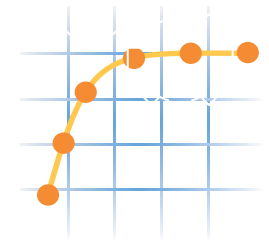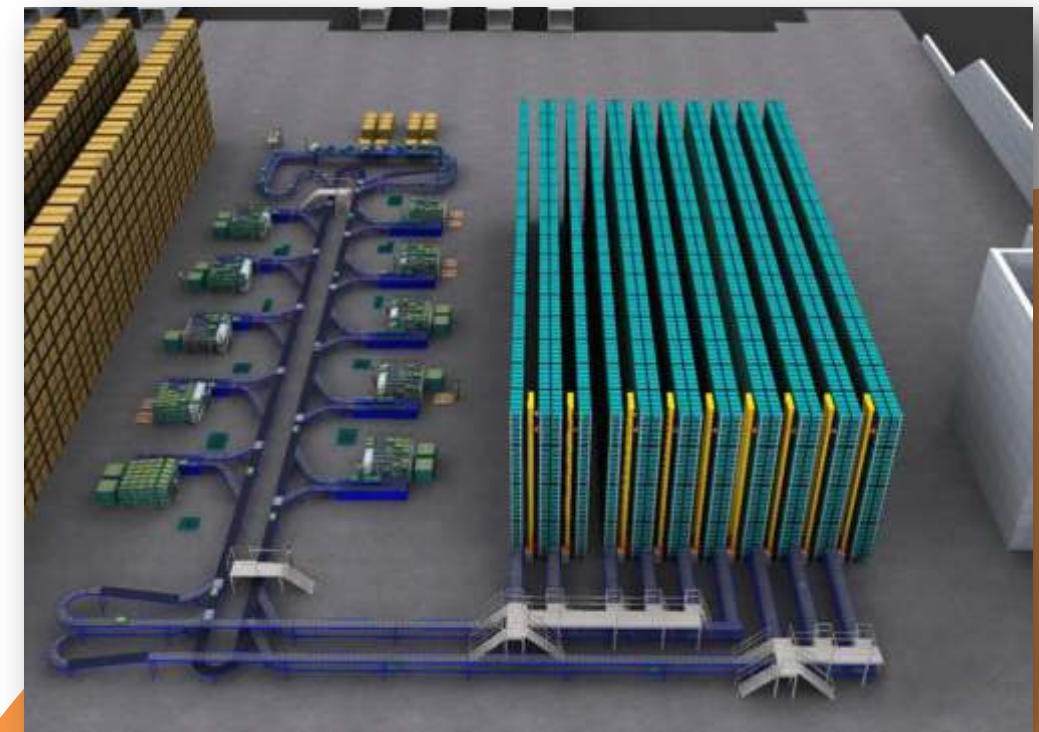# Engineer
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The Conductor WCS

POWERED BY
QC
SOFTWARE

Warehouse Challenge

There are two different systems in the automated distribution center: hardware and software. Material-handling equipment —conveyors, sorters, ASRS, RF, pick-to-light, pick-to-voice, etc. —enabled many companies to increase throughput, reduce labor costs, and decrease order lead-times. Software systems, like Enterprise Resource Planning (ERP) and Warehouse Management Systems (WMS), achieve greater visibility over your operations, plan order processing, and manage inventory. These systems offer greater inventory accuracy, productivity, more on-time deliveries, and the ability to accommodate value-added services.

However, while material-handling equipment and software systems can independently deliver considerable benefits, they are often unable to communicate effectively with each other. Just as an orchestra is a collection of different instruments that have different capabilities, so also do the technologies in your distribution center. In an orchestra, for example, there is a cello section, a brass section, a percussion section and a contra bass section. In a material-handling system, there may be conveyors, mini-load systems, carousels, ASRS- and pick-to-voice systems. Something has to get the concert of technologies to play together to efficiently process orders. To address this issue, many companies are now turning to the Warehouse Control System (WCS).

A WCS bridges the gap between corporate software applications that plan the daily workload (ERP and WMS) and the Programmable Logic Controllers (PLCs) and PCs that control the material handling equipment. The WMS plans the various tasks for order fulfillment, whereas the WCS is responsible for efficient execution of these tasks.

CONDUCTOR ARCHITECTURE
POWERFUL, FLEXIBLE TECHNOLOGY

The DC CONDUCTOR leverages cross-platform software technologies (e.g. Java, C, TCP/IP, etc.), allowing you to deploy a single software foundation on a variety of platforms, whether Windows, Linux, or UNIX®. The modularity and configurability of THE DC CONDUCTOR ENSEMBLE lets you easily tailor it to accommodate physical layout changes and/or changing business rules.

Control processes use TCP/IP sockets for inter-task messaging which provide the high-speed response-time needed for demanding, real-time applications. THE DC CONDUCTOR ENSEMBLE graphical user-interface (GUI) screens are developed in Java so they are hardware independent and can run anywhere. They also feature customizable XML-based screens to define the appearance of the screens with SQL based queries to extract information from the database. .

Benefits

• Achieve platform independence by selecting the technology that matches your existing computing environment
• Scale from a single desktop PC to a client/server architecture
• Improve performance with fast response times
• Rapidly adapt to physical layout changes with an easily modifiable system
• Empower users with an open architecture that lets them modify business rules to create their own custom screens and reports

About abco automation

abco automation grew out of its partner company, ABCO Systems, a premier fourth-generation garment warehousing and industrial supply company serving the market since the 1930's.

As a result, abco automation benefits from combined industry knowledge and experience of over 50 years. In fact, ABCO Systems worked side-by side with abco automation's key executives to design and install distribution automation for the garment industry.

abco automation was formed to bring European intralogistics knowledge and efficiencies to the North American market using American technology. Very quickly, abco automation's reach has extended internationally from the US to Canada, Mexico and Europe. Now, we can represent US, Canadian and Mexican companies that have European interests as well as European companies that have US, Canadian and Mexican interests.

Service and Support

A successful WCS implementation takes more than computer hardware and software installation; it takes people. At abco automation, we believe our relationship with our customers is a partnership, and we work hard to ensure that our solutions deliver the results to meet your warehouse needs today, and prepare you for the opportunities of tomorrow.

You will benefit from our broad range of implementation services, provided by consultants with warehouse and distribution experience in companies much like your own. Our solid, proven methodology, which results in a speedy implementation and faster time-to-benefit, will help you minimize your risk.

We assign a software project manager to each customer implementation. With an average of over 25 years' experience working with warehouse and distribution facilities, our project managers have the knowledge to ensure your success. Our project managers are involved with every customer prior to contract signing, in order to ensure a high-level product fit, verify your business goals, and set accurate expectations for the implementation.

We are responsive to your needs and always provide you with the highest levels of customer service. We'll draw upon our industry knowledge, expertise, and best practices to ensure you are fully leveraging our solutions.

Support Services Include

- 24x7x365 system support
- Concept development
- Functional specification
- On-site systems analysis
- Installation & integration services
- Web-based training and conferencing

How a WCS Can Help

A Warehouse Control System (WCS) is the glue that binds together automated material handling equipment and the Warehouse Management System (WMS) or Enterprise Resource Planning (ERP) systems. The WCS provides a single point of control to efficiently direct and manage various islands of automation into a harmonious orchestra of activity. The Warehouse Control System enables a distribution center manager to fine tune operations, optimize your investment in software and hardware, and control the system in real-time through a single interface. Implementing warehouse control software can be a cost-effective alternative to adding more equipment, or upgrading or replacing a WMS.

With a WCS, you can monitor and manage your operational processes and diagnose problems within a single system.

A WCS helps improve efficiency by providing you with the information to manage your systems, and the tools necessary to make changes to equipment, staffing, and operational procedures. You will find that a WCS will quickly pay for itself by reducing your cost-per-order. More advanced warehouse control systems can also include functionality typically found in warehouse management systems, such as order management, inventory control, order verification, and shipping.

WCS Benefits

- Greater productivity and order accuracy
- Lower operating costs
- Data/system integrity
- Better asset utilization
- Less downtime
- Fast ROI

The DC Conductor Ensemble

THE DC CONDUCTOR™ ENSEMBLE is an integrated suite of software modules providing the tools you need to efficiently and economically manage a warehouse or distribution center.

Backed by over sixteen years of research and development, The DC CONDUCTOR is modular, easily-configurable, platform-independent, and has a scalable architecture to satisfy the needs of any size distribution center. This allows the distribution center to quickly respond to increased demand or changing business requirements.

THE DC CONDUCTOR™ ENSEMBLE is comprised of five tightly-integrated modules that provide state-of-the-art distribution capabilities. The foundation of the ENSEMBLE is the DC CONDUCTOR Tool Kit which provides the core communications and functionality required to communicate between higher-level software systems (ERP, WMS) to PLC and PC-based machine controllers. This module provides the communications links without providing any logic or processing decisions.

Into this software backbone, abco automation can apply any of the other modules listed below to complete the software suite for your company requirements. These modules can stand alone, can scale as you need more functionality, or be provided as the entire CONDUCTOR ENSEMBLE. We describe the functionality of each module in more detail below.

- The DC CONDUCTOR Tool Kit (core components)
- The DC CONDUCTOR Navigator (conveyor routing/sortation)
- The DC CONDUCTOR Order Management System (OMS)
- The DC CONDUCTOR Inventory Management System (IMS)
- The DC CONDUCTOR Shipping Management System (SMS)

THE DC CONDUCTOR's
Order Management System (OMS)

The Order Management System (OMS) provides efficient execution of the order-fulfillment process. This module facilitates the planning, picking, verification, and packing of orders within the distribution center. OMS streamlines the ordering process, accelerates order cycle-time, and increases order accuracy with reduced labor costs, resulting in improved customer satisfaction. In addition, OMS provides operational data on demand for greater visibility across the warehouse.

Planning orders for path-optimized picking and minimizing product handling (touches) is the most important part of improving the order-fulfillment process. OMS is a configurable tool streamlining orders for picking efficiency. The systems uses wave-planning and scheduling functions to determine the most efficient picking technique, whether you are processing single-line/single-quantity orders, multi-line orders, or ship-alone orders. OMS releases the proper number of pick tasks to maintain a continuous and efficient workload. The system allocates items to containers based on weight, dimension, pick-zone location, and other factors in order to minimize the number of containers routed to each zone for a single order. THE DC CONDUCTOR's OMS allows you to integrate a variety of manual and/or automated picking methods, including pick tickets, carousels, pick-to-light, pick-to-voice, automated systems and RF terminals. OMS also allows for multiple picking methods such as batch, cluster and order picks.

THE DC CONDUCTOR OMS can also optimize carton-size selection to compress shipping cube by analyzing the makeup of each order, and selecting the smallest possible container size. As a result, OMS reduces the amount of packing material required both reducing packaging costs, and loading more boxes on a truck.

Benefits

- Improves throughput by maintaining a continuous and efficient workload
- Decreases labor costs through process optimization
- Optimizes batch and wave techniques for increased picking efficiency
- Improves customer satisfaction by reducing errors
- Provides real-time statistics for greater operational visibility and insight.
- Reduces freight charges with optimized carton size
- Reduces pack-out processing time, by allowing orders to be picked directly into the shipping carton

Sub-Modules

- Cartonizer
- RF Manager
- Pick-to-light Manager
- Pick-to-voice Manager
- A-Frame Manager
- AS/RS Manager
- Wave Planning Manager
- Packing/Auditing Manager

THE DC CONDUCTOR's
Inventory Management System (IMS)

The Inventory Management System (IMS) improves the accuracy and efficiency of inventory functions such as receiving, put-away, picking, replenishment, cycle-counting, and bar-code label printing.

With IMS, you can integrate RF devices to receive goods into the warehouse, eliminating paper forms, and allowing you to efficiently and accurately receive product into the warehouse and stage it for put-away.

THE DC CONDUCTOR's IMS also controls the replenishment between reserve storage locations and forward pick locations. The replenishment engine continuously monitors inventory levels of active pick locations, and automatically generates replenishment tasks based on a minimum quantity for each item. Replenishment tasks may also be generated manually in anticipation of increased activity for an item.

IMS's picking function adjusts inventory levels based on pick transactions and provides fully-traceable inventory transactions within the system. IMS also provides multiple methods of inventory counting to ensure ongoing inventory accuracy: you can count based on location, item, last cycle count date, or velocity. IMS publishes a complete set of reconciliation and discrepancy reports, and the capability to track all cycle count history.

Bar-code label printing lets you quickly and accurately produce labels for locations, items, and shipping, using automated, inline print & apply technology.

Benefits

- Eliminates excess inventory
- Improves inventory accuracy
- Optimizes space utilization
- Reduces inventory loss and spoilage
- Increases productivity
- Improves space utilization
- Facilitates cross-docking

Sub-Modules

- Work-order Manager
- Receiving Manager
- Put-away Manager
- Allocation Manager
- Cycle-count Manager

The DC Conductor's Toolkit

The core of THE CONDUCTOR™ is the DC CONDUCTOR Tool Kit™. The Tool Kit provides common user interface screens for monitoring, control and diagnostics. It is the foundation for all CONDUCTOR modules providing the tools to communicate with ERP and WMS systems, as well as lower-level material-handling equipment.

THE DC CONDUCTOR's TOOLKIT also provides diagnostic tools enabling operators and managers to work proactively rather than reactively. Statistical analysis and diagnostic tools monitor and troubleshoot the operational performance of your entire system heading off problems before they occur. You can track work orders and cartons throughout the distribution process, giving you oversight to balance and control carton induction, pick frequency, sorting, packing, and shipping rates, while monitoring and reporting lane divert status, and scanners.

Sub-Modules

- Communications (FTP, Sockets, Database tables, web services, SOAP, etc.)
- Service Manager
- Message Logger
- GUI Manager

Benefits

- Manage your entire facility with a single interface
- Reduce system downtime with diagnostic tools
- Make better decisions using extensive management information
- Improve efficiency by empowering users to create their own screens and reports

THE DC CONDUCTOR's NAVIGATOR

As the focal point for managing the operational aspects of the material handling system, DC CONDUCTOR NavigatorTM optimizes sorting and routing functions for accurate and efficient order processing. This application also provides seamless integration to most Enterprise Resource Planning (ERP) and Warehouse Management (WMS) systems and custom programs.

NAVIGATOR provides real-time data management and interface responsibilities for conveyor routing applications. At each decision point, NAVIGATOR determines the most efficient routing of containers on the conveyor system. The decision-making process is, in turn, controlled by two separate utilities, the Sort Manager and the Route Conductor.

The Sort Manager is responsible for controlling all high-speed sorting technologies, including cross-belt, sliding-shoe, tilt-tray, and wheel-style sorters. It is designed to maximize sorting to multiple divert locations and provide real-time sortation statistics. This application is utilized in environments requiring single-source scan-points.

The Route Conductor is for more complex environments, requiring multiple scanners. The sort manager provides priority-based route sequencing and zone skipping.

Benefits

•   Replaces the inefficiencies of pick-and-pass order-fulfillment with efficiency-boosting zone-skipping
•   Processes orders in the right sequence with priority-based routing
•   Provides a comprehensive view of floor-level operations through a single interface to all material-handling devices
•   Simplifies equipment controllers by keeping decision logic in the WCS
•   Accommodates both simple and complex routing

Sub-Modules

•   Scanner Manager
•   Tote Manager
•   Route Manager
•   Conveyor monitor
•   Sort Manager
•   Statistics Manager

THE DC CONDUCTOR's

Shipment Management System (SMS)

THE DC CONDUCTOR's SMS (Shipment Management System) is a comprehensive application that provides the customer with all the tools to efficiently ship their product worldwide.

The SMS provides a carrier-compliant parcel and LTL shipping-manifest system. Powered by ConnectShip™, SMS enables you to select between major carriers, their associated service levels, and special service options. SMS can process multiple packages in a single shipment even though they have different shipping parameters. SMS is compliant with carrier rules and requirements for label printing and manifest reporting, supports shipping in North America and Europe, and includes manifesting with major carriers, including UPS®, USPS®, LTL, DHL®, Purolator®, Canada Post®, and Canpar®.

THE DC CONDUCTOR's SMS stores detailed shipment information of all processed shipments for future review, so you can track package history. It also includes capabilities for performing end-of-day procedures, including closing out, printing, and transmitting manifest reports.

You can implement SMS as part of a THE CONDUCTOR ENSEMBLE installation, or in a stand-alone environment, integrated with your current supply-chain solutions.

Benefits

•   Reduces shipping costs
•   Increases on-time deliveries
•   Provides an override to select the most cost-effective shipping method
•   Enhances customer service with email notification
•   Supports all major carriers
•   Prints carrier-compliant labels
•   Prevents double shipment of orders
•   Verifies that shipment has been sent to correct location
•   Reduces charge-backs from carriers due to improper ship method selection
•   Eliminates common shipping errors

Sub-Modules

•   Manifest Manager
•   Shipping Manager