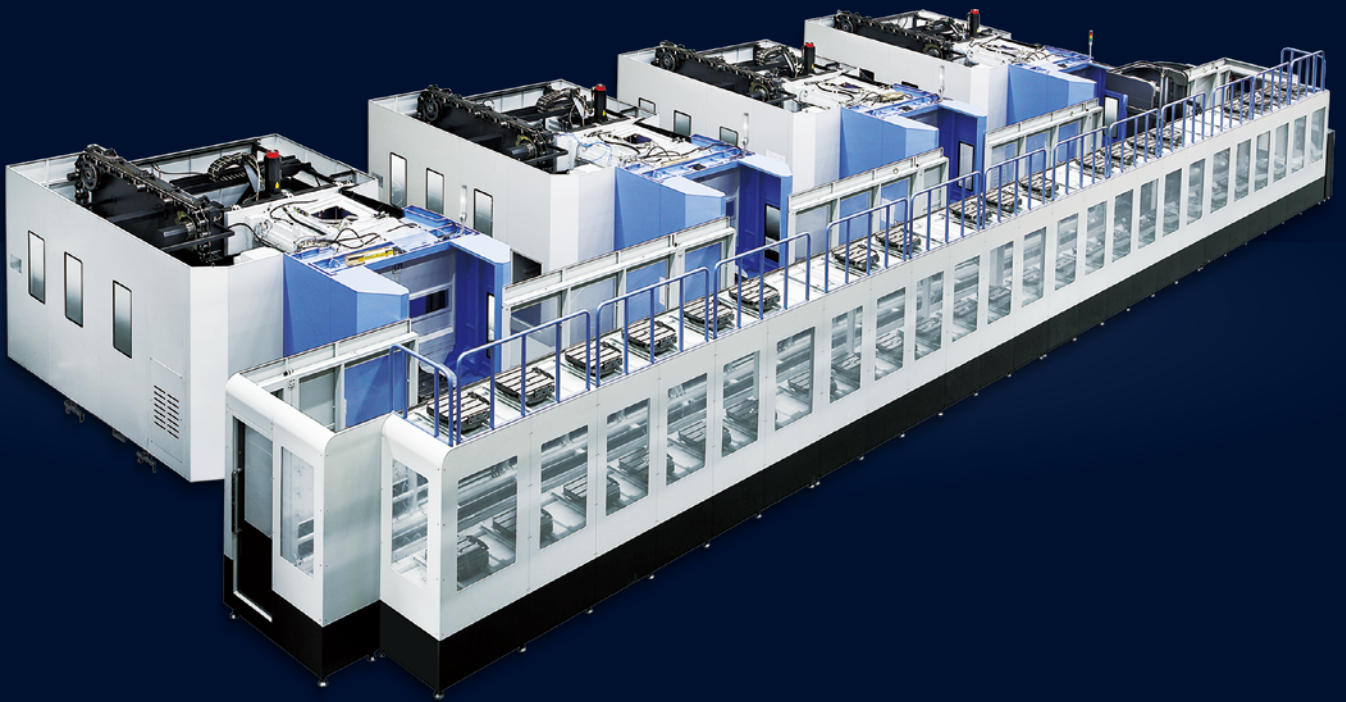




AUTOMATION SYSTEM

DN SOLUTIONS PALLET POOL SYSTEM

LPS • RPS



**MACHINE
GREATNESS™**

DN SOLUTIONS

DN SOLUTIONS PALLET POOL SYSTEM

Optimal Solution for your Pallet Automation System

Automated system now offer the reduce labor costs and increase productivity in your factory. At the same time, the production capacity and utilization rate of the machine tools are increased.



HOW WE PROVIDED FOR CUSTOMER DN SOLUTIONS AUTOMATION SYSTEM?

We have 4-steps process. We will offer you the best optimal solution with our best engineers.

STEP 01

Inquiry from customer

The first step, we got the inquiries from the customer, and reviewing then we offer the best solution system for customer.

STEP 02

Assembly and test

The Second step, we do assembly, and test. We assemble main machine with automation system and test it in our system building.

STEP 03

Try-out

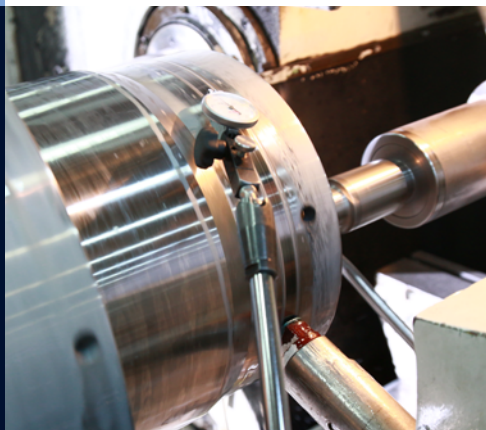
The entire system will be supervised by our control system which takes care of order handling and production control. The training of operators is facilitated by customized training programs.

STEP 04

Customer support



We provide A/S when customer need any support of our system. (Improving Cycle time, maintenance, supply spare part etc.)

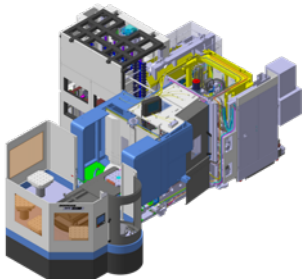
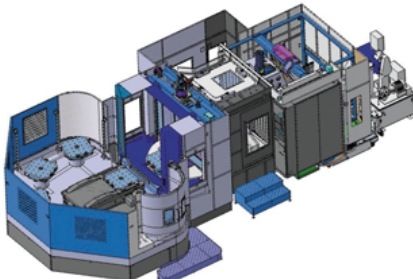
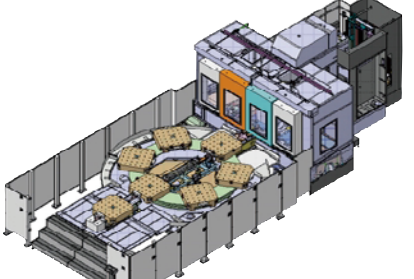
How are you going to offer price reductions unless you automate in some way and become more efficient?



PALLET EXPANSION SYSTEM FOR HORIZONTAL MACHINING CENTER


Line-up

Pallet Pool Type	LPS 4000 / 5000	LPS 5500 / 6300 / 8000
Features	<ul style="list-style-type: none"> - Optimized Slim design - Optimized AGV of Single Mast & Single Fork Structure - Easy installation - Easy field retrofit 	<ul style="list-style-type: none"> - Ready to expansion for machine, washing station, setup station, pallet - Full Line-up for all HMC - Easy field retrofit
Available Model	<ol style="list-style-type: none"> 1) NHP 4000 / HC 400 II 2) NHP 5000 / HC 500 II 3) DVF 6500 w/APC 	<ol style="list-style-type: none"> 1) NHM 5000 / NHP 5500 2) NHM 6300 / NHP 6300 3) NHM 8000 / NHP 8000 / DHF8000 4) HM 1000 / HM 1250
Workpiece Size	<p>NHP 4000 : Ø630 x 900h x 400kg HC 400 II : Ø600 x 800h x 400kg NHP 5000 : Ø800 x 1000h x 500kg(700kg) HC 500 II : Ø800 x 900h x 500kg DVF 6500 : Ø630 x 430h x 500kg</p>	<p>NHM5000/NHP5500 : Ø850 x 1100h x 800kg NHM6300/NHP6300 : Ø1050 x 1350h x 1200kg DHF8000 : Ø1400 x 1400h x 2000kg NHM8000/NHP8000 : Ø1450 x 1550h x 2000kg HM1000/HM1250 : Ø2000 x 1475h / 1725h x 3000kg</p>
Number of Machine	1~7 (AUX. +1)	1~7 (AUX. +1)
Number of Setup Station	1~4	1~4
Number of pallet	<p>Pallet 400 Class : 12 ~ 72 Pallet 500 Class : 12 ~ 72</p>	<p>Pallet 500 Class : 12 ~ 72 Pallet 630 Class : 10 ~ 72 Pallet 800 Class : 8 ~ 72 Pallet 1000 Class : 6 ~ 30</p>
Operation	<ul style="list-style-type: none"> - PC windows based operation - DPMS II 1) Group part 2) Program up / down loading 3) Alarm / Status e-mailing 4) Tool / Machine monitoring 	<ul style="list-style-type: none"> - PC windows based operation - DPMS II 1) Group part 2) Program up / down loading 3) Alarm / Status e-mailing 4) Tool / Machine monitoring
Operation		

RPS 4000 / 5000	RPS 5500 / 6300 / 8000	RPS 1000 / 1250
<ul style="list-style-type: none"> - Optimized slim design for space saving & minimal invest cost - Telescopic Mechanism Fork - Simple installation and easy maintenance - Easy field retrofit to DN Solutions HMC 	<ul style="list-style-type: none"> - Long time unmanned operation - High reliability by servo driven - Simple installation - Easy field retrofit 	<ul style="list-style-type: none"> - Available large volume workpiece - Driven by hydraulic unit - Stable pallet changing unit
<p>1) NHP 4000 / HC 400 II 2) NHP 5000 / HC 500 II</p>	<p>1) NHM 5000 / NHP 5500 2) NHM 6300 / NHP 6300 3) NHM 8000 / NHP 8000 / DHF 8000</p>	<p>1) HM 1000 / HM 1250 (only for pallet size 1000 x 1000, 1250 x 1000)</p>
<p>1) NHP 4000 6/14p : Ø630 x 900h x 400kg 21p : Ø630 x 700h x 400kg 2) HC 400 II 6/14p : Ø600 x 800h x 400kg 21p : Ø600 x 700h x 400kg 3) NHP 5000 6/14p : Ø800 x 1000h x 500kg(700kg) 21p : Ø800 x 700h x 500kg(700kg) 4) HC 500 II 6/14p : Ø800 x 900h x 500kg 21p : Ø800 x 700h x 500kg</p>	<p>1) Ø850 x 1100h x 800kg 2) Ø1050 x 1350h x 1200kg 3) NHM 8000 / NHP 8000 : Φ1450x1550h x 1700kg DHF 8000 : Φ1400 x 1400h x 1700kg</p>	<p>1) Ø2000 x 1475h / 1725h x 3000kg (Adjacent pallets empty)</p>
<p>1</p>	<p>1</p>	<p>1</p>
<p>1</p>	<p>1</p>	<p>1</p>
<p>6/14/21</p>	<p>7 & 9</p>	<p>6</p>
<ul style="list-style-type: none"> - PLC operation - Easy scheduling operation (Built-in control) - Buffer Station type with Carrier 	<ul style="list-style-type: none"> - CNC operation - Easy scheduling operation (2-Path control) - Available priority pallet 	<ul style="list-style-type: none"> - CNC operation - Pallet scheduling operation (1-Path, PMC control)
		

PALLET EXPANSION SYSTEM FOR HORIZONTAL MACHINING CENTER

Line-up

Pallet Pool Type	MULTI LEVEL RPS6500	APC	AWC
Features	<ul style="list-style-type: none"> - Slim design optimized for a 5-axis machine. - Large maintenance space for optimal machine tool accessibility. - Easy to install. - Easy on-site renovation. 	<ul style="list-style-type: none"> - Automatic pallet changer optimized for 5-axis machine tools. - Large maintenance space easily accessible to the operator. - Easy to install. - Easy on-site renovation. 	<ul style="list-style-type: none"> - Slim design. - Side loading/unloading for optimal access to the front. - Easy to install. - Easy on-site renovation.
Available Model	DVF 6500 / VC 630/5AX	DVF 6500 / DVF 8000	DVF 5000 / DNM 4500/5700/6700 Mynx 6500
Workpiece Size	Ø630 x 430h x 500kg	DVF 6500 : Ø630 x 430h x 500kg DVF 8000 : Ø730 x 490h x 850kg DVF 8000T : Ø730 x 490h x 700kg	1) Ø550 x 350h x 250kg 2) Ø450 x 350h x 250kg 3) Ø400 x 350h x 250kg 4) Ø350 x 315h x 65kg 5) Ø300 x 350h x 130kg
Number of Machine	1	1	1
Number of Setup Station	1	1	1
Number of pallet	7/14/21	2/4	Pallet 500 Class : 4/18/24 Pallet 400 Class : 6/21/28 Pallet 350 Class : 8/24/32 Pallet 250 Class : 12/30/40
Operation	<ul style="list-style-type: none"> - PLC operation - Easy scheduling operation (Built-in control) - Buffer Station type with Carrier 	<ul style="list-style-type: none"> - CNC operation (only for 2APC), PLC operation (only for 4APC) - Easy scheduling operation & Built-in control (only for 4APC) - Available priority pallet (only for 4APC) 	<ul style="list-style-type: none"> - CNC operation - Easy scheduling operation (2-Path control) - Available priority pallet
Operation			

LINEAR PALLET SYSTEM

LPS 4000 / 5000

LPS 4000 / 5000 is designed to provide optimized system for the user wants space saving & high productivity linear pallet system in pallet size both 400 mm x 400 mm (15.7 inch x 15.7 inch) and 500 mm x 500 mm (19.7 inch x 19.7 inch) with minimum invest cost.



Features

- Optimized Slim design for space saving & minimal invest cost
- Optimized AGV of Single Mast & Single Fork Structure
- Simple installation in one piece
- Easy field retrofit to DN Solutions horizontal machining center
- User friendly intuitive way to register basic information for flexible manufacturing



Simplify AGV

15 %
Reduced length

Improved Cycle Time

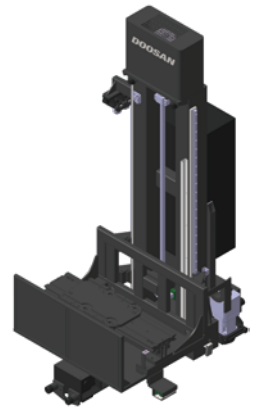
32 %

Reduced footprint

10.8 %

Optimized AGV

- Lifting Axis with Ball Screw & LMG
- Optimized AGV of Single Mast & Single Fork Structure



Machine Specifications

Description		LPS 4000		LPS 5000	
		NHP 4000 / HC 400 II		NHP 5000 / HC 500 II	
Pallet Dimension	mm (inch)	400 x 400 (15.7 x 15.7)		500 x 500 (19.7 x 19.7)	
Workpiece Diameter	mm (inch)	630 / 600 (24.8 / 23.6)		800 (31.5)	630 (24.8)
Workpiece Height	mm (inch)	900 / 800 (35.4 / 31.5)		1000 / 900 (39.4 / 35.4)	430 (16.9)
Workpiece Weight	kg (lb)	400 (881.8)		500 (1102.3) {700 (1543.2) : NHP 5000}*	500 (1102.3)
Travelling (X) Speed	m/min (ipm)	60 [Load], 90 [Unload] (2362.2, 3543.3)			
Lifting (Y) Speed	m/min (ipm)	10 [Load], 20 [Unload] (393.7, 787.4)			
Forking (Z) Speed	m/min (ipm)	20 [Load], 50 [Unload] (787.4, 1968.5)			
Axis Control		Servo			
Forking Type		Single Fork (Telescopic Mechanism)			
Turntable Indexing		45N			
Power Supply (AGV)		Trolley Bar			
Communication (AGV<-> Main Controller)		Optical			
Number of Machines		1 ~ 7 (Aux. +1)			
Number of Setup Stations		1 ~ 4			
Number of Pallet	ea	12 ~ 72			
Dimension(Basic)	mm (inch)	6980 [L] x 2400 [W] (274.8 x 94.5)			

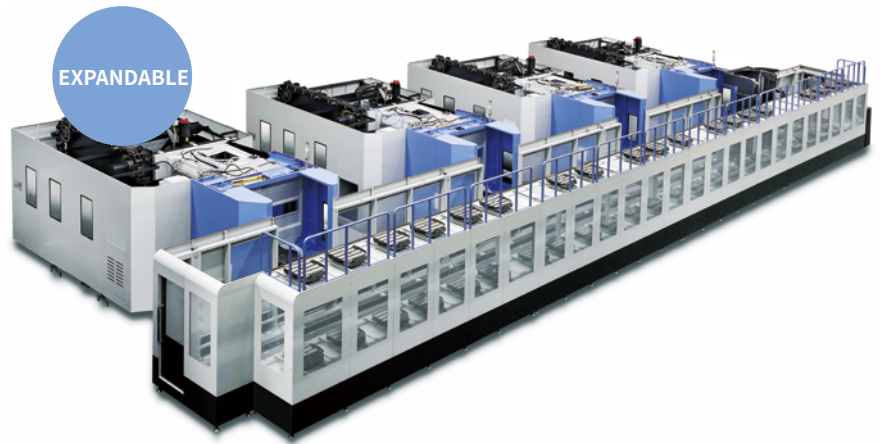
Note) Please contact DN Solutions sales representative for further information

* { } : Option

LINEAR PALLET SYSTEM

LPS 5500 / 6300 / 8000

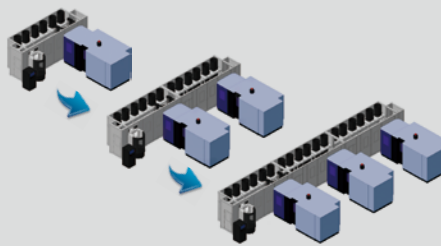
LPS 5500 / 6300 / 8000 is designed to provide a high level of automation system for the customer wants high storage capacity.



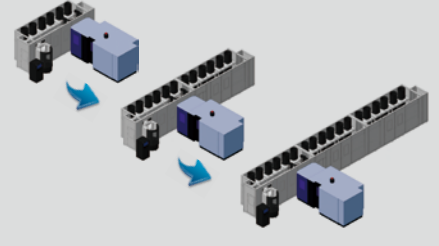
Features

- Easy extension of system by modularized storage rack up to 7 machines & 72 pallets
- High efficiency of workpiece load space
- Auto-operation control by PC based OS
- Easy retrofit to old DN Solutions horizontal machining centers

Increased production

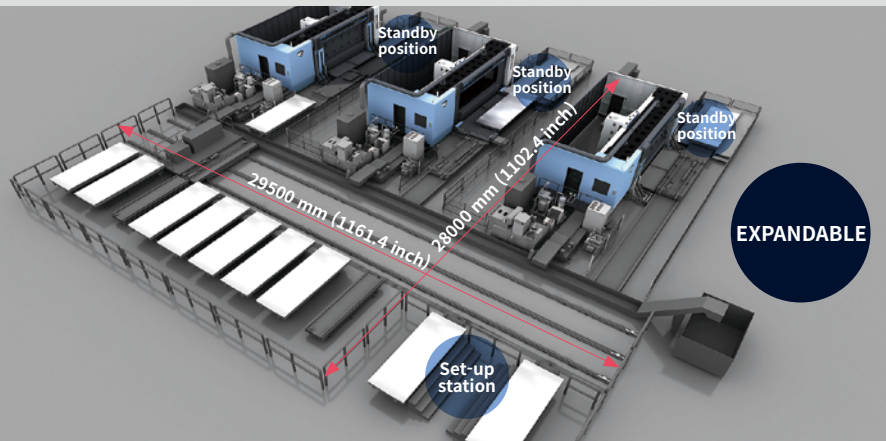


Increased automated operation time



LPS 1540

- Automation solutions (LPS) for processing large aircraft fuselages
- Securing reliability with servo-driven driving
- Reduced pallet exchange time by configuring the standby position
- High-capacity centralized chip processing solution



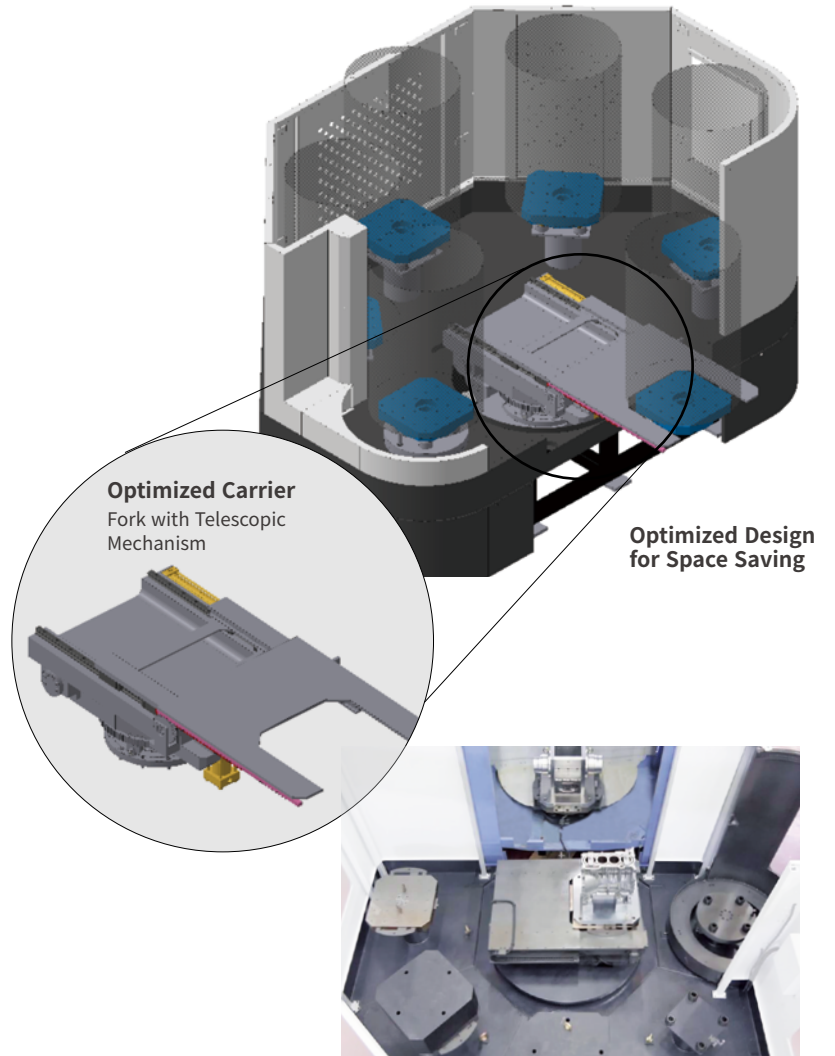
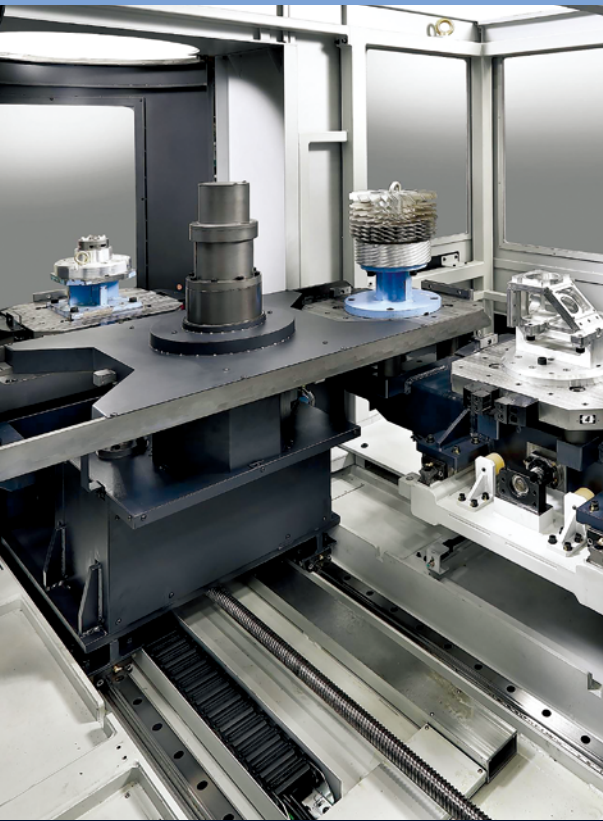
Machine Specifications

Description		LPS 5500	LPS 6300	LPS 8000	LPS 1540
		NHM 5000 / NHP 5500	NHM 6300 / NHP 6300	NHM 8000 / NHP 8000 / DHF 8000	HFP 1540
Pallet Dimension	mm (inch)	500 x 500 (19.7 x 19.7)	630 x 630 (24.8 x 24.8)	800 x 800 (31.5 x 31.5)	4000 x 1500 (157.5 x 59.1)
Workpiece Diameter	mm (inch)	850 (33.5)	1050 (41.3)	1450 (57.1)	-
Workpiece Height	mm (inch)	1100 (43.3)	1350 (53.1)	1400 (55.1)	500 (19.7)
Workpiece Weight	kg (lb)	800 (1763.7)	1200 (2645.5)	2000 (4409.2)	3000 (6613.7)
Number of Machines			1 - 7		1-3
Number of Setup Stations			1 - 4		2
Number of Pallet	ea	12 ~ 72	10 ~ 72	8 ~ 72	1 - 14
Dimension (Basic)	mm (inch)	7824 [L] x 2400 [W] (308.0 [L] x 94.5 [W])	7904 [L] x 785 [W] (311.2 [L] x 30.9 [W])	8952 [L] x 3500 [W] (352.4 [L] x 137.8 [W])	28000 x 29500 (1102.4 x 1161.4)

ROUND PALLET SYSTEM

RPS 4000 / 5000

Compact size Slim Round Pallet System for New HMC Taper #40 Series.



Features

- Optimized slim design for space saving & minimal invest cost
- Telescopic Mechanism Fork
- Simple installation and easy maintenance
- Easy field retrofit to DN Solutions HMC

Machine Specifications

Description		RPS 4000 / 5000-6P	
		NHP 4000 / HC 400 II	NHP 5000 / HC 500 II
Pallet Dimension	mm (inch)	400 x 400 (15.7 x 15.7)	500 x 500 (19.7 x 19.7)
Workpiece Diameter	mm (inch)	630 / 600 (24.8 / 23.6)	800 (31.5)
Workpiece Height	mm (inch)	900 / 800 (35.4 / 31.5)	1000 / 900 (39.4 / 35.4)
Workpiece Weight	kg (lb)	400 (881.8)	500 (1102.3) {700 (1543.2)}*
Number of Pallets	ea	6	
Magazine Type	-	Buffer Station type with Carrier	
Operation	-	Easy scheduling operation (Built-in Control)	
Driving Mechanism	Rotating Axis(X)	-	Servo Motor & Reduction Gear
	Forking Axis(Z)	-	Hydraulic Cylinder & Rack/Pinion
Dimension (Basic)	mm (inch)	3230 x 2215 (127.2 x 87.2)	3630 x 2415 (142.9 x 95.1)

*{ } : Option

ROUND PALLET SYSTEM

RPS 5500 / 6300 / 8000

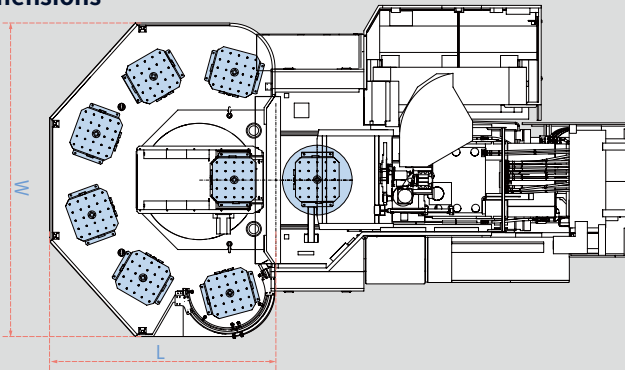
Compared to a standard twin pallet machine, the RPS offers a long period of unmanned operation and the flexibility to produce many different workpieces using the work scheduling function. This system can be easily retrofitted to existing machines in the field.

Features

- Long time unmanned operation
- High reliability by servo driven carrier type
- Simple installation and easy maintenance
Easy field retrofit
- The priority order for pallet and schedule operation



External Dimensions



MACHINE		WIDTH	LENGTH
NHM 5000	mm (inch)	3848 (151.5)	2674 (105.3)
NHP 5500	mm (inch)		
NHM 6300	mm (inch)	4706 (185.3)	3276 (129.0)
NHP 6300	mm (inch)		
NHM 8000	mm (inch)	6462 (254.4)	4400 (173.2)
NHP 8000	mm (inch)		
DHF 8000	mm (inch)		

Machine Specifications

Available Model		NHM 5000 / NHP 5500	NHM 6300 / NHP 6300	NHM 8000 / NHP 8000	DHF8000
Pallet Dimension	mm (inch)	500 x 500 (19.7 x 19.7)	630 x 630 (24.8 x 24.8)	800 x 800 (31.5 x 31.5)	800 x 800 (31.5 x 31.5)
Workpiece Diameter	mm (inch)	850 (33.5)	1050 (41.3)	1450 (57.1)	1400(55.1)
Workpiece Height	mm (inch)	1100 (43.3)	1350 (53.1)	1550 (61.0)	1400(55.1)
Workpiece Weight	kg (lb)	800 (1763.7)	1200 (2645.5)	1600 (3527.3)	1700 (3747.8)
Number of pallets	ea	7 & 9			
Magazine type		Buffer Station type with Carrier			
Operation		Easy scheduling operation (2-Path control)			
Pallet Drive Device		Servo Motor & Reduction Gear			
Hydraulic Power Unit	kW (Hp)	2.2 (3.0)			

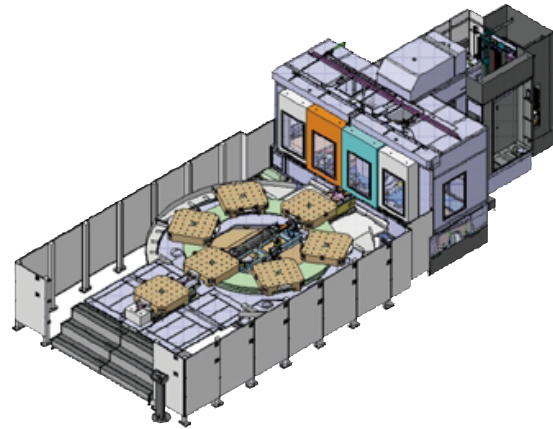
ROUND PALLET SYSTEM

RPS 1000 / 1250

RPS 1000 / 1250 is composed of a rotating pallet pool storage unit and a feed mechanism to transfer the pallet to and from the machine working area. In addition, a pallet can be transferred to a separate setup station where the operator has all-round access for loading the workpiece.

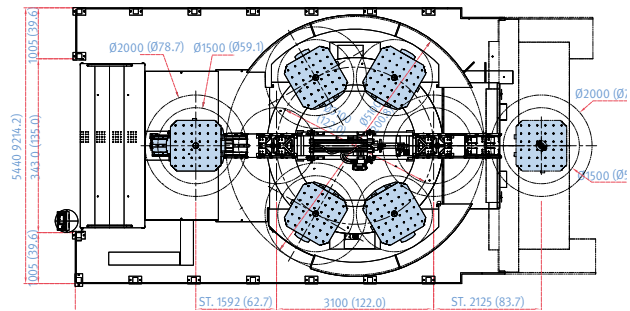
Features

- Conventional multi pallet changer (Loop type)
- Available large volume workpiece
- Driven by hydraulic unit
- Stable pallet changing unit
- Pallet scheduling operation (1-Path, PMC control)



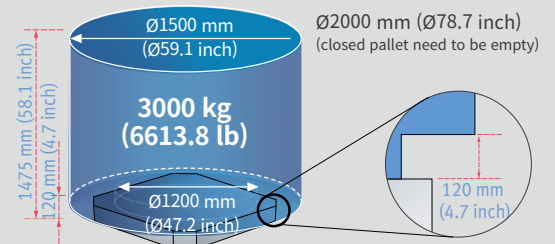
External Dimensions

Unit : mm (inch)



Machine Specifications

Available Model		HM 1000	HM 1250	HM 1250W
Pallet Dimension	mm (inch)	1000 x 1000 (39.4 x 39.4), 1250 x 1000 (49.2 x 39.4)		
Workpiece Diameter	mm (inch)	1500 (59.1) {2000 (78.7), closed pallet need to be empty}		
Workpiece Height	mm (inch)	1475 (58.1)	1725 (67.9)	
Workpiece Weight	kg (lb)	3000 (6613.8)		
Magazine type		Round type		
Operation		Pallet scheduling operation (1-Path, PMC control)		
Pallet Drive Device		HYDRAULIC MOTOR & CHAIN		
Hydraulic Power Unit	kW (Hp)	7.5 (10.1)		



Recommendable options

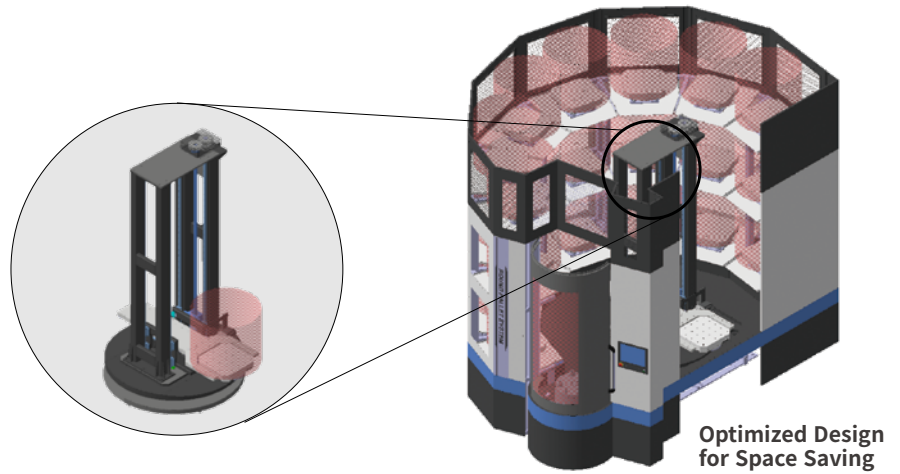
ITEMS	SPECIFICATION	
ESSENTIAL OPTION	TOOL STORAGE CAPACITY	MORE THAN 90 TOOLS
	FEEDBACK SYSTEM	ABSOLUTE TYPE
	SHOWER COOLANT	CLEANING FOR WORKPIECE AND FIXTURE
	COOLANT DRAIN PUMP (LPS II, Compact only)	EACH STOCKER
	TOOLBREAKAGE DETECTOR	NEEDLE SWING TYPE FOR SMALL SIZE TOOLS
	AIR CONDITIONER	FOR ELECTRICAL CABINET
	THRU. SPINDLE COOLANT	MIDDLE or HIGH PRESSURE
	PREPARATION FOR F.M.S (LPS II)	ELECTRICAL INTERFACE, WIRING., ADDITIONAL SOFTWARE A.P.C MODIFICATION PALLETS MODIFICATION
	FANUC CNC FUNCTION	• WORK COORDINATE : 300 (PAIRS) • NUMBER OF TOOL OFFSET : 400 (PAIRS) • PART PROGRAM STORAGE : MORE THAN 2560M (1MB)_1000EA • TOOL LIFE MANAGEMENT
	DN Solutions Tool Management II or 8 digits	Support 3 or 8 digits T code, Support Tool ID system Support various functions for Tool management
Advanced Tool & Pallet Retract	When Tool broken is detected by TLM or OMP60 automatically tool and pallet retract is performed and than next pallet is automatically continued.	

ITEMS	SPECIFICATION	
SELECTIVE OPTION	AUTO WORKPIECE MEASUREMENT	OMP60 / RENISHAW
	AIR GAP SENSOR	FOR A.P.C
	ETHERNET FUNCTION	
	AUTO. TOOL LENGTH MEASUREMENT	
	AUTO. POWER OFF	

MULTI LEVEL PALLET SYSTEM

RPS 4000 / 5000-21

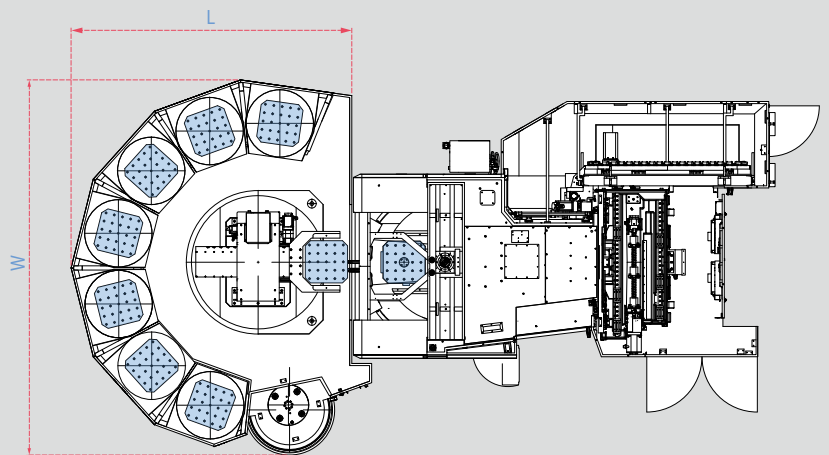
Slim Multi Level Pallet System for HMC Taper #40 Series



Features

- Optimized Multi Level storage design for space saving : up to 21Pallets
- Minimal invest cost automation solution
- Enhanced unmanned time, compared to six pallet system
- Simple installation and easy maintenance
- Easy field retrofit to DN Solutions HMC

External Dimensions



Machine Specifications

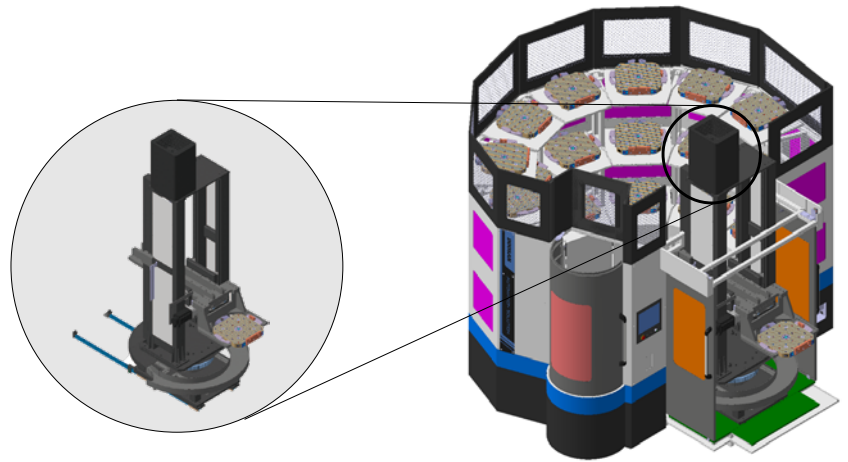
Available Model			NHP 4000 / HC 400 II	NHP 5000 / HC 500 II
Pallet Dimension	mm (inch)		400 x 400 (15.7 x 15.7)	500 x 500 (19.7 x 19.7)
Workpiece Diameter	mm (inch)		630 / 600 (24.8 / 23.6)	800 (31.5)
Workpiece Height	mm (inch)		NHP4000: 900(14P) / 700(21P) HC400II : 800(14P) / 700(21P)	NHP5000: 1000(14P) / 700(21P) HC500II: 900(14P) / 700(21P)
Workpiece Weight	kg (lb)		400 (881.8)	500 (1102.3) {700 (1543.2) : NHP 5000}*
Number of Pallets	ea		14P / 21P	
Magazine type	-		Buffer Station type with Carrier	
Operation	-		Easy scheduling operation (Built-in control)	
Driving Mechanism	Rotating Axis	-	Servo Motor & Reduction Gear	
	Lifting Axis	-	Servo Motor & Ball Screw w / LMG	
	Forking Axis	-	Servo Motor & Rack / Pinion	
DIMENSION		mm (inch)	3700 x 2800 (145.7 x 110.2)	4445 x 3320 (175.0 x 130.7)

* { } : Option

MULTI LEVEL PALLET SYSTEM

RPS 6500

Multi-level pallet system with optimal machine tool accessibility.



Features

- Slim design optimized for a 5-axis machine.
- Large maintenance space for optimal machine tool accessibility.
- Independent control system for 4axis
- Easy to install and maintenance



Machine Specifications

Available Model		DVF 6500 / VC 630/5AX	
Pallet Dimension	mm (inch)	500 x 500 (19.7 x 19.7)	
Workpiece Diameter	mm (inch)	630 (23.6)	
Workpiece Height	mm (inch)	430 (16.9)	
Workpiece Weight	kg (lb)	500 (1102.3)	
Number of Pallets	ea	7/14/21	
Magazine type	-	Buffer Station type with Carrier	
Operation	-	Easy scheduling operation(Built-in Control)	
Driving Mechanism	Rotating Axis(R)	-	Servo Motor & Reduction Gear
	Transfer Axis(X)	-	Servo Motor & Rack / Pinion
	Lifting Axis(Y)	-	Servo Motor & Ball Screw w / LMG
	Forking Axis(Z)	-	Servo Motor & Rack / Pinion
DIMENSION	mm (inch)	2100 X 1700 (82.7 X 66.9)	

* {}: Option

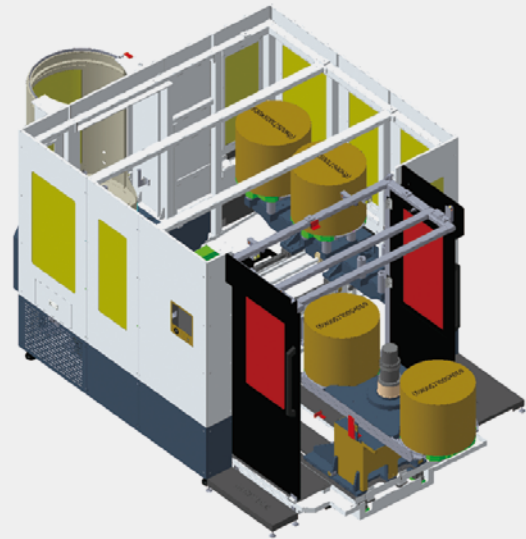
AUTO PALLET CHANGER

APC 6500 / 8000

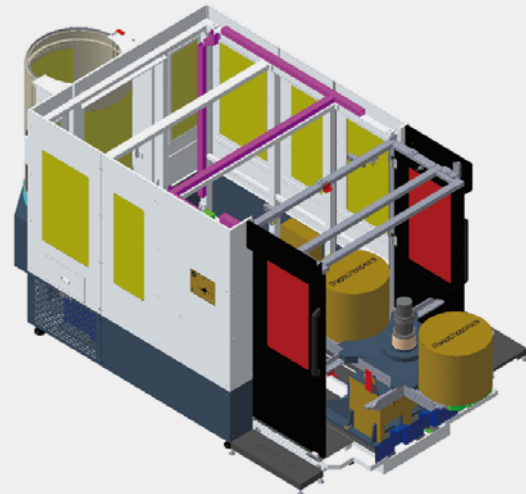
Automatic pallet changer optimized for 5-axis machine tools.

Features

- Max. 4 pallets
- Servo-control
- Large maintenance space easily accessible to the operator.
- Easy to install and management



4-APC



2-APC

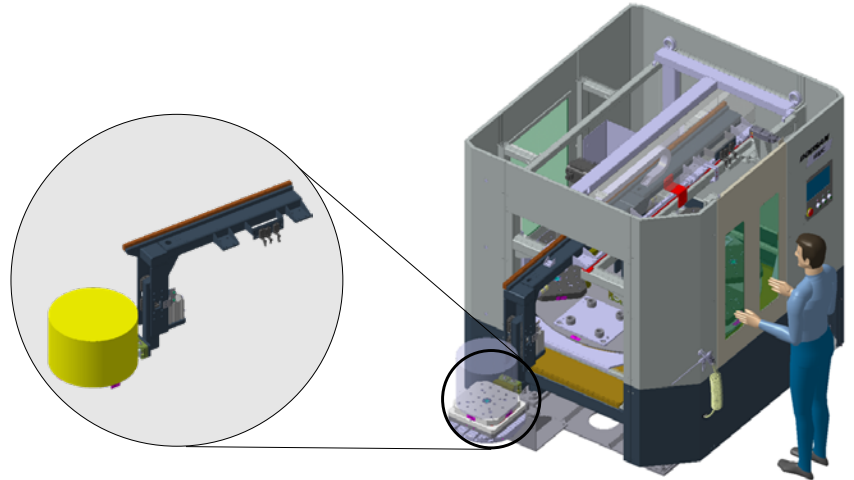
Machine Specifications

Available Model		APC 6500		APC 8000	
		DVF 6500		DVF 8000	
Pallet Dimension	mm (inch)	500 x 500 (19.7 x 19.7)		630 x 630 (24.8 x 24.8)	
Workpiece Diameter	mm (inch)	630 (24.8)		730 (28.7)	
Workpiece Height	mm (inch)	430 (16.9)		490 (19.3)	
Workpiece Weight (included pallet)	kg (lb)	500 (1102.3)		850 (1873.9)	
Number of Pallets		2P / 4P			
Driving Mechanism	2APC	-	APC type without Buffer Station		
	4APC	-	APC type with 3-Buffer Station		
	2APC	-	CNC Control		
	4APC	-	Easy scheduling operation(Built-in Control)		
	R Axis	-	Servo Motor & Reduction Gear		
	X Axis	-	Servo Motor & Rack / Pinion		
	Y Axis	-	Servo Motor & Ball Screw / LMG		
	UP/DOWN	-	Hydraulic Cylinder & LMG		
DIMENSION	2-APC	mm (inch)	4210[L] x 2154[W] (165.7 x 84.8)	4740[L] x 2874[W]] (106.3 x 113.1)	
	4-APC	mm (inch)	4210[L] x 2900[W]] (165.7 x 114.2)	4740[L] x 3800[W]] (106.3 x 149.6)	

AUTO WORKPIECE CHANGER

AWC 5000

Slim design pallet system optimized for small work pieces



Features

- Side loading/unloading for optimal access to the front.
- Minimal cost and space needed
- System with slim zero point clamp module
- Easy to install and management



Machine Specifications

Available Model		DVF5000/DNM4500/5700/6700/MYNX6500/BVM5700			
Pallet Dimension	mm (inch)	250 x 250 (9.8 x 9.8)	350 x 350 (13.8 x 13.8)	400 x 400 (15.7 x 15.7)	500 x 500 (19.7 x 19.7)
Workpiece Diameter	mm (inch)	300 (11.8)	400 (15.7)	450 (17.7)	550 (21.7)
Workpiece Height	mm (inch)	335 (13.2)			
Workpiece Weight (included pallet)	kg (lb)	130 (286.6)		250 (551.2)	
Number of Pallets	ea	12	8	6	4
Magazine type	-	Rotary Buffer Station type with Carrier			
Operation	-	Easy scheduling operation(Built-in Control)			
Driving Mechanism	Rotating Axis(R)	-	Servo Motor & Reduction Gear		
	Transfer Axis(X)	-	Servo Motor & Rack / Pinion		
	UP/DOWN	-	Air Cylinder & LMG		
DIMENSION	mm (inch)	2100 X 1700 (82.7 X 66.9)			

Note) Please contact DN Solutions sales representative for further information

MULTI LEVEL AWC(AUTO WORKPIECE CHANGER)

Multi Level AWC

An unmanned machining system that offers improved spatial utilization compared to the single-level AWC and is optimized for small-medium quantity batch production.

Features

- Increased unmanned operation hours compared to the single-level AWC.
- Optimal multi-layer loading system that saves space: up to 40 pallets.
- Easy to install and maintain in the field.
- Easy to grasp the current status of the system at glance.



Machine Specifications

Available Model		DVF 5000 / DNM 4500/5700/6700 / Mynx 6500 / BVM 5700				
Pallet Dimension	mm (inch)	250 x 250 (9.8 x 9.8)	250 x 250 (9.8 x 9.8)	350 x 350 (13.8 x 13.8)	400 x 400 (15.7 x 15.7)	500 x 500 (19.7 x 19.7)
Max. Workpiece Diameter	mm (inch)	350 (13.8)	300 (11.8)	400 (15.7)	450 (17.7)	550 (21.7)
Max. Workpiece Height	mm (inch)	315 (12.4)	350 (13.8)			
Max. Workpiece Weight	kg (lb)	65	130	250		
Number of Pallets		40(4x10=40)		32(4x8=32)	28(4x7=28)	24(4x6=24)
Magazine Type	-	Buffer Station type with Carrier				
Clamping System(SHUNK)	-	NSE mini 90-25 &	NSE3 138 & SPA 40-16			
	-	SPA mini 20				
Gripping System(SHUNK)	-	NSR mini 100	NSR 160			NSR 160-84
Operation		PLC Operation, Built-in control				
Driving Mechanism	Rotating Axis	-	Servo Motor & Reduction Gear			
	Lifting Axis	-	Servo Motor & Ball Screw w/LMG			
	Forking Axis	-	Servo Motor & Ball Screw w/LMG			
DIMENSION	mm (inch)	3185 x 2102 (125.4 x 82.8)		3300 x 2225 (129.9 x 87.6)		3596x2513 (141.6 x 98.9)

MANAGEMENT SYSTEM

DPMS (DN Solutions Production Management System) for LPS

The DPMS is to schedule the automatic pallet transfers between the setup stations, machining centers, and buffer stations. After operator set a part on pallet and enter detailed information to DPMS, the pallet will be transferred to the Machining Center or the Buffer Station by priority order of AGV. If there is not pallet in Machining Center, the pallet will be sent to the Machining Center by the top priority order. If there is pallet in the Machining Center, the pallet will be sent to the Buffer Station until the machining center is emptied. The operation of the LPS is based on automatic operation. Basically, the sequence of pallet transfer in the system will be performed according to the due-date.

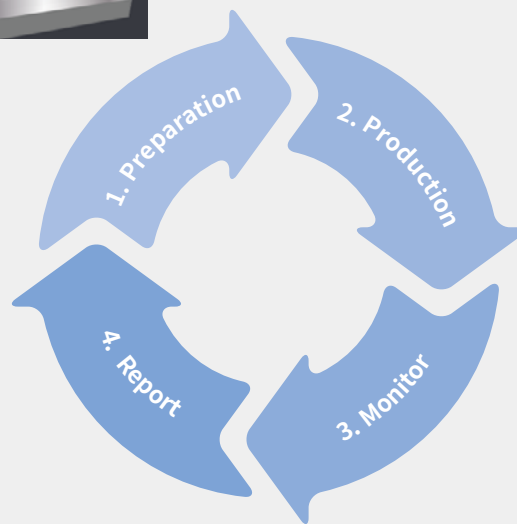
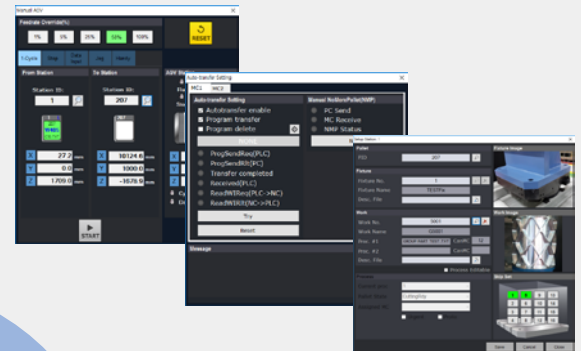
Preparation

- Program/Fixture/Part Data
- Planning & Schedule
- Supports up to 16 parts on a pallet



Production

- Job Dispatching in order of Due-date
- Automatic Pallet Call
- Program Auto-transfer



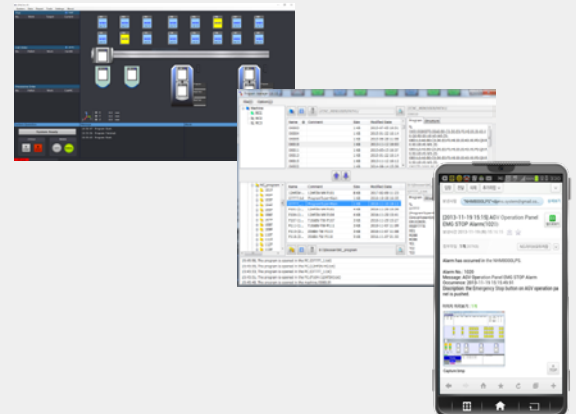
Report

- Production Results
- Alarm History
- Status Monitor



Monitor

- Program Manager
- Tool Manager
- Remote Alarm / Remote DPMS



MANAGEMENT SYSTEM

Main Screen

- Menu : Execute the main functions of DPMS
- Work list : List the progress of the pallet
- System layout : Visually display pallet and station information

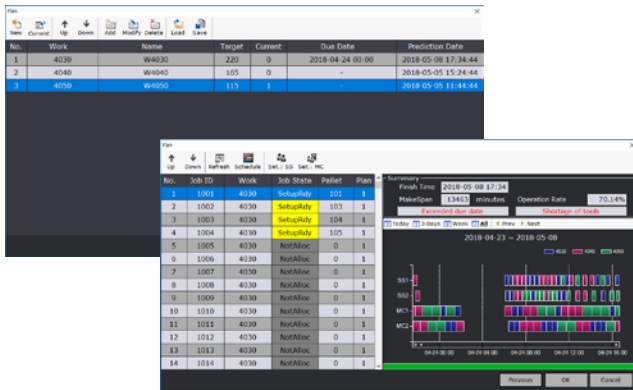
- Message : Display AGV operation log and alarm message
- PC OP panel : Panel operating system on PC



Standard function

Planning

- It makes a production plan and job schedule easier



Setup function

- Max 16EA different sub programs and offsets can be assigned to a pallet.
- It supports skip part set, proto set, urgent set



Tool use prediction

- This function is a predictable for tool life at the planning step.

MC1 Tool Prediction			
Tool	MC2 Tool Prediction		
	Tool	Current	Req.
T10	T10	1000	800
T15	T15	1000	700
T20	T20		

Needed Tool: T15
06-15 11:00

Prepare the short tools

Tool pre-check

- Before sending the pallet to the MC, check the tool status of the MC.

Short Tool

Transfer to other MC

Program-Tool data		
Program	Tool	Req.
O1011	T10	100
O1011	T20	150

MANAGEMENT SYSTEM

DPMS (DN Solutions Production Management System) for LPS

Standard function

Automatic resume after tool alarm

- When using the Advanced Pallet & Tool Retract function, automatic operation resumes automatically even if a tool alarm occurs.

Schedule preview

- Display pallet schedules of setup and MC so operator can prepare job ahead of time.
- Display the next movement of AGV.



Time	Pallet	Work	SS
17:2			
17:2			
17:3	17.17	103	16x1Min
17:4	17:27	201	4x2Min
17:4			
17:4			

MC	Time	Tool No.	Life	Status
MC1	00:00	15	-1 / 100	A
MC2	00:00	15	-1 / 100	A

Next AGV Move			
14:32	1	→	10 (101)
14:33	102	→	1 (102)

Optional function

Remote alarm

- By the registered alarm, the Remote Alarm sends e-mail to system manager.



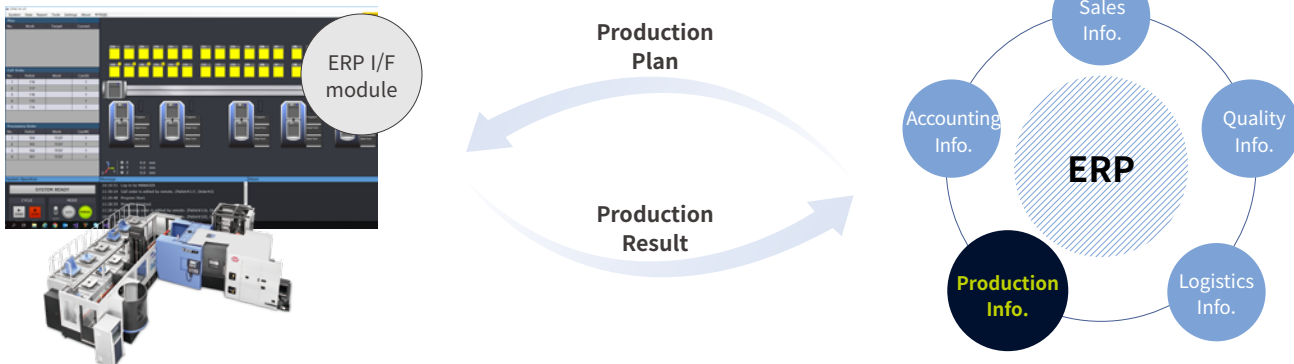
Remote DPMS

- Check the status of LPS using the web at remote site.
- Program, work, plan data can be registered and changed in process order using the web.



ERP interface

- Support sharing of information between LPS and your system such as ERP and MES.





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* Specifications and information contained within this catalogue may be changed without prior notice.