Smart Factory Implementation Guide for Manufacturers (WMS and Warehouse Edition)

White Paper for Factory and Warehouse Managers

NTTDATA TAIWAN SMDC (Smart Manufacturing Development Center)

Introduction

Why Is “Transformation” Required at overseas manufacturing sites Now?

The "Silent Crisis" Facing the Shop Floor

Overseas manufacturing bases that were once valued as "low-cost production sites" are now facing a structural management crisis. The most pressing concern is a severe labor shortage. In Taiwan, for example, the unemployment rate at the end of 2024 fell to 3.32%—the lowest level since 2001. According to a JETRO survey, 60% of Japanese companies operating locally cite "difficulty hiring employees" as an investment environment risk, and securing talent has become a structural challenge tied to the declining birthrate and aging population, not a temporary fluctuation.

Adding to this pressure is a sharp rise in labor costs. The average monthly wage in 2024 increased by 4.39% year-on-year—the largest increase in over a decade. The traditional labor-intensive model of "hiring more people to solve problems" has transformed into a management risk that squeezes profitability.

As global supply chains are restructured, overseas bases are expected to evolve into "high-value-added supply hubs." To achieve this, warehouses now need DX that deeply integrates WMS as the "brain" with AGV/AMR as the "hands and feet," breaking free from dependence on human labor.

This document presents a concrete roadmap for evolving Taiwan-based warehouses into "next-generation smart warehouses"—from uncovering waste at overseas locations, to implementing Warehouse Management Systems (WMS), AGV/AMR, and automated storage systems, to integrating related systems.

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Chapter 1

In-Depth Analysis： "Challenges" Lurking in Factories and Warehouses

How many "challenges" are hidden in the warehouse operations that seem routine on a daily basis?

① Discrepancy Between Records and Physical Inventory (Decline in Inventory Accuracy)

In manual and visual management, mistakes such as missed entries and miscounts occur frequently. This creates discrepancies between system figures in ERP and other systems and the actual inventory in the warehouse, leading to lost sales opportunities from stock outs and increased storage costs from excess inventory.

② Inefficient Transport (Wasted Travel Time)

In conventional warehouse operations, workers walk around large factories and warehouses to retrieve products and materials, with travel time accounting for a large portion of their work. This bottleneck in transport operations leads to a decline in overall production line productivity.

③ Paper Ledger Management and Manual Data Entry

Many workplaces still rely on paper-based processes, requiring workers to return to the office and manually enter data into Excel and other tools. This analog operation causes significant administrative burden and data time lags.

(Image)

① Discrepancy Between Records and Physical Inventory

② Inefficient Transport

③ Paper Ledger Management and Manual Data Entry

④ Not Knowing Where Things Are—Searching Around

"Searching for items" is one of the biggest burdens on the shop floor. When location management is insufficient, every increase in SKUs (Stock Keeping Units) causes workers to walk around searching for the right shelf, dramatically reducing work speed.

⑤ Picking Errors (Mis-shipments)

Visual confirmation-based picking inevitably leads to mix-ups of similar items and quantity errors. When a mis-shipment occurs, it not only incurs costs for re-delivery and return handling, but directly damages customer trust.

⑥ Inability to Grasp Warehouse Status in Real Time

In environments without digital management, it is impossible to instantly know "what is where and in what quantity." This lack of information transparency makes it difficult to respond to sudden demand fluctuations and hinders decision-making.

⑦ Labor Shortages and Over-Reliance on Specific Individuals in Warehouse Management

In addition to a serious labor shortage, operations are increasingly dependent on the intuition of veteran workers—creating a situation where experienced staff leaving becomes a risk of operational shutdown, while training new workers requires significant time. This creates a vicious cycle.

④ Not Knowing Where Things Are—Searching Around

⑤ Picking Errors (Mis-shipments)

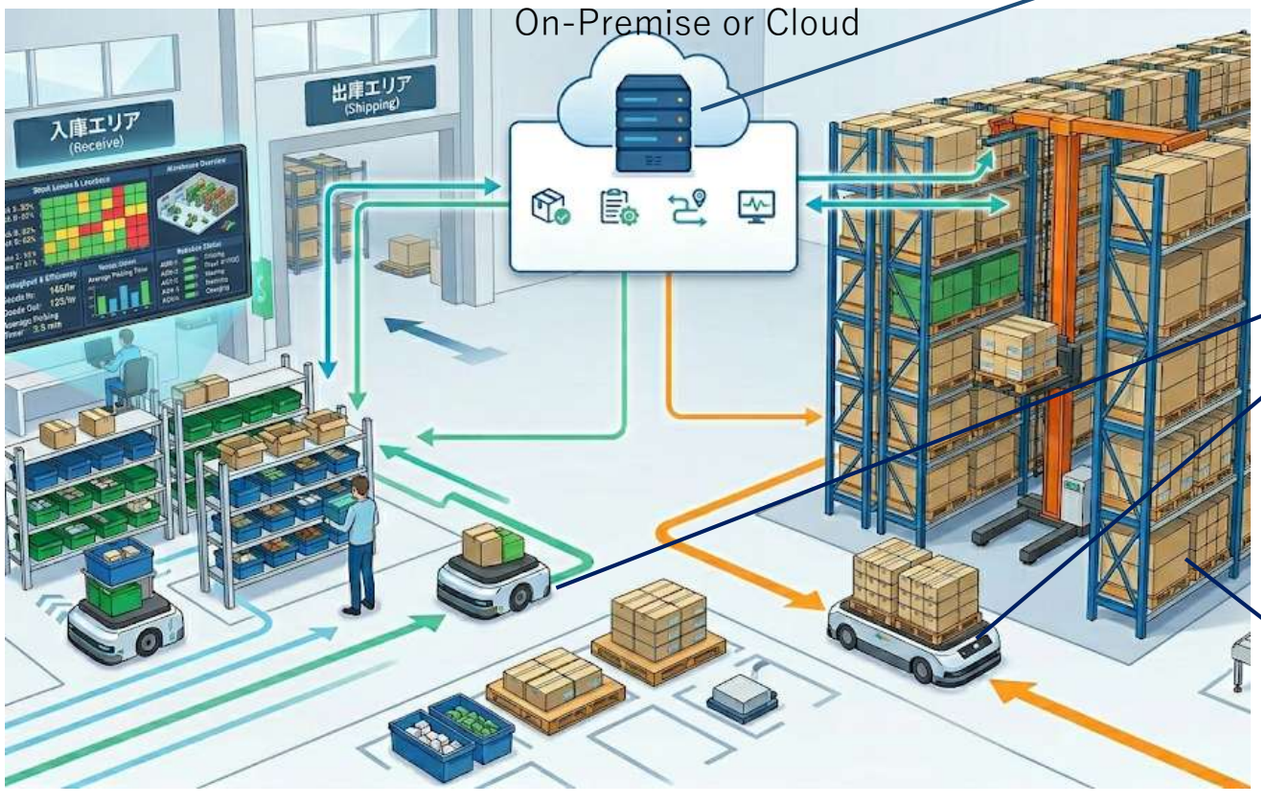
⑥ Inability to Grasp Warehouse Status in Real Time

⑦ Labor Shortages and Over-Reliance on Specific Individuals in Warehouse Management

Toward Solving the Challenges： Technology Changes the "Landscape of the Shop Floor"

As highlighted on the previous page, conventional warehouse environments conceal many challenges—inventory discrepancies, wasted movement, and over-reliance on specific individuals—that can seem "normal" at first glance. However, these challenges cannot be fundamentally resolved through simple shop floor effort or awareness campaigns alone. The "smart warehouse" we envision means systematizing through digital technology and automation the parts that have traditionally relied on workers' intuition and physical effort.

Smart Warehouse Image



(Image)

The three essential core systems needed to eliminate these accumulated challenges and evolve into a next-generation logistics hub are as follows.

1
In-Depth Analysis：
"Challenges" Lurking in
Factories and Warehouses

【Three Core Systems】

WMS
（Warehouse Management System）

Overview：
Software that digitally and centrally manages inbound/outbound operations, inventory, and storage locations. By grasping accurate inventory in real time and transitioning away from analog operations dependent on visual checks and handwriting, it reduces human errors such as missed entries and picking mistakes.　NTT DATA Taiwan (SMDC) has developed EXC-WMS in-house.

AGV/AMR
（Unmanned Transport Vehicles）

Overview：
Transport vehicles and robots that automate the conveyance of goods. Receiving instructions from the system via RCS (Robot Control System), they transport goods and realize "Goods-to-Person," eliminating the time workers spend walking around searching for items. They dramatically improve labor productivity.

Automated Warehouse（ASRS）

Overview：
Equipment that automates the storage and retrieval of goods through computer control. By maximizing the use of vertical space up to the ceiling, they multiply storage efficiency within a minimal footprint at locations where land prices are high, enabling 24-hour unmanned operation.

(※) What is EXC-WMS (Excellent WMS)?
A WMS independently developed by NTT DATA Taiwan. It deeply integrates with ERP, AGV, and other systems to deliver accurate inventory status visibility and maximized storage efficiency end-to-end. A next-generation smart warehouse management system that enhances operational agility and management profitability.

Chapter 2

Solutions for Solving Warehouse Problems

Solution ①： WMS (Warehouse Management System)

1. What Is a WMS： The "Command Center" That Visualizes the Shop Floor and Supports Decision-Making

A WMS (Warehouse Management System) is the foundational system that digitizes and efficiently manages the entire series of operations in a warehouse, from receiving to shipping. By moving away from analog management dependent on "individual experience and memory" and shifting to "accurate operations based on data," it maximizes logistics site productivity.

2. Advancing Smart Warehouse Operations with EXC-WMS

EXC-WMS provided by NTT DATA Taiwan is designed not merely for efficiency improvements as a standalone WMS, but with an eye toward optimizing the entire factory and warehouse.

- **Deep integration with MES (Manufacturing Execution System)：** Synchronizes production plans and logistics workflows in real time, realizing "just-in-time" logistics that automatically supplies the materials a production line needs, when it needs them.
- **Integration of "Brain" and "Hands and Feet" (AGV/AMR Linkage)：** Links with AGV and AMR via the Robot Control System (RCS) to automate physical transport instructions. WMS as the "brain" makes decisions while robots as the "hands and feet" execute—enabling autonomous warehouse operations.
- **Global, Multilingual Support：** Supports multiple languages including Japanese, Chinese, and English, supporting unified data management between the Japan headquarters and Taiwan base, as well as smooth adoption by local staff.

Before-and-After Comparison of Warehouse Operations with Warehouse Management System (WMS) Implementation

Item	Before Implementation (Analog Management)	After Implementation (WMS Utilization)
Inventory Accuracy	Missed entries and transcription errors from manual/visual ledgers cause "stocktaking discrepancies" to be the norm.	Inspection via barcodes or RFID updates data the moment goods are received or shipped. Inventory accuracy improves, and discrepancies with system records are eliminated.
Inbound/ Outbound Inspection	"Visual inspection" comparing item numbers and quantities against paper lists. Human error from overlooking similar items is unavoidable.	The system instantly cross-checks at the time of scanning. Mix-ups and quantity errors trigger warnings, reducing mis-shipment rates.
Training and Ramp-Up	Dependent on the memory of veterans who know "what is where." A training period is required to bring new workers up to speed.	Terminals direct workers to "shelf numbers" and "walking routes." With short-term training, even inexperienced workers can perform at the same level as veterans.
Picking Efficiency	Workers make multiple trips through the warehouse for each order, with wasted travel time accounting for much of their total work. Picking inefficiency is a major factor causing overall site productivity to decline.	The WMS warehouse map eliminates non-value-added wandering, realizing shortest-route guidance for workers. Furthermore, visualization management through integration with electronic paper labels provides real-time guidance that functions as poka-yoke, thoroughly eliminating picking errors.
Inventory Visibility	Status remains unknown until workers return to the office and manually enter data into spreadsheets. Time lags cause stockouts and excess inventory.	Inventory is reflected in real time from the shop floor. Sharing inventory between locations becomes easy, enabling optimal ordering based on demand forecasts.
Administrative/ Document Creation	Delivery slips, shipping labels, and work instructions are created individually. Double-entry effort and input errors occur.	Various documents and shipping labels are issued from the WMS. With ERP integration, data coordination is automated, drastically reducing administrative workload.

Solution ②： Transport Automation

Strategic Selection of AGV (Automated Guided Vehicles) and AMR (Autonomous Mobile Robots)

In smart warehouses, AGV (Automated Guided Vehicles) and AMR (Autonomous Mobile Robots) are responsible for the physical "movement of goods." They substitute for manual transport operations and realize a logistics infrastructure that runs 24 hours without stopping.

1 . Representative Solution Forms

- **Shelf Transport Type (GTP： Goods to Person)：** A method in which robots carry entire shelves to pickers. The "Goods-to-Person" approach eliminates waste and realizes an environment where workers can focus on high-value-added tasks.
- **Pallet/Heavy Load Transport Type：** Forklift type and low-floor type. Standardizes intra-factory transport, realizes stable component supply to production lines, and reduces transport risk.
- **Collaborative Transport Type (Follow-Along Type)：** The robot automatically follows behind the worker. Technology supports human judgment, reducing workload while optimizing operations through human-machine collaboration.

2 . Benefits of Implementation

- **Optimized Staffing and Cost Management：** By replacing low-value-added tasks such as transport with automation, human resources are concentrated on high-value-added work, eliminating waste.
- **Improved Safety：** Advanced safety protection by sensors and AI achieves excellent poka-yoke functionality, eliminating collision risks and safety concerns in human-machine collaborative environments.
- **Flexible Adaptation to Shop-Floor Layouts：** Through the technical advantages of AMR systems, rapid response to production changes and scale expansion is possible by updating map data without physical facility changes, maximizing environmental adaptability.

↑ AGV solution implemented by NTT DATA Taiwan (SMDC)

3 . Definitions and Technical Differences Between AGV and AMR

Whether conventional "guided type" or next-generation "autonomous type," the suitable operating environments differ.

Item	AGV (Automated Guided Vehicle)	AMR (Autonomous Mobile Robot)
Guidance Method	Physical guidance via magnetic tape, QR codes, etc. Travels by reading codes on the floor surface.	Autonomous map construction via SLAM technology (sensor-based mapping), LiDAR, etc. Recognizes surrounding shapes for autonomous travel.
Implementation Cost	Relatively inexpensive	Tends to be more expensive due to high performance
Environmental Preparation / Flexibility	Requires affixing guidance codes to the floor, etc. Route changes require construction or adjustment.	Can be implemented with existing layout as-is. Route changes can be flexibly configured in software to match operational rules.
Obstacle Avoidance	Basically stops to ensure safety	Autonomously detours around obstacles and continues traveling
Best-Suited Environments	Best for environments with straight, fixed routes	Best for high-mix low-volume production, environments where layout changes occur frequently

For example, when travel routes are linear and simple, choosing a low-cost, highly reliable "QR code AGV" rather than an expensive AMR (SLAM type) is the wise judgment that maximizes ROI.

Solution ③： Automated Warehouse
Automated Warehouse (ASRS) (Automated Storage and Retrieval System)

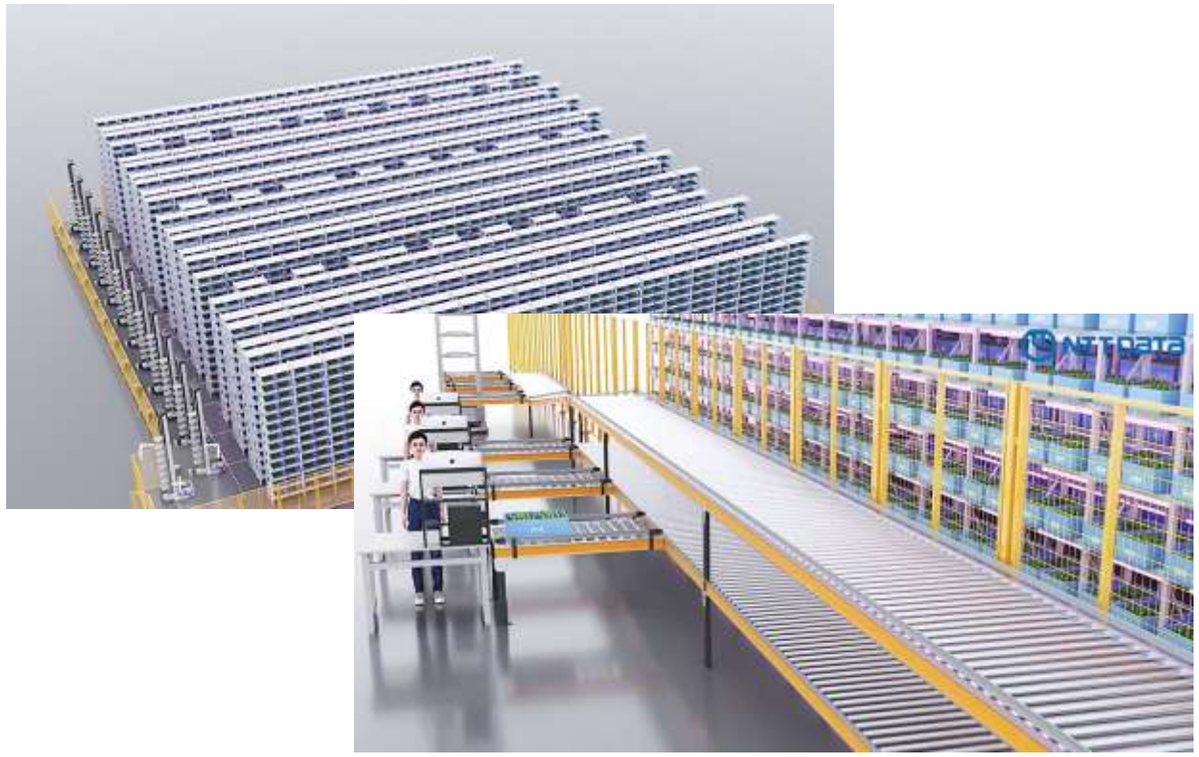
1. What Is an Automated Warehouse：

An automated warehouse (AS/RS) is a system that automates the storage and retrieval of goods through computer control. It consists of high-rise storage racks, transport equipment such as stacker cranes and shuttles, and the software that controls them. While conventional warehouses operated on a "Person-to-Goods" basis where people go to the shelves to retrieve items, automated warehouses realize "Goods-to-Person (GTP)," dramatically changing the landscape of the shop floor.

2. Why Automated Warehouses Are a "Strategic Investment" at Taiwan Bases

Against the unique challenges faced by Taiwan's manufacturing and logistics bases, automated warehouses offer the following advantages：

- **Effective Use of Base Space：** In Taiwan, where land prices are soaring, automated warehouses that can utilize vertical space (height) up to nearly 30 meters realize maximum storage efficiency with minimum floor space.
- **Addressing Serious Labor Shortages：** Capable of unmanned, 24-hour operation, avoiding the pressure of labor shortages and rising labor costs.
- **Reducing Work in Harsh Environments：** Automates work in environments harsh for humans, such as semiconductor clean rooms and freezer warehouses at minus 25 degrees or below, ensuring safe operations.



↑ Model image of the automated warehouse built by NTT DATA Taiwan (SMDC)

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Solutions for Solving Warehouse Problems

3. Representative Types and Features of Automated Warehouses

It is important to select the optimal system based on the form of goods, shipping frequency, and purpose.

Type	Features/Benefits	Main Use Case Examples
Pallet Automated Warehouse (Unit Load)	Stores heavy loads by pallet in high-rise configuration. Extremely high storage efficiency.	Storage of raw materials, large products, long-term inventory
Case/Bucket Automated Warehouse (Mini-Load)	High-speed storage and retrieval of small items in container or cardboard box units. Ideal for improving picking efficiency.	Storage of electronic components and daily goods, EC logistics
Shuttle-Type Automated Warehouse	Utilizes shuttles (transport vehicles) moving at high speed across each shelf. Overwhelmingly higher processing capacity than crane-type.	Refrigerated/frozen warehouses, high-shipment-frequency warehouses, EC logistics
Moving Rack-Type Automated Warehouse	Racks themselves move to secure only the necessary aisles. Effective for installation in existing warehouses and space-saving purposes.	Small to medium-sized warehouses with limited space, storage of high-mix low-volume products

4. Implementation Points： Recommending a Phased "Small Start“

Since automated warehouses represent a large-scale investment, a small start tailored to the current state of the manufacturing/logistics base is important.

- **Focused Investment on Challenges：** By limiting initial implementation to the most inefficient processes or areas requiring high-density storage rather than the entire warehouse, initial costs can be suppressed while achieving early ROI (return on investment).
- **Utilization of Modular/Unit Types：** By selecting systems with high expandability that allow racks and robots to be added as needed, phased upgrades in line with future business growth are possible.

Solution ④： Solution Integration — Smart Warehouse From Point Solutions to End-to-End Optimization：

"Points" to "Lines"：
By combining WMS, AGV/AMR, automated warehouses, and other systems, the following information coordination and transport autonomy can be realized：

1. WMS × AGV/AMR： Synchronization of Autonomous Transport

A combination that directly connects information (systems) with physical actions, thoroughly eliminating transport waste.

How the Integration Works： EXC-WMS automatically issues transport tasks to the optimal AGV/AMR via the RCS (Robot Intelligent Dispatch System) based on manufacturing instructions and shipping requests.

Expected Effects：
- **Dramatic Reduction in Transport Personnel：** Substitutes for manual transport, reducing transport personnel costs.
- **Real-Time Data Consistency：** Since WMS inventory data is updated simultaneously with AGV loading and unloading, on-site inventory and system records remain synchronized.

2. WMS × Automated Warehouse (ASRS)： High-Density, High-Precision Storage

A combination that maximizes storage efficiency and reduces human error in inbound/outbound operations to zero.

How the Integration Works： WMS integrates with the automated warehouse (ASRS) to manage automatic extraction of optimal lots based on FIFO (first-in, first-out) or expiration dates, and automatic storage into vacant shelves.

Expected Effects：
- **Maximization of Space Utilization：** Manages tens of thousands of high-rise locations with millimeter-level precision, extracting maximum floor space efficiency.
- **Elimination of Waiting：** Completely eliminates standby losses from searching for materials, building a dynamic inventory system capable of instant allocation and supply whenever needed.

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Solutions for Solving Warehouse Problems

3. WMS × ASRS × AGV： End-to-End Unmanned Logistics

A combination that realizes an "unmanned factory (Lights-Out Factory)" minimizing human intervention from the warehouse entrance to the front line of the production line.

How the Integration Works：
- Materials are automatically retrieved from ASRS.
- Waiting AGV/AMR receives the materials and transports them through automated doors and elevators to the production line.
- All processes are monitored and recorded by WMS/MES.

Main Effects：
- **Stable 24-Hour Operation Rhythm：** Establishes a stable transport takt time unaffected by human breaks and shift changes, improving overall factory production efficiency.
- **Dramatic Reduction in Total Cost：** Beyond labor savings, it is possible to reduce forklift maintenance costs and energy costs for lighting and air conditioning.

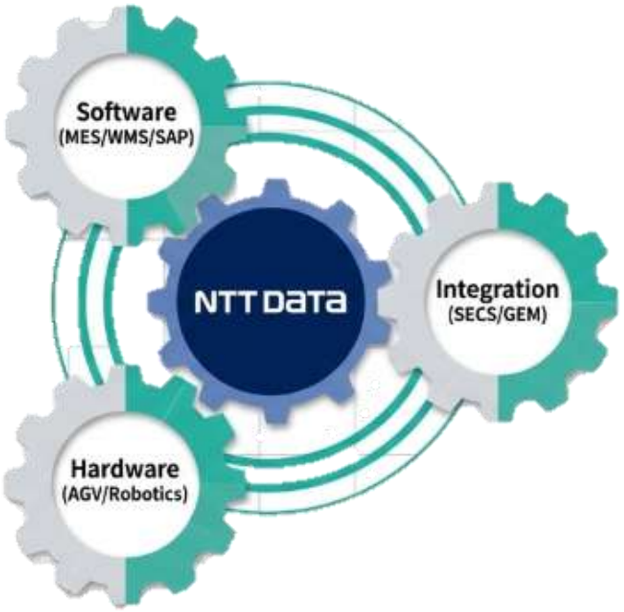
4. Integrated System × AI (Infrared/Image Recognition)： Intelligent Exception Handling

An advanced combination that adds AI "eyes" to physical automation, enabling response to non-standard situations.
How the Integration Works： Integrates 3D SLAM technology and infrared AI monitoring systems. AI automatically recognizes the fork pockets and center points of non-standard pallets, and AGV autonomously fine-tunes the vehicle body to pick up (automatic correction function).
Main Effects：Flexible Response to Special Load Forms： Even for pallets and containers of different specifications, storage in high-rise racks is possible with precision and safety exceeding human capability.
Dramatic Improvement in Safety： Minimizes accident risks in human-machine collaborative environments through obstacle avoidance and movement prediction.

At NTT DATA Taiwan, even when using ASRS or AGV/AMR from different manufacturers, the DEI module built into EXC-WMS enables rapid connection and integration.

Why Choose NTT DATA Taiwan (SMDC)

NTT DATA Taiwan holds unique and powerful strengths in realizing smart warehouses that other companies cannot match.



(Image)

① **Providing a Total Solution Package：** We are one of the few providers capable of delivering and controlling not only WMS implementation, but also material handling implementations such as AGV/AMR and automated warehouses, and an entire suite of smart factory solutions including ERP, MES, APS, and data platforms—all in one seamless package.

② **Advanced System Integration Technology：** As part of the NTT DATA Group, we possess the capabilities of Taiwan's largest SAP consulting firm, having successfully implemented SAP for over 3,500 customers worldwide. We seamlessly "vertically integrate" ERP systems such as SAP with shop floor MES/WMS.

③ **Japanese Quality with Locally Rooted Support：** We combine the high quality of the NTT DATA Group with abundant local consulting capabilities in Taiwan. Having understood the current situation of various companies, we propose the most cost-effective DX approaches.

④ **Global Capability：** Based on our extensive implementation track record in Taiwan, we also support solution deployment to overseas production bases. We support cross-location standardization and efficiency improvements for companies with multiple sites.

A Partner Who Walks Alongside You After Implementation： NTT DATA Taiwan's Ongoing Support After Implementation

Systems are not "set and forget." We have a complete system in place to ensure they take root on the shop floor and continue delivering results.

- **Expert Consulting：**
We thoroughly listen to the customer's shop floor challenges and design the optimal blueprint.

- **Flexible Customization Capability：**
We resolve technical hardware challenges as well, including proprietary customizations to link IT (systems) and OT (equipment/FA).

- **Education Support Rooted in the Shop Floor：**
In addition to multilingual UI, we can produce and provide dedicated operation training videos and other educational content so that foreign operators can learn quickly in a short period.

- **Support for Sustainable ESG Management：**
Through paperless operations and CO2 reduction via forklift replacement, we work together with customers to achieve their sustainability and ESG targets.

If you have any interest or questions, please feel free to **contact us** via the "Inquiry" form. We also offer a complimentary "Free Diagnosis" of your company's challenges.

DX Roadmap： "Start Small, Scale Up"

System implementation does not need to be done all at once. A phased approach suited to your company's maturity level is the key to success.

Phase1： Digitalization (Visualization)

EXC-WMS

WMS

・WMS implementation ： Abolish paper ledgers and Excel management, transitioning to barcode/RFID-based warehouse management
・Shop floor standardization： Thoroughly implement location management, building an environment where "anyone can work without getting lost or searching."
・ERP integration： Synchronize core system and shop floor data, reducing administrative workload and improving ordering accuracy.

Phase 2 ： Automation and Integration

AGV

・AGV/AMR implementation： Automate transport of materials supply and finished product conveyance.
・Direct WMS linkage： Link system instructions and AGV/AMR to build a framework for "autonomous transport."
・Work upgrading： Shift workers from "walking and carrying" to high-value-added tasks.

Phase 3 ： Autonomy (AI Utilization)

AI | **ASRS**

・Automated warehouse (ASRS) construction： Realize high-density storage utilizing space, multiplying storage efficiency.
・AI optimization： Based on historical data, "dynamic slotting" that automatically places frequently shipped items in front positions, and automatic generation of shortest picking routes.

Case Study ① :
High-Rise Rack Automation Through AGV and WMS Integration at a Major Pump Manufacturer

Challenges Faced
Manually operating forklifts to load and unload loads of up to 2 tons into 4-meter high-rise racks was a harsh environment with constant danger of tipping and load collapse. Additionally, the existing ERP could not manage approximately 20,000 shelf-level items, causing dependence on skilled workers' experience and paper lists for material identification—resulting in chronic picking errors and delays from material searching.

Solutions Implemented
- Implemented EXC-WMS and automated forklift AGV equipped with 3D SLAM. AI algorithms and sensors automatically identify the fork pockets of non-standard pallets, and an "automatic correction function" was implemented that accurately picks up even angled loads by fine-tuning the vehicle body.
- WMS was vertically integrated with SAP, visualizing inventory across all 6 factories at the shelf level. This established a stable automated transport rhythm running 24 hours without stopping, driven by system instructions.

Case Study ② :
MES and AGV Integration at an Optical/Semiconductor-Related Manufacturer

Challenges Faced
Transport operations from the cleanroom warehouse to work equipment caused workers to walk over 10 km per day, carrying heavy loads in a harsh labor environment. Inefficient manual carts caused delays in material supply. High levels of automation and quality management were demanded by customers.

Solutions Implemented
- EXC-MES, IIOT, and AGV were implemented as an integrated unit, completely automating the movement of heavy transport equipment.
- Since there was a risk of lens breakage from even slight misalignment when setting AGVs into vapor deposition machines (manufacturing equipment), a high-precision positioning function using XY tables and CCD cameras was independently developed; manufacturing conditions (parameters) of vapor deposition machines are automatically set via EAP. A system was also built enabling managers to monitor operating rates and status without going to the shop floor.

Case Study ③ : Elimination of Information Silos Through Vertical Integration of ERP, MES, and WMS at a Plastic Injection Molding Company

Challenges Faced

Warehouse and manufacturing shop floor information was not coordinated, making it impossible to grasp accurate inventory quantities and production progress in real time. Additionally, management relied on handwritten paper and forms, causing frequent inventory discrepancies and picking errors. As a result, line stoppages due to material waiting (standby losses) occurred frequently.

Solutions Implemented

- EXC-WMS × PDA linkage： Digitalized all inbound/outbound and stocktaking operations, realizing "ledger-material consistency (alignment of system and physical goods)" through PDA scanning.
- ERP/APS vertical integration： Seamlessly linked SAP ERP, production planning (APS), shop floor execution (MES), and warehouse (WMS).

Results Achieved

2 5 % Reduction

Dramatic improvement in logistics efficiency： Warehouse operational efficiency improved, reducing line stoppage time due to material waiting by 25%.

1 1 %Reduction

Cash flow optimization： Precise inventory management reduced average monthly inventory by 11%, also improving production efficiency.

Case Study ④ : Simultaneous Achievement of Labor Shortage Resolution and Decarbonization Through AGV and 5G/AI Integration at a Textile Company

Challenges Faced

The retirement of veteran workers led to a serious labor shortage. Additionally, many diesel forklifts operating within the factory generated environmental loads from exhaust emissions. Furthermore, the low transport efficiency caused by irregular travel routes dependent on human experience was a major factor increasing logistics costs.

Solutions Implemented

- Implemented an AGV automation system combining 5G high-speed communication and AI image recognition technology. Real-time communication via 5G optimized the operation of multiple units across the wide factory area.
- AI image recognition avoids obstacles while automating wide-area transport along managed routes, like buses and subways.。

Results Achieved

Approximately 2.9 million TWD reduction

Operational cost reduction： Eliminated the equivalent of 5 workers and 5 forklifts. Annual costs reduced by approximately 2.9 million TWD (equivalent to approximately 13 million JPY).

Approximately 35 tons reduction

Contribution to ESG targets： Logistics travel distance shortened by 30%, achieving annual CO2 reduction of approximately 35 tons.

3
Why Choose NTT DATA Taiwan (SMDC)

A Decision for the Future： The First Step Toward the Next Generation Starting from Overseas Bases

Smart warehouse transformation is never achieved in a single leap. We recommend starting small—accumulating "small successes" while staying close to your company's current situation.
Visualize the shop floor with WMS as the "brain," then gradually introduce AGV/AMR and automated warehouses as "hands and feet" in response to challenges. This step-by-step approach is the surest path to steadily resolving challenges and embedding transformation in the shop floor.
NTT DATA Taiwan (SMDC) will continue to "accompany" you as a partner in smart warehouse transformation. Let us work together to grow your Taiwan base into a source of future competitiveness.

Why not take a new first step, starting with a casual consultation?

Inquiries / Free Diagnosis

Our experienced consultants will answer your questions about challenges lurking in your factory/warehouse and your smart warehouse roadmap.

【Contact】
smdc.inquiry@nttdata.com

Please feel free to contact us.
(Japanese / Chinese / English accepted)

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