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Brilliant IT and Automation Solutions

High Bay Warehouse Automation system

The High Bay Warehouse Automation System adds value to your business by optimising the flow of high value product from multiple sources in your manufacturing facility, while performing outstanding order fulfilment to multiple destinations. Product is typically moved by Automated Stacker Cranes or other Automatic Guided Vehicles (AGV's) into and out of individual storage locations in the High Bay Warehouse.

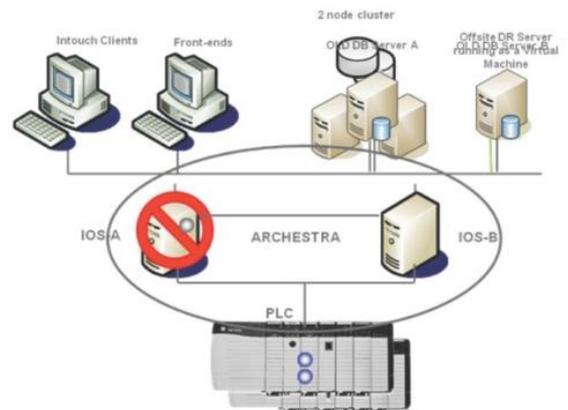
The system of product put away and order fulfilment is rules based and therefore can be configured according to business needs. A comprehensive multiple criteria hold and release system can further dynamically control automatic storage and retrieval of product. The system caters for multiple entrance conveyors from, as well as multiple exit conveyors to, different sections of the plant.

Business Challenges

- Find a fully integrated end-to-end solution for management and control of a shuffle and sort buffer or Warehouse.
- Be able to cater for existing Warehouse and production flows or to design and integrate a new Warehouse and routing.
- Accommodate real-time production requirements to supply product when and where it is needed based on downstream demand and upstream supply considerations integrate with the organisations ERP, product tracking and scheduling systems.
- Maximise throughput and minimise maintenance and energy costs within the Warehouse.
- All in a user-friendly environment giving full graphical visibility of the facility for production control and maintenance.
- Delivering business intelligence and flexible reporting to management.

Technical Information

- Oracle 11g Failsafe Cluster configuration
- MS Windows Server 2003 Enterprise R2
- HP DL380 Cluster configuration, EMC AXA storage
- C#.Net Framework 3.5 Rules Engine
- Visual Basic.NET Framework 3.5 front-end
- Archestra System Platform 2014 and Intouch 2014 SCADA
- Various PLCs: Siemens S7400, S7300, S5; Allen Bradley Compact Logix, AEG A250
- Offering user friendly operator parameter input
- Flexible management reporting
- Captures and tracks the product using barcode or RFID at various entry points in conjunction with Corporate Tracking Systems. Separate Entrance and Exit sorting and dispatch areas.



Key Features

- Warehouse including stacker cranes, conveyors, entrance and exit areas as well as Warehouse bypass routing
- Integrates to multiple plc's controlling the cranes and conveyors, and therefore can be adapted into most existing plants
- Comprehensive Multiple Dynamic Hold and Release facility including partial releases
- Sequencing of product to feed various assembly lines according to complex algorithms like colour / model batching, model category line balancing to maintain fixed minimum and maximum ratios of categories of product supplied to the assembly lines
- Crane Cycle optimisation- pick up after drop off, drop off in the closest compartment to the drop off point, bypass of product around the High Bay Warehouse to reduce the crane cycles minimising wear and tear and increasing throughput
- Freeze and release of cranes, aisles, compartments. Freeze and release independently of entrance and exit
- Communicating with Corporate Scheduling and Product tracking Systems
- Offering user friendly operator parameter input
- Flexible management reporting
- Captures and tracks the product using barcode or RFID at various entry points in conjunction with Corporate Tracking Systems
- Separate Entrance and Exit sorting and dispatch areas

Customer Benefit

- Shuffle and sort facility for high value product
- Flexible management, scheduling and control of the production process
- Highly automated
- User Friendly
- High throughput rates of products through the racking store while optimising on crane movements
- Offers complex sequencing of parts or product to assembly lines
- In a Vehicle Manufacturing Context
 - System can control movement of skids, body in white, EC coated and Painted bodies through a Warehouse (Racking Store).
 - Can cater for different types of Racking Stores, having variable number of compartments, cranes, racks and aisles.
 - Stores excess units and skids from Bodyshop and Paintshop.
 - Feeds Final Assembly and Paintshop from Warehouse according to configurable business rules.
 - Acts as a shuffle and sort facility between Bodyshop, Paintshop and Final Assembly

Customer Reference



Figure 1: High Bay Warehouse



Figure 2: Alarm Screen

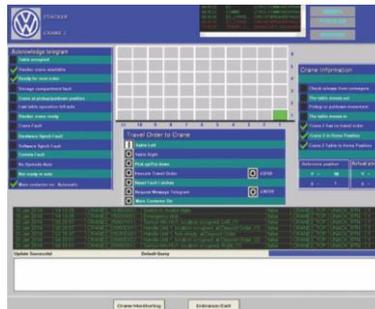


Figure 3: Crane Monitoring

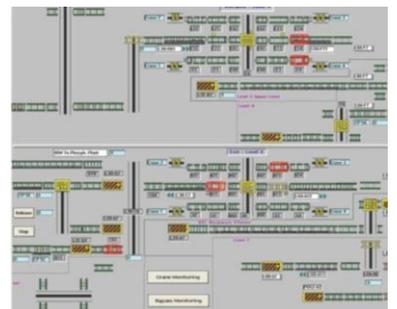


Figure 4: Entrance and Exit Monitoring