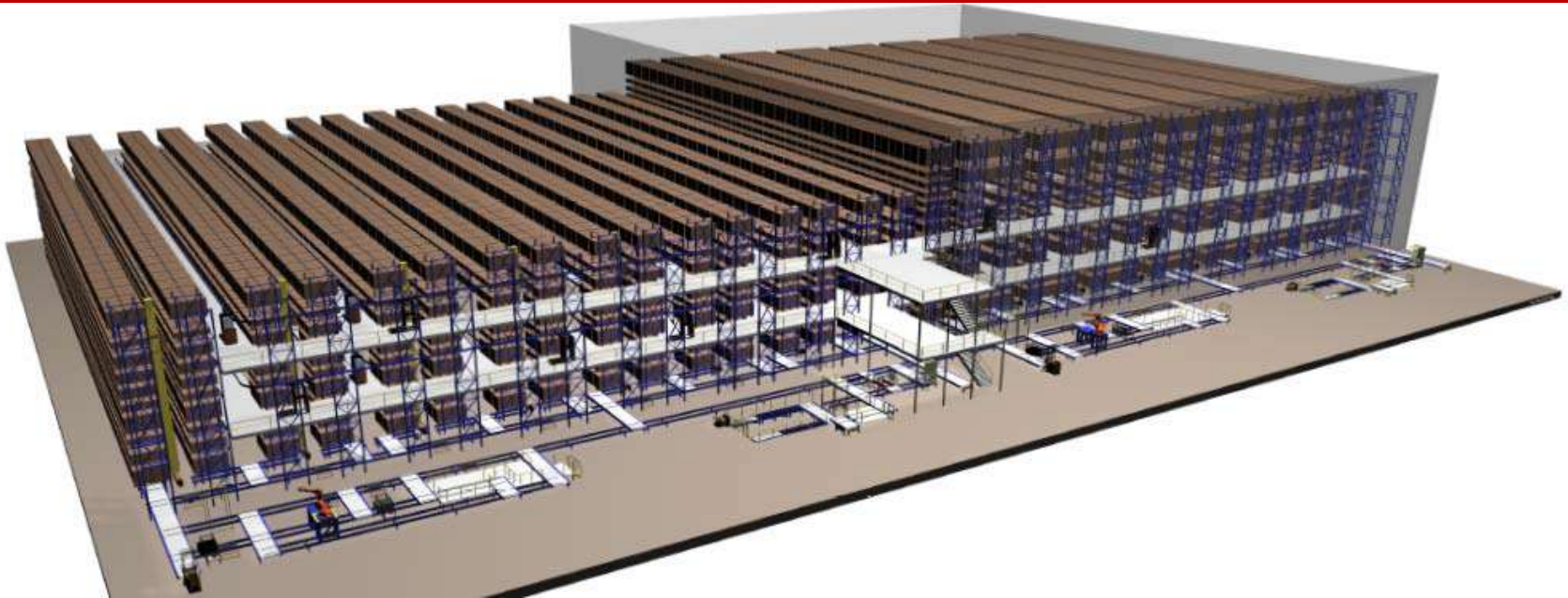
- Frozen and refrigerated HBW of 35,000 pallet locations
- ConveyORIZED Input to High Bay Warehouse
- 18 Automatic Stacker Crane's for Automatic putaway and replenishment
- No touch from receipt to order selection
- Three (3) pick levels for pick to pallet voice order selection
- Pick-to-pallet order picking of 200,000 cases per day

Swisslog Mechanized Grocery Distribution

Photos courtesy of Swisslog



- Receiving induction Station
- AS/RS Crane
- 3rd Level Monorail
- Pick Aisle (3 levels)
- Wrap Stations



- 2 DCs built in U.S.
- Frozen and refrigerated HBW of 42,000 pallet locations
- Conveyorized Input to High Bay Warehouse
- 18 Automatic Stacker Crane's for Automatic putaway and replenishment
- CaddyPick system on two levels with 98 weight sensitive Caddies
- Two De-Layer robots to place product onto Split Trays for better Pick Face density

Layer Picking Robot



Pallet Induction



- Putaway to the storage system accomplished via double pallets jacks at purpose built
- Induction Stations
- Layer Picking Robots are used to place full pallets onto smaller 'Split Trays'.
 - Split Trays allow 2-3 products to be presented in any given pick slot, thereby reducing the pick face needed by 35%

Swisslog Order Fulfillment CaddyPick Aisles

Photos courtesy of Swisslog

- Patented CaddyPick solution transforming a conventional case pick solution into a high quality, high performance zone pick application
 - Quality - Pick By Light / Weight verification
 - Performance – High degree of mechanization / reduced walking / travel time
- In this installation Caddy's travel through the 14 pick aisles, and drops-off orders to the shipping conveyor system
 - 39 Caddies in Freezer
 - 59 Caddies in Cooler
- First Freezer application for CaddyPick in the world





<p>Company</p>	<ul style="list-style-type: none"> ▪ TGW Transportgerate GmbH ▪ HQ in Wels, Austria ▪ Founded in 1969 ▪ \$ 468 Million ▪ 1500 employees
<p>Automation Solutions</p>	<ul style="list-style-type: none"> ▪ Conveyors ▪ Stingray Miniload ASRS with 3-deep case extractor ▪ Shuttle system ▪ High Bay ASRS ▪ PickCenter One & Multi
<p>Customers</p>	<ul style="list-style-type: none"> ▪ Key retail installations for multi-shuttle include: <ul style="list-style-type: none"> • Thomann (Germany) Musical Instruments • CasaModa (Germany) Fashion • Migros , Spar, Coop, Mercadona, Kroger , Edeka - Grocery • Petco, Office Depot, Woolworth, IKEA
<p>More Information</p>	<ul style="list-style-type: none"> ▪ TGW and Stingray

TGW ASRS Mini-load Fashion Distribution Operation

Photos courtesy of TGW



TGW Automated Carton Handling (Shuttle with extractor)

Photos courtesy of TGW



TGW Automated Warehouse (Mini-load with extractor)

Photos courtesy of TGW



TGW Stingray Miniload with Shuttle Carrier

Photos courtesy of TGW



Automation Supplier Profiles



Company	<ul style="list-style-type: none">▪ HQ in Hart/Graz, Austria▪ Founded in 1952▪ \$422 Million▪ 2000 employees
Automation Solutions	<ul style="list-style-type: none">▪ OSR Shuttle System (10,000 shuttles deployed)▪ Open Shuttle▪ Pick-It-Easy Workstations▪ Automatic carton erectors, labelling, wedging, carton closing▪ Auto-Picker SDA - A-frame dispensers▪ Travelling Dispenser TDA▪ Tube Channel TKA▪ KiSoft Vision, Pick to Light, Voice▪ Automated Guided Vehicles
Customers	<ul style="list-style-type: none">• Key retail installations for multi-shuttle include:<ul style="list-style-type: none">• Boots (UK)• Hermes (Germany) –for returns handling• John Lewis Partnership (JLP) (UK Dept Store)• Office Depot (France)
More Information	<ul style="list-style-type: none">• Knapp Shuttle Video and Knapp Roaming Video

KNAPP OSR Shuttle with Multiple Totes

Photos courtesy of Knapp



KNAPP Open Shuttle Free Roaming Shuttle Technology

Photos courtesy of Knapp



KNAPP Auto-Picker SDA A-Frame Dispensers (RX Application)

Photos courtesy of Knapp



Automation Supplier Profile



Company	<ul style="list-style-type: none">▪ Founded 1971 in Parkstein, Germany▪ \$310 Million▪ 1700 employees (500 in North America)
Automation Solutions	<ul style="list-style-type: none">▪ Automated Full Case Distribution Centers for Grocery (Dry & Perishables) Distribution<ul style="list-style-type: none">✓ Solution comprised of Pallet AS/RS, Layer Depalletizing, Tray Loading, Tray Mini-Load AS/RS, COM (Case Order Machine), Pallet Stretch Wrapping▪ Automated Tote System (ATS) for beverage▪ Dynamic Picking System (DPS) and E-DPS▪ Order Picking System (OPS)▪ Car Picking System (CPS)▪ Module Picking System (MPS)▪ Ergonomic Tray Picking (ETP)
Customers	<ul style="list-style-type: none">▪ Key North American retail installations include:<ul style="list-style-type: none">• SuperValu (Lancaster PA, Hopkins MN, Brea CA)• Sobeys (Vaughan ON, Terrebonne QC)• Kroger (6 sites)• CVS (4 sites)
More Information	<ul style="list-style-type: none">▪ Witron Video

Witron - Full Case Grocery Automation

Photos courtesy of Witron



Mini-load automatically extracts and selects trays

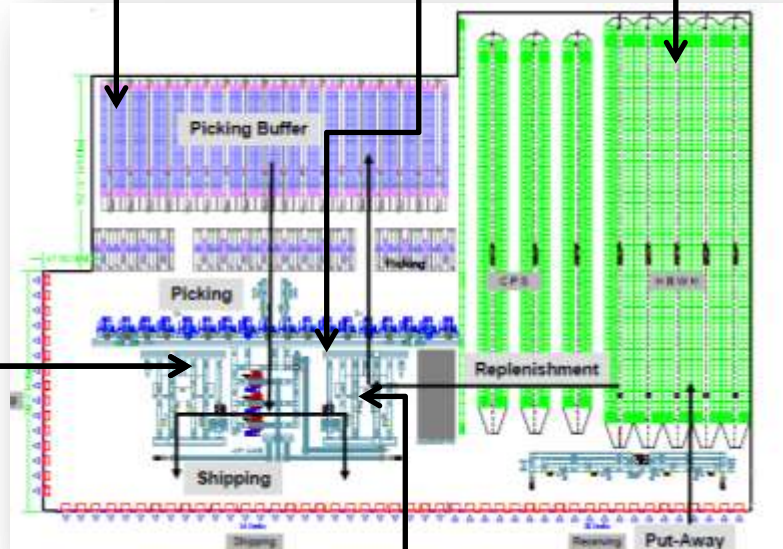


Insert Cases to Trays

Putaway Pallets to ASRS HBW



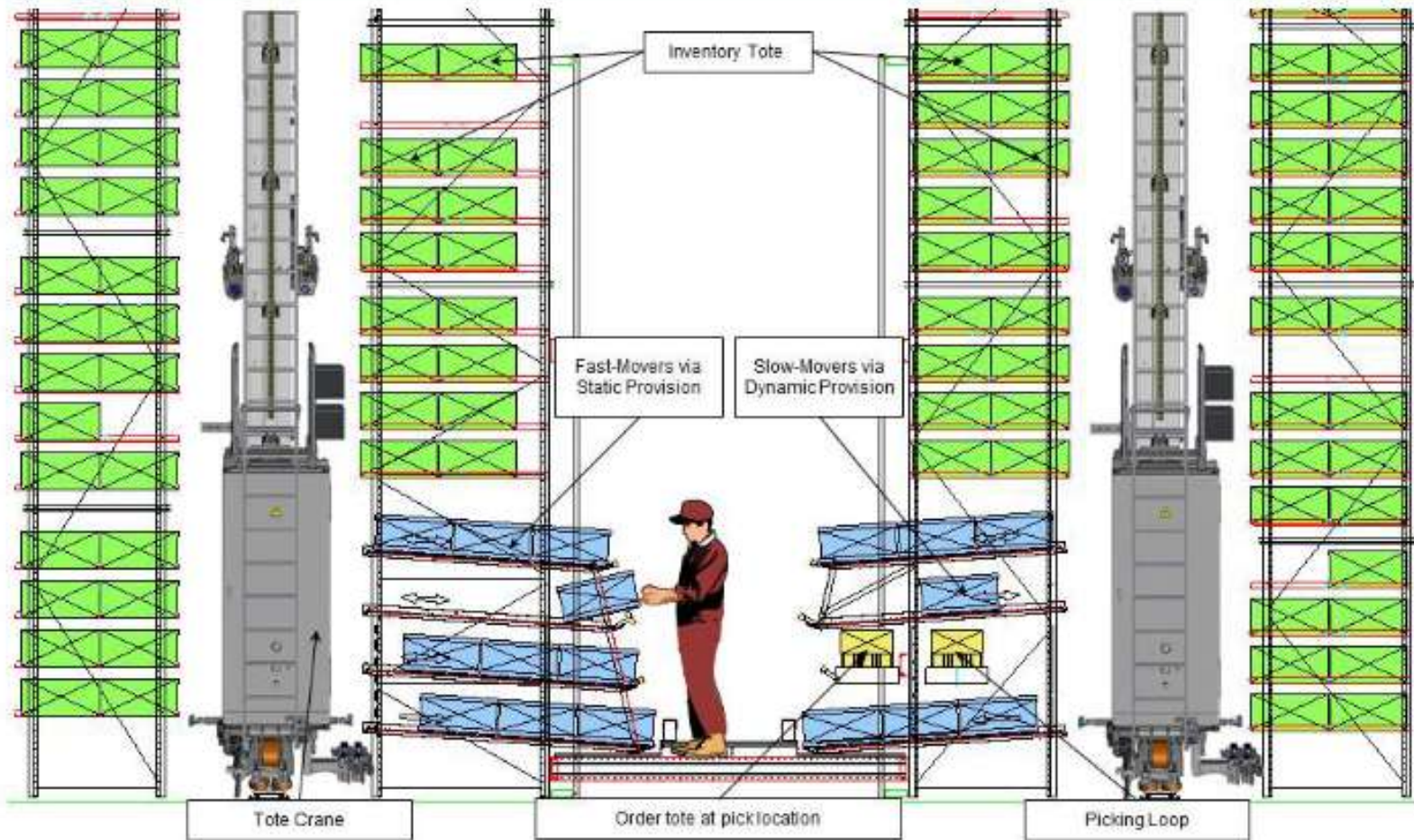
Automatic Store-friendly pallets stacked and shrink-wrapped



Depalletize cases to conveyors



DPS – Order Picking



Witron –Order Picking System (OPS) Goods to Person Split Case

Image courtesy of Witron



Automation Supplier Profile

Company	<ul style="list-style-type: none">▪ Founded 1937 in Osaka, Japan▪ US HQ in Farmington Hills, MI▪ \$ 2.0 Billion▪ 5200 employees
Automation Solutions	<ul style="list-style-type: none">▪ SmartCart▪ Dual miniload cranes in one aisle▪ High bay ASRS▪ Automated Guided Vehicles▪ SmartLoader System
Customers	<ul style="list-style-type: none">▪ Key retail installations for multi-shuttle include:<ul style="list-style-type: none">• Macys (US)
More Information	<ul style="list-style-type: none">▪ SmartCart



<p>Company</p>	<ul style="list-style-type: none"> ▪ Founded 1971 in Stuttgart, Germany ▪ US HQ in Grand Rapids, MI ▪ \$ 128 M ▪ 390 employees
<p>Automation Solutions</p>	<ul style="list-style-type: none"> ▪ viaStore shuttle system ▪ viapick – Fully Automated Order Picking System ▪ HPPS – High Performance Picking System ▪ viaSpeed miniload system ▪ Automatic Tray Warehouse ▪ viaStore storage/retrieval machines (AS/RS) ▪ Hänel carousel storage systems
<p>Customers</p>	<ul style="list-style-type: none"> ▪ Key retail installations for multi-shuttle include: <ul style="list-style-type: none"> • IIKEA (China) Viastore ASRS
<p>More Information</p>	<ul style="list-style-type: none"> ▪ Viastore Viapick

Automation Supplier Profile



Company	<ul style="list-style-type: none">▪ HQ in Moorestown, NJ▪ Founded in 1973▪ \$ 39 Million▪ 550 employees
Automation Solutions	<ul style="list-style-type: none">▪ PerfectPick shuttle system▪ Mail Sortation Systems
Customers	
More Information	<ul style="list-style-type: none">▪ PerfectPick



Company	<ul style="list-style-type: none">▪ HQ in Viano, Italy▪ US HQ in Skokie, IL▪ Founded in 1980▪ \$ 142 Million▪ 350 employees
Automation Solutions	<ul style="list-style-type: none">▪ Laser Guided Vehicles▪ Automated Pallet Wrapping Systems▪ Automated Palletization Machines
Customers	<ul style="list-style-type: none">▪ Many customers in the Food and Beverage Industry
More Information	<ul style="list-style-type: none">▪ Barilla

Included this company as they are a leader in the laser guided vehicle market

MWPVL International Supply Chain | Experience



© 2013 **MW**PVL International Inc.. All Rights Reserved.

The contents of this document are confidential and are not to be distributed electronically or in hard copy format without permission.