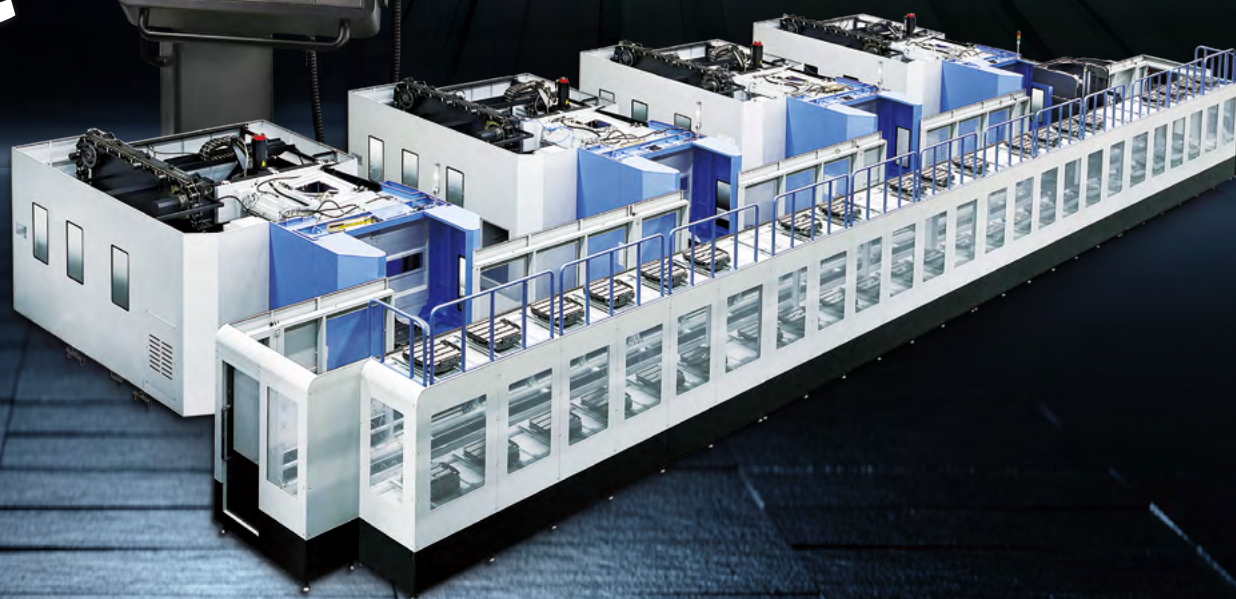


# ***DN Solutions*** ***Automation*** ***Solution*** ***Reference***



ver. EN 220826 SU

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Workpiece Handling

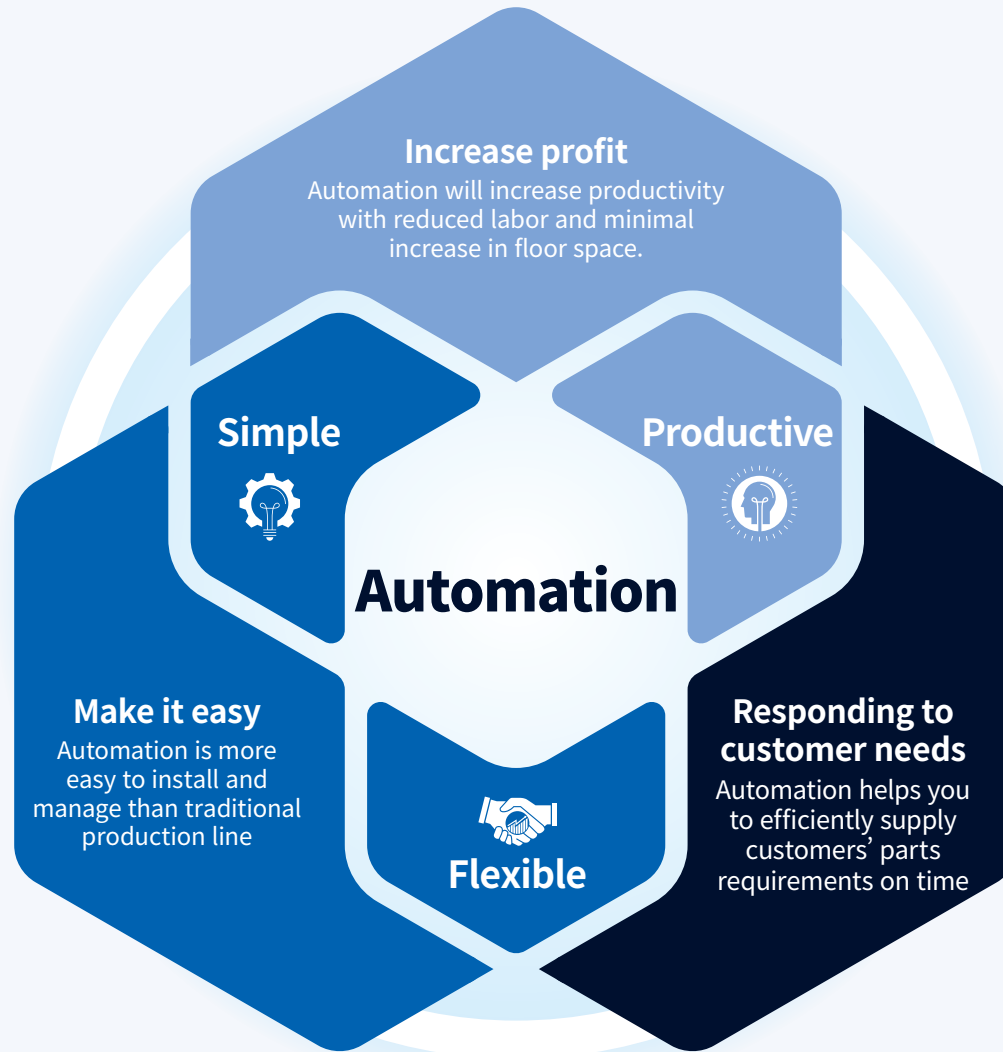
Gantry Loader  
Robot Solution

Pallet Change

AWC  
LPS  
RPS

Full Customized

Referential Cases



# What is the most optimized solution for our production requirements?

## Intro

### Workpiece Handling

Gantry Loader  
Robot Solution

### Pallet Change

AWC  
LPS  
RPS

### Full Customized

Referential Cases

## Workpiece Handling

### Bar feeder

Basic type of automation  
Most cost-effective for  
small production on  
turning centers



### Gantry

Fast installation and  
easy operation  
Apply to a variety of  
similar workpieces



### Robot

Flexible solution for  
multi-machine  
process and  
complex parts



## Pallet Change

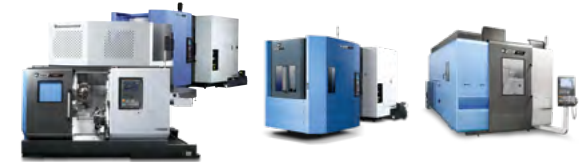
### AWC system

Optimized for  
automatic handling  
of small parts in the  
minimum floorspace



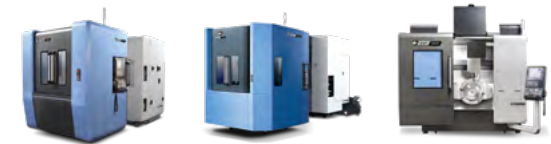
### RPS

Efficient use of space  
by multi-pallets Highly  
flexible production  
management



### LPS

Optimized for volume  
production of a variety of  
parts over a long period  
of time Easy expansion  
of production system



## All process

### Full-customized Automation

Through consulting,  
We offer optimal solution  
for customer's needs



### Bearing Solution



### Big line



# DN Solutions Robot System

## Intro

### Workpiece Handling

Gantry Loader  
Robot Solution

### Pallet Change

AWC  
LPS  
RPS

### Full Customized

Referential Cases

Robotic work-piece loading/unloading system and automated measurement and inspections process

## Features



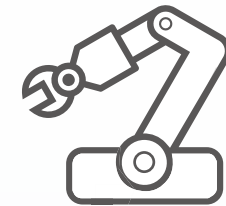
Higher Flexibility	Manufacturing from an individual item to mass production
24H Operation	Higher productivity without waste of time and labor cost
Higher Quality	The systemization of all setting-machining-inspection process
DN Solutions's Turn-key Solution Capability	A variety of machine tool models and professional system automation experiences

## Applications

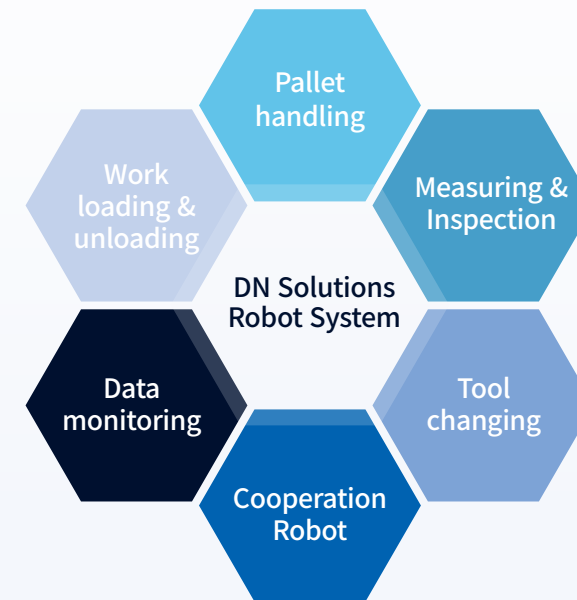


DN Solutions Machines

+



Robot System



# Robot Automation Cases

## Intro

### Workpiece Handling

Gantry Loader  
Robot Solution

### Pallet Change

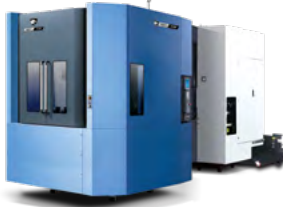
AWC  
LPS  
RPS

### Full Customized

Referential Cases

The newly-designed operation panel enhances operating convenience by common-design buttons and layout. Just like a PC, the QWERTY type keyboard has been adopted for easier and faster operation.

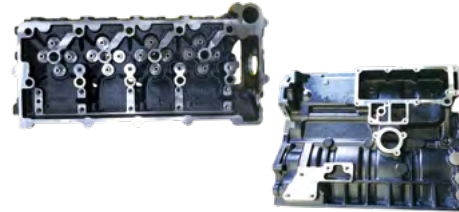
### Machine



NHP 5500, NHP 8000

An automation turn-key system mounting on NHP 5500 and NHP 8000 horizontal machining centers to provide total processing capability from roughing and semi-finishing of cylinder blocks to finishing of cylinder heads for diesel engines.

### Machining Component



Cylinder head & Cylinder block

### Robot application

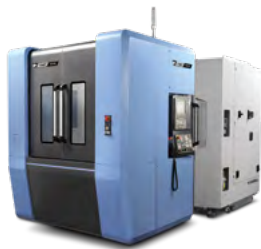


DNM series, PUMA VAW500

An automation of Aluminum wheel mass production line mounting on PUMA VAW7500 aluminum wheel turn and DNM series vertical machining center.

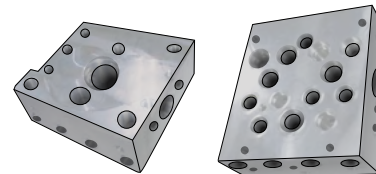


Aluminum Wheel



NHP 4000

The RGV robot & automation robot line mounting on NHP 4000 horizontal machining center



Manifold



# Full-Customized Automation

## Intro

### Workpiece Handling

Gantry Loader  
Robot Solution

### Pallet Change

AWC  
LPS  
RPS

### Full Customized

Referential Cases

In order to optimize the production of components with various shapes and materials, system engineering activities such as configuration of additional devices, process design and software are important based on high-performance machine tools. By using a wide range of DN Solutions's machine tools, we promise to provide optimized solutions that exceed the functions of machine tools itself through Full-Customized Automation.

### Gantry Loader



### Fixture



### Robot



### Chuck



### LPS (Linear Pallet System) Tool

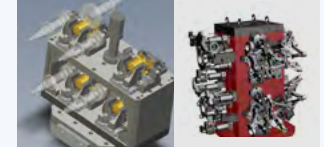


### Technical Consultation



Advance Analysis of Investment Feasibility

### Application



Basic engineering such as process design, manufacturing, and test

### Technical Validation



Differentiated engineering such as productivity and process reliability

## Customer Support Process



# Bearing Automation Solution

## Intro

### Workpiece Handling

Gantry Loader  
Robot Solution

### Pallet Change

AWC  
LPS  
RPS

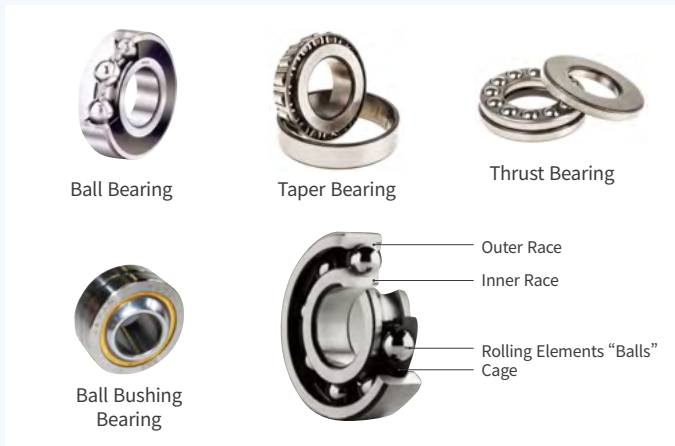
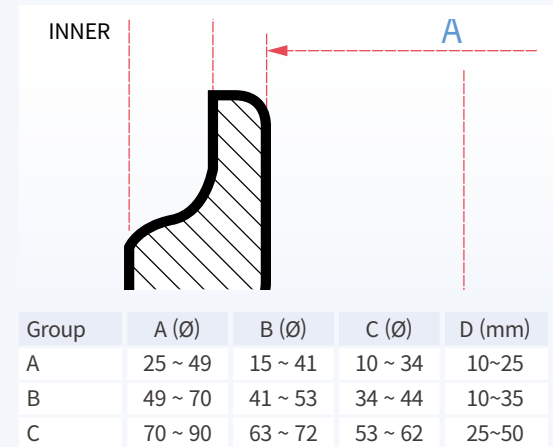
### Full Customized

Referential Cases

Optimized solution for bearing parts machining. loading and unloading system are fully optimized for bearing parts makes powerful productivity than any other solution.



## Workpiece Range



## [Improvement] Bearing loading unloading time

Previous model 4 ~ 5 sec

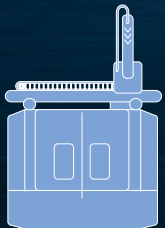
Lynx 2100G 2.99 sec

**50% Improved**

## OUTER

Group	A (∅)	B (∅)	C (∅)	D (mm)
A	25 ~ 49	20 ~ 41	15 ~ 35	10~25
B	49 ~ 70	41 ~ 60	34 ~ 50	10~35
C	70 ~ 90	63 ~ 70	60 ~ 69	25~50

# ***Gantry Loader***





# Gantry Loader Reference 1

Intro

## Workpiece Handling

Gantry Loader  
Robot Solution

## Pallet Change



AWC  
LPS  
RPS

## Full Customized

Referential Cases

## Solution



<b>Machine</b>	PUMA TW2600-GL, DT 360D (T 4000D)	
<b>Capacity</b>	300,000 ea/year	
<b>Cycle Time</b>	60 sec	
<b>Main Option</b>	<ul style="list-style-type: none"> <li>• Full Automation</li> <li>• Air Gap Sensing</li> </ul>	<ul style="list-style-type: none"> <li>• In Conveyor</li> <li>• Side Conveyor with Turn Over</li> </ul>
<b>Equipment Description</b>	<p><b>PUMA TW series</b> High-productivity 2-spindle horizontal turning center</p> 	<p><b>T series</b> High-productivity dual pallet tapping center</p> 

## Workpiece

### Machining Process

- OP#10 Hard Turning
- OP#20 Hard Turning
- OP#30 Spot Facing / Drilling, Boring / Chamfering
- OP#40 Spot Facing / Chamfering

### Jig & Fixture



OP#10, 20

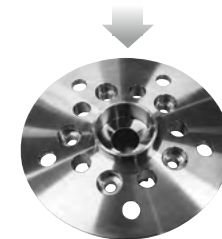
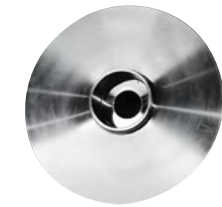
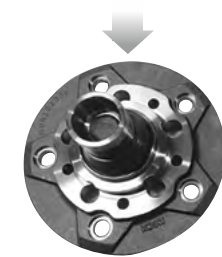


OP#30



OP#40

### Hub



# Gantry Loader Reference 2

Intro

Workpiece Handling

Gantry Loader  
Robot Solution


Pallet Change

AWC  
LPS  
RPS

Full Customized  
Referential Cases

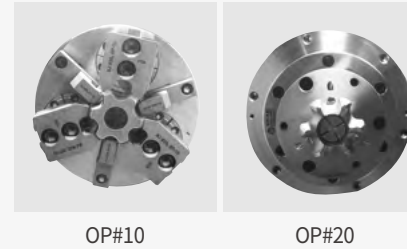
## Solution



<b>Machine</b>	PUMA TW2600-GL 2Sets	
<b>Capacity</b>	400,000 ea/year	
<b>Cycle Time</b>	46 sec	
<b>Main Option</b>	<ul style="list-style-type: none"> <li>• Fool Proof for Instocker Unit</li> <li>• Manual Q-setter</li> </ul>	<ul style="list-style-type: none"> <li>• Turn over Modification (agree)</li> </ul>
<b>Equipment Description</b>	<p><b>PUMA TW series</b> High-productivity 2-spindle horizontal turning center</p> 	

## Workpiece

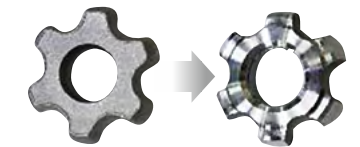
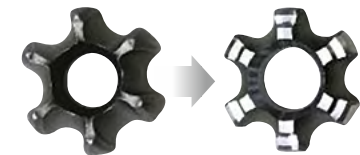
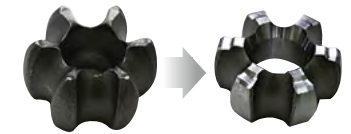
### Jig & Fixture



### Tooling



### Inner Race



# Gantry Loader Reference 3

Intro

## Workpiece Handling

Gantry Loader  
Robot Solution

## Pallet Change

AWC  
LPS  
RPS

## Full Customized

Referential Cases

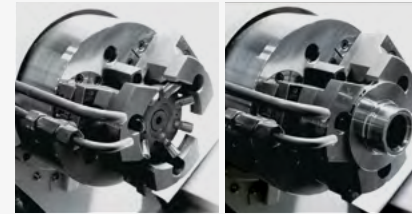
## Solution



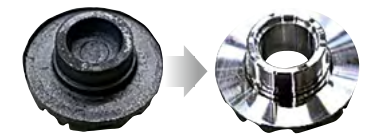
<b>Machine</b>	Lynx 2100 6Sets
<b>Capacity</b>	800,000 ea/year
<b>Cycle Time</b>	68 sec
<b>Main Option</b>	<ul style="list-style-type: none"> <li>• Auto Top Door</li> <li>• High Productive Machine</li> <li>• Gantry Loader Automation (Built in type)</li> </ul>
<b>Equipment Description</b>	<p><b>Lynx series</b> Compact economical turning center</p> 

## Workpiece

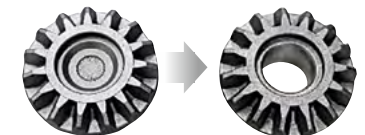
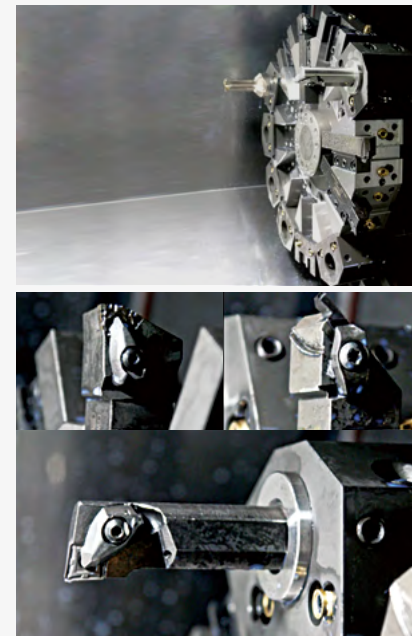
### Jig & Fixture



### Bevel Gear



### Tooling



# Gantry Loader Reference 4

Intro

## Workpiece Handling

Gantry Loader  
Robot Solution

## Pallet Change


AWC  
LPS  
RPS

## Full Customized

Referential Cases

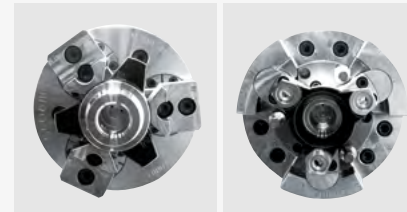
## Solution



<b>Machine</b>	PUMA TW2600-GL 2Sets, PUMA TW2600M-GL 4Sets	
<b>Capacity</b>	400,000 ea/year	
<b>Cycle Time</b>	160 sec	
<b>Main Option</b>	<ul style="list-style-type: none"> <li>• A3 Gantry Loader</li> <li>• Mist Collector</li> </ul>	<ul style="list-style-type: none"> <li>• Hinged Chip Conveyor</li> </ul>
<b>Equipment Description</b>	<p><b>PUMA TW series</b> High-productivity 2-spindle horizontal turning center</p> 	

## Workpiece

### Jig & Fixture



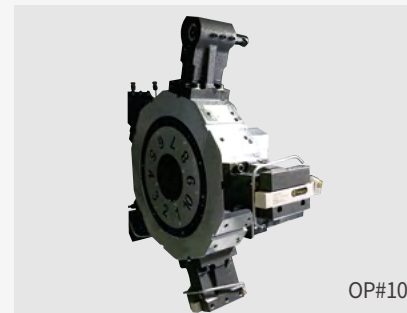
OP#10

OP#20

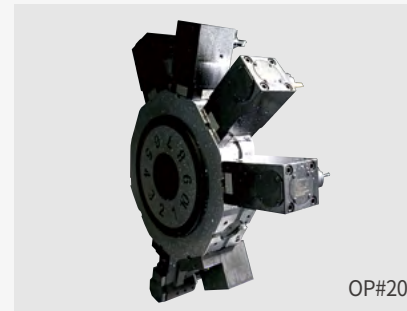
### Pinion Flange



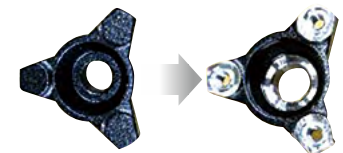
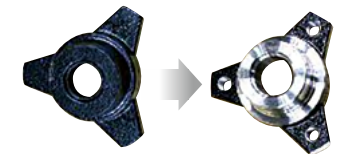
### Tooling



OP#10



OP#20



# Gantry Loader Reference 5

Intro

## Workpiece Handling

Gantry Loader  
Robot Solution

## Pallet Change


AWC  
LPS  
RPS

## Full Customized

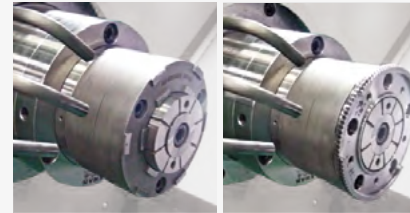
Referential Cases

## Solution

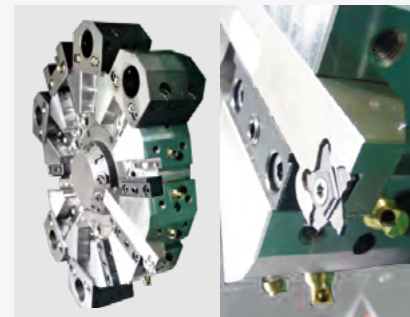


<b>Machine</b>	Lynx 220C-GL 1Set
<b>Capacity</b>	1,500,000ea/year
<b>Cycle Time</b>	31 sec
<b>Main Option</b>	<ul style="list-style-type: none"> <li>• Special chuck</li> <li>• In/out Stocker</li> <li>• Inspection chute</li> </ul>
<b>Equipment Description</b>	<p><b>Lynx series</b> Compact economical turning center</p> 

## Jig & Fixture

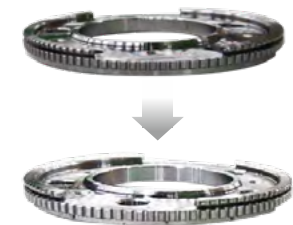
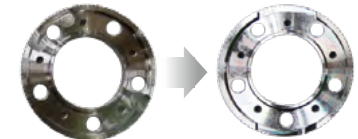


## Tooling



## Workpiece

### Plate carrier



# Gantry Loader Reference 6

Intro

## Workpiece Handling

Gantry Loader  
Robot Solution

## Pallet Change


AWC  
LPS  
RPS

## Full Customized

Referential Cases

## Solution



<b>Machine</b>	PUMA TW2600GL 2Sets	
<b>Capacity</b>	1,500,000 ea/year	
<b>Cycle Time</b>	40 sec	
<b>Main Option</b>	<ul style="list-style-type: none"> <li>• Special In stocker</li> <li>• Inspection chute</li> </ul>	<ul style="list-style-type: none"> <li>• Type Check unit</li> </ul>
<b>Equipment Description</b>	<p><b>PUMA TW series</b> High-productivity 2-spindle horizontal turning center</p> 	

## Workpiece

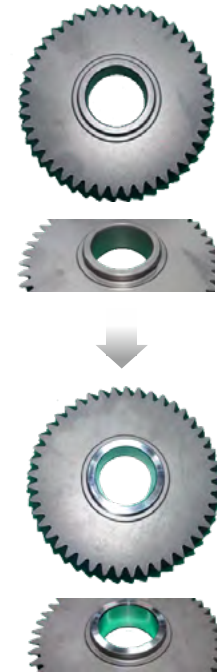
### Jig & Fixture



### Tooling



### Pinion Flange



# Gantry Loader Reference 7

Intro

Workpiece Handling

Gantry Loader  
Robot Solution


Pallet Change

AWC  
LPS  
RPS

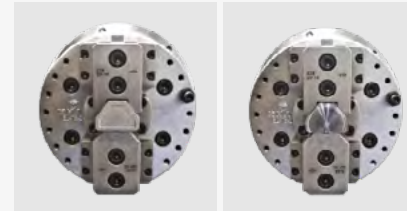
Full Customized  
Referential Cases

## Solution



<b>Machine</b>	PUMA TW2600GL 2Sets
<b>Capacity</b>	500,000ea/year
<b>Cycle Time</b>	60 sec
<b>Main Option</b>	<ul style="list-style-type: none"> <li>• 2-Jaw Special chuck</li> <li>• Auto Parts Feeder</li> <li>• MAll-In-One Measuring System and Output Stocker</li> </ul>
<b>Equipment Description</b>	<p><b>PUMA TW series</b> High-productivity 2-spindle horizontal turning center</p> 

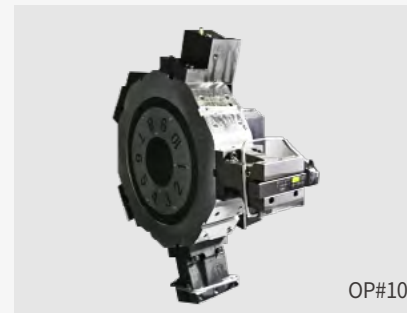
## Jig & Fixture



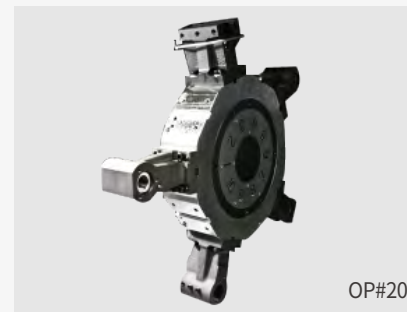
OP#10

OP#20

## Tooling



OP#10



OP#20

## Workpiece

### Lug



# Gantry Loader Reference 8

Intro

## Workpiece Handling

Gantry Loader  
Robot Solution

## Pallet Change


AWC  
LPS  
RPS

## Full Customized

Referential Cases

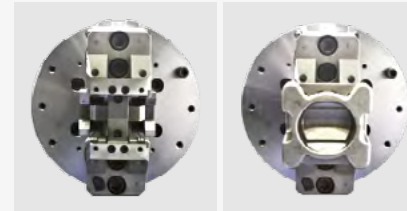
## Solution



<b>Machine</b>	PUMA TW2600M-GL 1Set
<b>Capacity</b>	400,000ea/year
<b>Cycle Time</b>	160 sec
<b>Requirement</b>	Satisfaction of circularity regulation for 5 micron inner diameter
<b>Main Option</b>	Removal of back face burr by two point angle drill
<b>Equipment Description</b>	<p><b>PUMA TW series</b> High-productivity 2-spindle horizontal turning center</p> 

## Workpiece

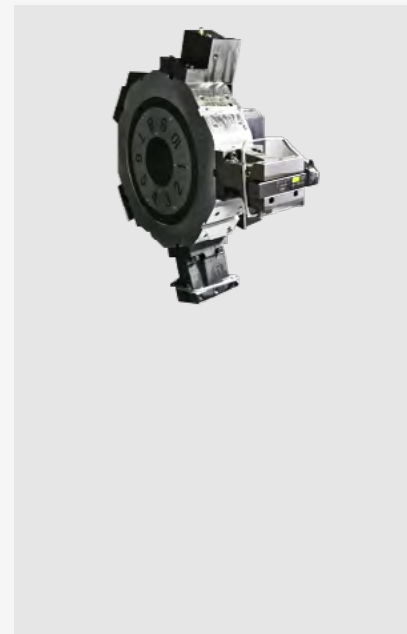
### Jig & Fixture



### Yoke



### Tooling





# Gantry Loader Reference 9

Intro

## Workpiece Handling

Gantry Loader  
Robot Solution

## Pallet Change

AWC  
LPS  
RPS

## Full Customized

Referential Cases

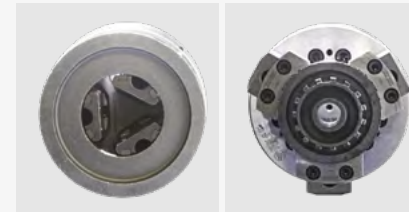
## Solution



<b>Machine</b>	PUMA TW2600GL 2Sets	
<b>Capacity</b>	500,000ea/year	
<b>Cycle Time</b>	Diff Gear : 70 sec / Driven Gear : 50 sec	
<b>Main Option</b>	<ul style="list-style-type: none"> <li>• TWIN GANTRY LOA DER</li> <li>• MIST COLLECTOR</li> </ul>	<ul style="list-style-type: none"> <li>• SCREW TYPE CHIP CONVEYOR</li> </ul>
<b>Equipment Description</b>	<p><b>PUMA TW series</b> High-productivity 2-spindle horizontal turning center</p> 	

## Workpiece

### Jig & Fixture



### Gears



Driven Gear : 50 sec

### Tooling



Driven Gear : 70 sec



# Gantry Loader Reference 10

Intro

## Workpiece Handling

Gantry Loader  
Robot Solution

## Pallet Change



AWC  
LPS  
RPS

## Full Customized

Referential Cases

## Solution



<b>Machine</b>	PUMA TW2600GL 2Sets, Lynx220C 1Set	
<b>Capacity</b>	400,000ea/year	
<b>Cycle Time</b>	OP#10,20 : 38 sec / OP30 : 50 sec	
<b>Main Option</b>	<ul style="list-style-type: none"> <li>• SCREW TYPE CHIP CONVEYOR</li> <li>• MIST COLLECTOR</li> <li>• WORK CHECK UNIT, INSTOCKER, TRANS FER</li> </ul>	
<b>Equipment Description</b>	<b>PUMA TW series</b> High-productivity 2-spindle horizontal turning center 	<b>Lynx series</b> Compact economical turning center 

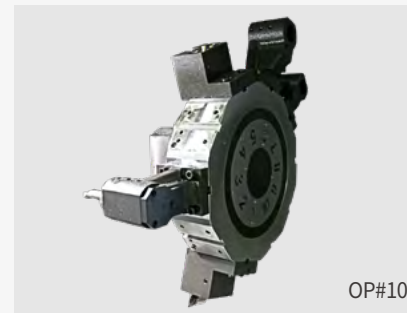
## Jig & Fixture



OP#10

OP#20

## Tooling



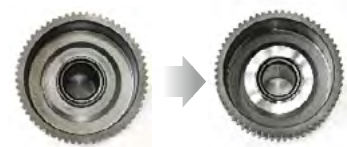
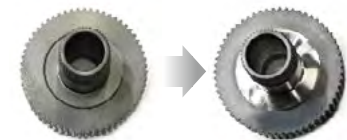
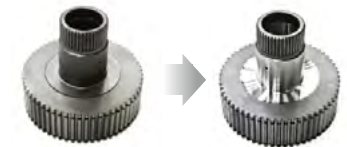
OP#10



OP#20

## Workpiece

### Lug



# Gantry Loader Reference 11

Intro

## Workpiece Handling

Gantry Loader  
Robot Solution

## Pallet Change


AWC  
LPS  
RPS

## Full Customized

Referential Cases

## Solution



<b>Machine</b>	PUMA TW2600GL 3Sets
<b>Capacity</b>	360,000ea/year
<b>Cycle Time</b>	OP10 : 130 sec / OP20 : 128 sec
<b>Main Option</b>	<ul style="list-style-type: none"> <li>• IN/OUT STOCKER</li> <li>• MEASURING UNIT</li> <li>• WORK CHECK UNIT</li> <li>• EXTENDED BEAM_500MM</li> </ul>
<b>Equipment Description</b>	<p><b>PUMA TW series</b> High-productivity 2-spindle horizontal turning center</p> 

## Jig & Fixture



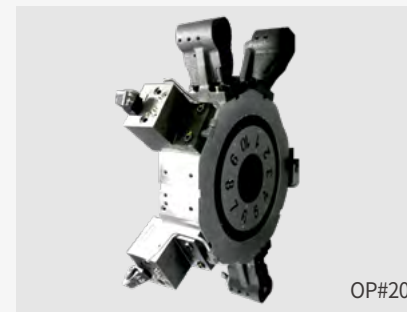
OP#10

OP#20

## Tooling



OP#10



OP#20

## Workpiece

### Pinion Shaft



# Gantry Loader Reference 12

Intro

## Workpiece Handling

Gantry Loader  
Robot Solution

## Pallet Change


AWC  
LPS  
RPS

## Full Customized

Referential Cases

## Solution



<b>Machine</b>	PUMA TW2600GL 1Set
<b>Capacity</b>	360,000ea/year
<b>Cycle Time</b>	43 sec
<b>Main Option</b>	<ul style="list-style-type: none"> <li>• AIR BLOWER FOR CHUCK ADD</li> <li>• COOLANT GUN</li> <li>• SCREW TYPE CHIP CONVEYOR</li> </ul>
<b>Equipment Description</b>	<p><b>PUMA TW series</b> High-productivity 2-spindle horizontal turning center</p> 

## Jig & Fixture

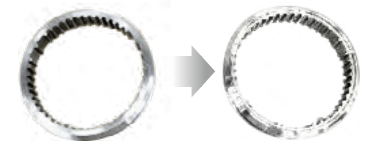
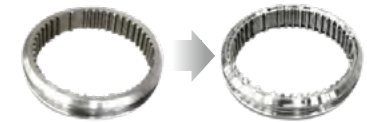


## Tooling



## Workpiece

### Sleeve



# Gantry Loader Reference 13

Intro

## Workpiece Handling

Gantry Loader  
Robot Solution

## Pallet Change

AWC  
LPS  
RPS

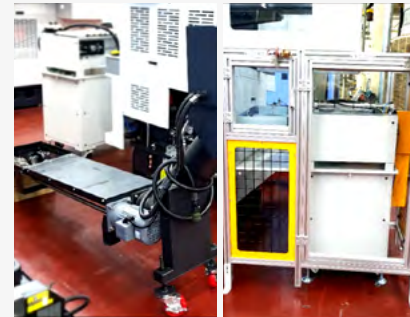
## Full Customized

Referential Cases

## Solution




## Options



## Workpiece

### Fitting



<b>Machine</b>	PUMA TW2100M GL 1Set
<b>Capacity</b>	10,000ea/year
<b>Cycle Time</b>	OP10 : 3 min, OP20 : 5 min
<b>Main Option</b>	<ul style="list-style-type: none"><li>• 30 BAR COOLANT</li><li>• SCREW TYPE CHIP CONVEYOR</li><li>• SPECIAL IN-CONVEYOR &amp; OUT CHUTE</li></ul>
<b>Equipment Description</b>	<p><b>PUMA TW series</b> High-productivity 2-spindle horizontal turning center</p> 

# Gantry Loader Reference 14

Intro

## Workpiece Handling

Gantry Loader  
Robot Solution

## Pallet Change


AWC  
LPS  
RPS

## Full Customized

Referential Cases

## Solution



<b>Machine</b>	PUMA TW2100GL 1 SET
<b>Cycle Time</b>	40 sec / 46 sec
<b>Main Option</b>	<ul style="list-style-type: none"> <li>• AIR SENSING (SMC)</li> <li>• RECHUCKING UNIT</li> <li>• MIST COLLECTOR</li> <li>• HINGED CHIP CONVEYOR</li> </ul>
<b>Equipment Description</b>	<p><b>PUMA TW series</b> High-productivity 2-spindle horizontal turning center</p> 

## Jig & Fixture



OP#10



OP#20

## Workpiece

### Outer Ring



# Gantry Loader Reference 15

Intro

## Workpiece Handling

Gantry Loader  
Robot Solution

## Pallet Change


AWC  
LPS  
RPS

## Full Customized

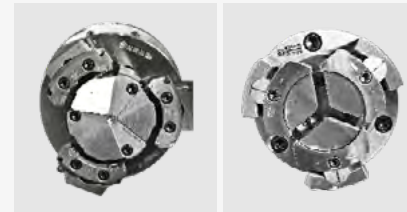
Referential Cases

## Solution



<b>Machine</b>	PUMA TW2100GL 2Sets
<b>Capacity</b>	200,000ea/year
<b>Cycle Time</b>	'A' ITEM :76 sec / 'B' ITEM : 180 sec
<b>Main Option</b>	<ul style="list-style-type: none"> <li>• AIR GAP SENSING</li> <li>• MANUAL Q-SETTER</li> <li>• IN/OUT STOCKER (8 STA. ROTARY)</li> <li>• COOLANT PUMP POWER UP (1.1kw)</li> </ul>
<b>Equipment Description</b>	<p><b>PUMA TW series</b> High-productivity 2-spindle horizontal turning center</p> 

## Jig & Fixture



OP#10

OP#20

## Tooling



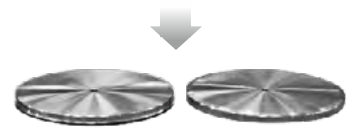
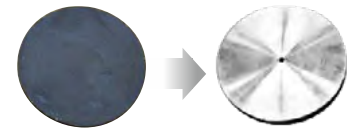
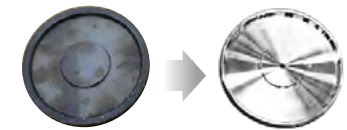
OP#10



OP#20

## Workpiece

### Flange



# Gantry Loader Reference 16

Intro

## Workpiece Handling

Gantry Loader  
Robot Solution

## Pallet Change


AWC  
LPS  
RPS

## Full Customized

Referential Cases

## Solution



<b>Machine</b>	PUMA TW2600-GL 2Sets, PUMA TW2600M-GL 4Sets
<b>Capacity</b>	300,000ea/year
<b>Cycle Time</b>	117 sec
<b>Main Option</b>	<ul style="list-style-type: none"> <li>• AUTO GAGING (OFFSET FEEDBACK)</li> <li>• IN &amp; OUT STOCKER</li> <li>• 1,000mm BEAM EXTENSION</li> <li>• AIR BLOW STA./MODEL CHECK STA.</li> </ul>
<b>Equipment Description</b>	<p><b>PUMA TW series</b> High-productivity 2-spindle horizontal turning center</p> 

## Jig & Fixture



OP#10

OP#20

## Tooling



OP#10



OP#20

## Workpiece

### Clutch





# Gantry Loader Reference 17

Intro

## Workpiece Handling

Gantry Loader  
Robot Solution

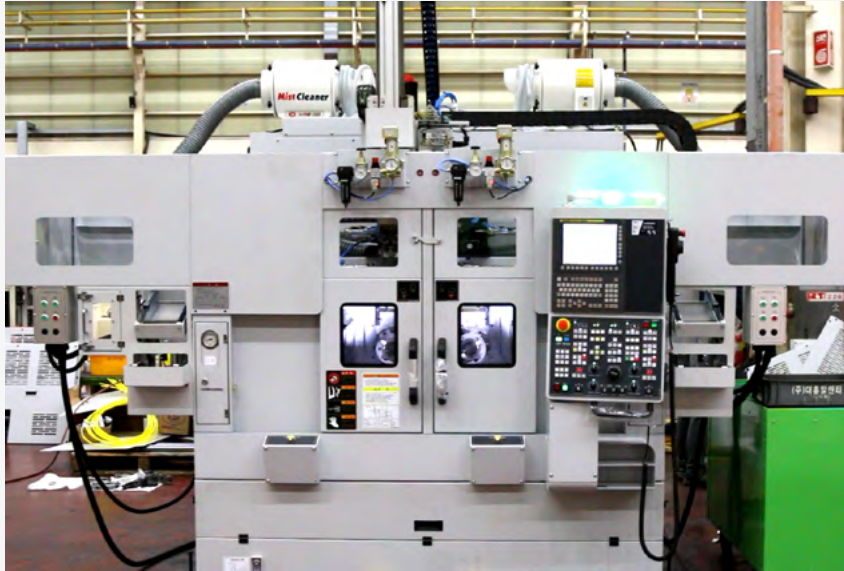
## Pallet Change


AWC  
LPS  
RPS

## Full Customized

Referential Cases

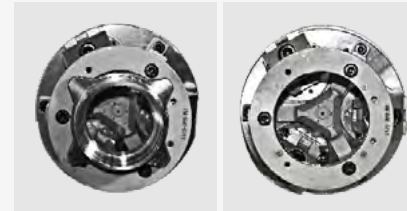
## Solution



<b>Machine</b>	PUMA TW2100GL 1Sets
<b>Cycle Time</b>	79 sec
<b>Main Option</b>	<ul style="list-style-type: none"> <li>• RECHUCKING UNIT</li> <li>• MIST COLLECTOR</li> <li>• TUTTER&amp;BED COOLANT SEPARATION - 10 BAR</li> </ul>
<b>Equipment Description</b>	<p><b>PUMA TW series</b> High-productivity 2-spindle horizontal turning center</p> 

## Workpiece

### Jig & Fixture



OP#10

OP#20

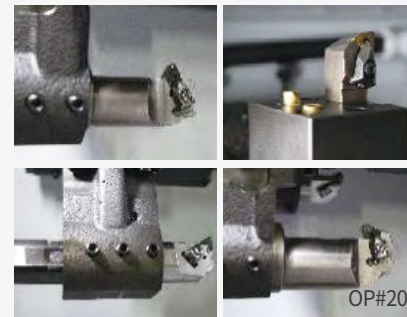
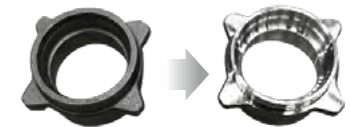
### Pinion Flange



### Tooling

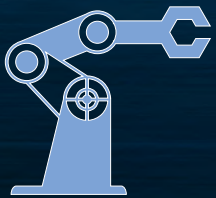
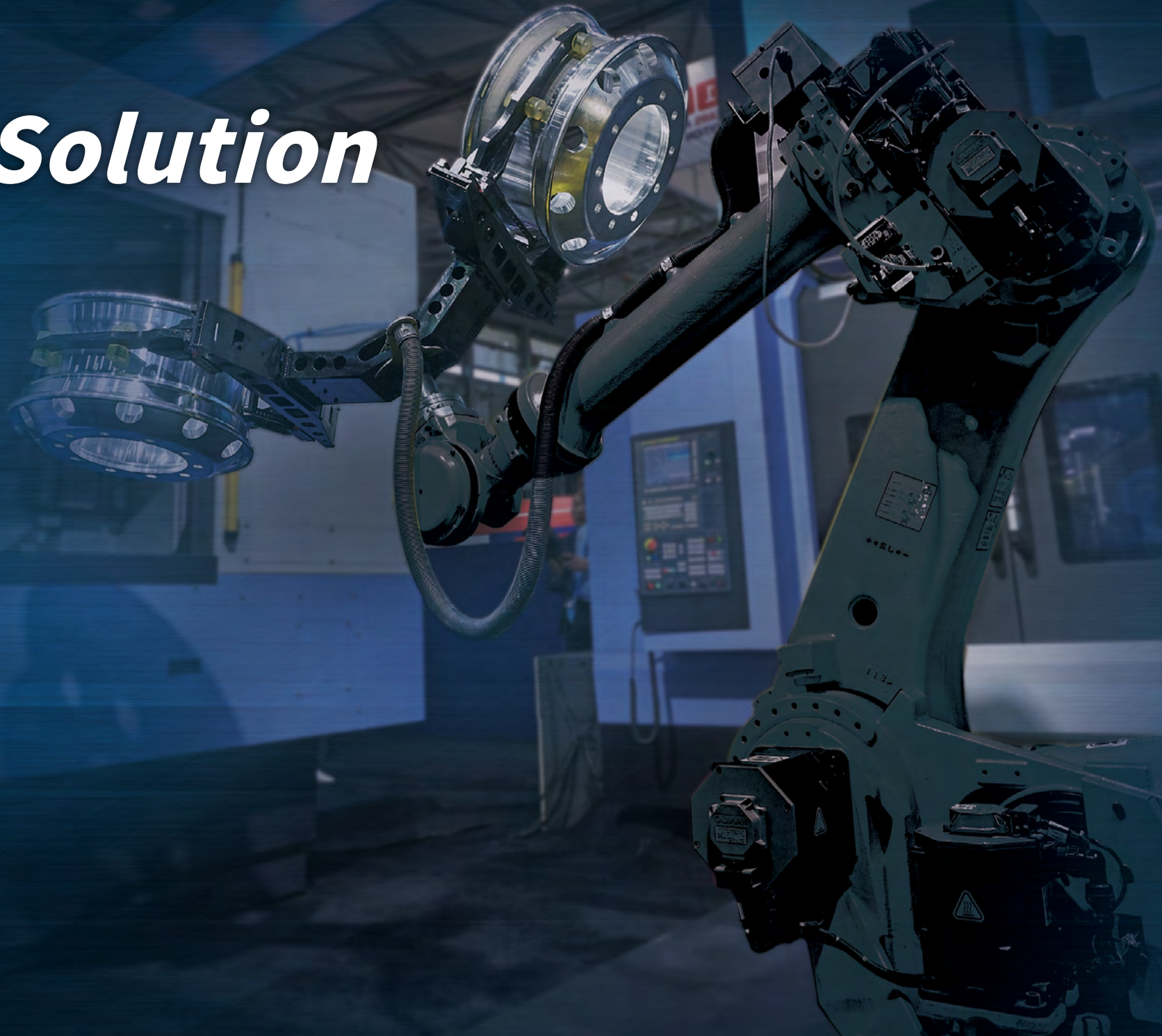


OP#10



OP#20

# ***Robot Solution***



# Robot Solution Reference 1

Intro

## Workpiece Handling

Gantry Loader  
Robot Solution

## Pallet Change



AWC  
LPS  
RPS

## Full Customized

Referential Cases

## Solution



<b>Machine</b>	PUMA GT3100M 1Set, DNM 4500 1Set	
<b>Capacity</b>	42,000 ea/year	
<b>Cycle Time</b>	494 sec	
<b>Main Option</b>	<ul style="list-style-type: none"> <li>• CNC Rotary Table</li> <li>• PTS</li> </ul>	<ul style="list-style-type: none"> <li>• Model Select S/W</li> </ul>
<b>Equipment Description</b>	<p><b>PUMA GT series</b> Global standard turning center</p> 	<p><b>DNM series</b> High productivity global standard vertical machining</p> 

## Workpiece

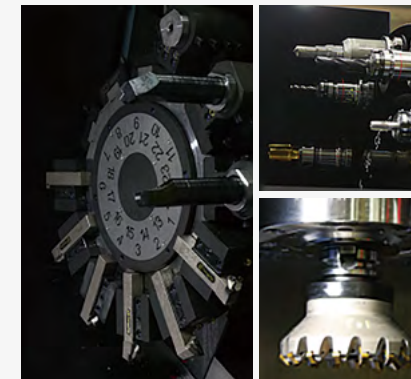
### Inner Race



### Jig & Fixture



### Tooling



# Robot Solution Reference 2

Intro

## Workpiece Handling

Gantry Loader  
Robot Solution

## Pallet Change

AWC  
LPS  
RPS

## Full Customized

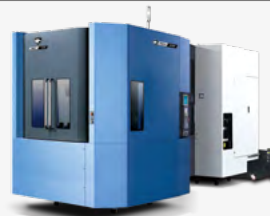
Referential Cases

## Solution

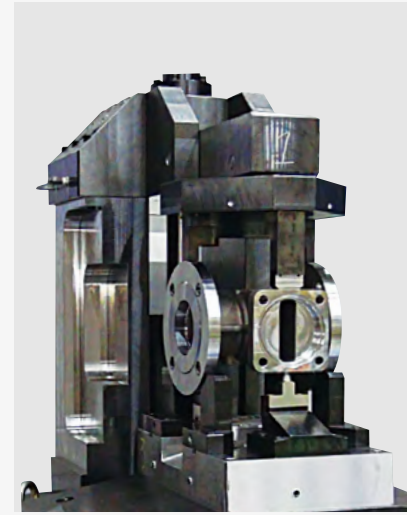


<b>Machine</b>	NHM 6300 2Sets
<b>Capacity</b>	20,000 ea/year
<b>Cycle Time</b>	30 min
<b>Main Option</b>	<ul style="list-style-type: none"><li>• TA-Center</li><li>• Fanuc Robot</li><li>• HYD. Fixture</li><li>• Auto Workpiece Measurement</li></ul>

**Equipment Description**  
NHM series  
High-performance medium-size horizontal machining center



## Jig & Fixture



## Workpiece

### Valve



# Robot Solution Reference 3

Intro

## Workpiece Handling

Gantry Loader  
Robot Solution

## Pallet Change

AWC  
LPS  
RPS

## Full Customized

Referential Cases

## Solution



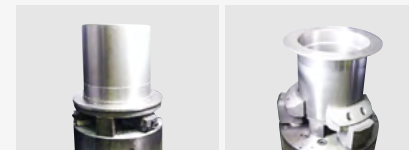
<b>Machine</b>	PUMA V550 3Sets, Mynx 6500/50 2Sets	
<b>Capacity</b>	46,500 ea/year	
<b>Cycle Time</b>	6 min	
<b>Main Option</b>	<ul style="list-style-type: none"> <li>• Special Chuck &amp; Fixture</li> <li>• In/Out Conveyor (w/Robot)</li> </ul>	<ul style="list-style-type: none"> <li>• Air Sensing, In-process Measuring</li> </ul>
<b>Equipment Description</b>	<p><b>PUMA V series</b> Compact high-productivity vertical turning center</p> 	<p><b>Mynx series</b> Powerful heavy-cutting vertical machining center</p> 

## Workpiece

### Machining Process

- OP#10, 20** O.D Rough Cutting, I.D Rough & Finish Cutting
- OP#30** O.D Finish Cutting
- OP#40** Drilling & Tapping

### Jig & Fixture



OP#10, 20

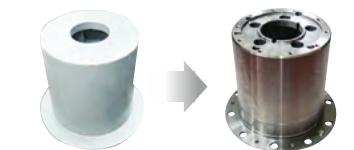
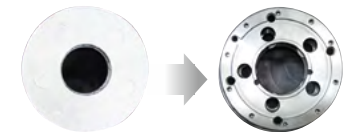
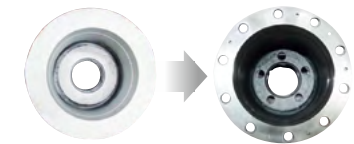


OP#30



OP#40

### Planetary Carrier



# Robot Solution Reference 4

Intro

## Workpiece Handling

Gantry Loader  
Robot Solution

## Pallet Change

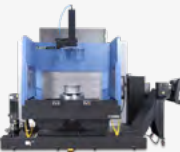

AWC  
LPS  
RPS

## Full Customized

Referential Cases

## Solution



<b>Machine</b>	PUMA VAW800 1Set, PUMA AW560 1Set, Mynx 5400 1Set	
<b>Capacity</b>	1,500,000 ea/year	
<b>Cycle Time</b>	120 sec	
<b>Main Option</b>	<ul style="list-style-type: none"> <li>• Auto Measuring Unit</li> <li>• Measurement Correction Function</li> </ul>	<ul style="list-style-type: none"> <li>• Vision System for Air hole Positioning</li> </ul>
<b>Equipment Description</b>	<p><b>PUMA VAW series</b> High-productivity aluminum wheel processing vertical turning center</p> 	<p><b>PUMA AW series</b> High-productivity aluminum wheel processing Horizontal turning center</p> 

## Workpiece

### Aluminum Wheel



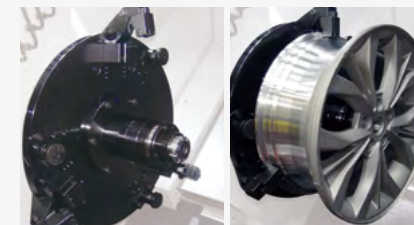
### Machining Process

- OP#10 Half out & In side
- OP#20 Half out side & Face
- OP#30 Bolt Hole

### Jig & Fixture



OP#10, 20



OP#30



OP#40

# ROBOSOL Introduction

Intro

## Workpiece Handling

Gantry Loader  
Robot Solution

## Pallet Change

AWC  
LPS  
RPS

## Full Customized

Referential Cases

## Solution



ROBOSOL\_T4000HP



ROBOSOL\_PUMA V400

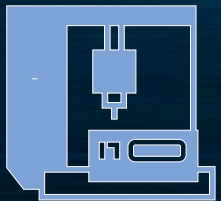
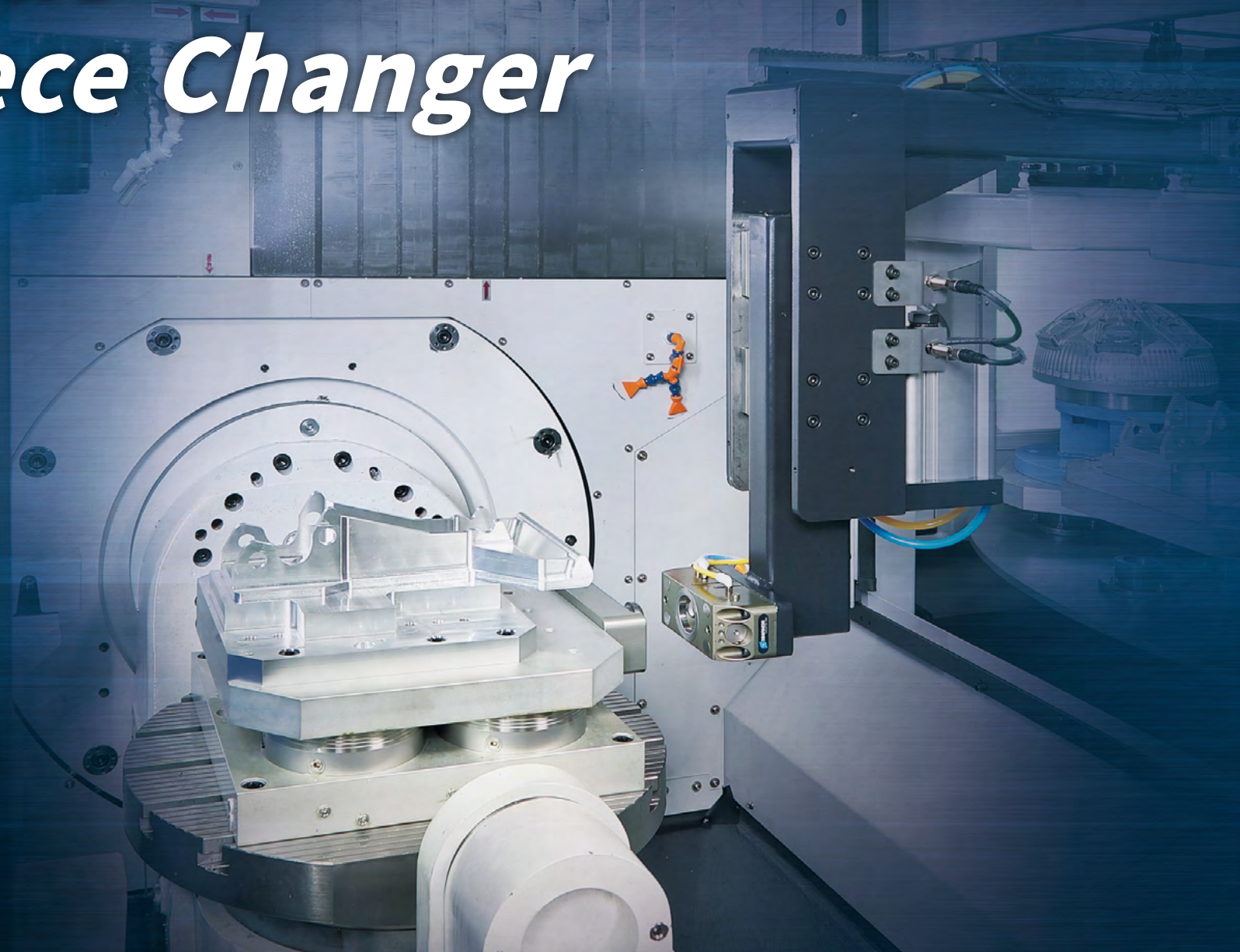
## Workpiece

Robot cell  
interface for  
various machine  
types

Cycle time  
reduction through  
optimizing  
loading/unloading  
**38%**

Easy Touch  
Operation

# *Automatic Workpiece Changer*





# AWC Introduction

Intro

Workpiece Handling

Gantry Loader  
Robot Solution

Pallet Change

AWC  
LPS  
RPS

Full Customized

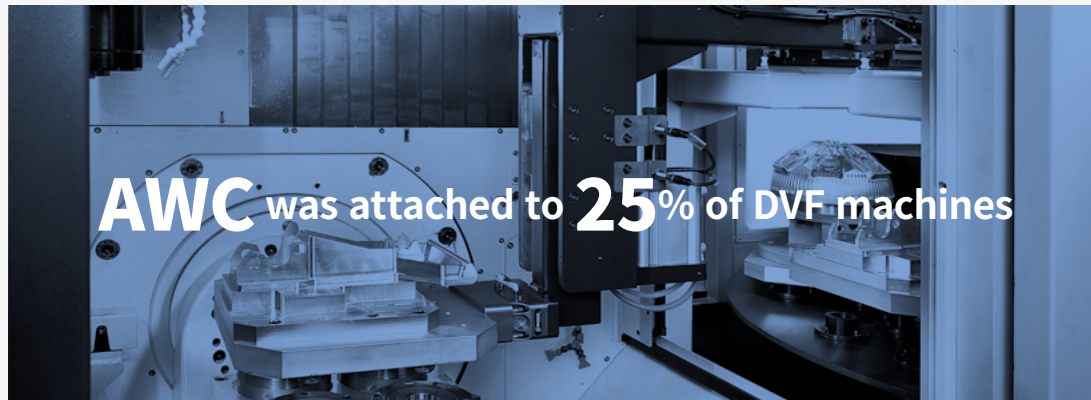
Referential Cases

## Solution



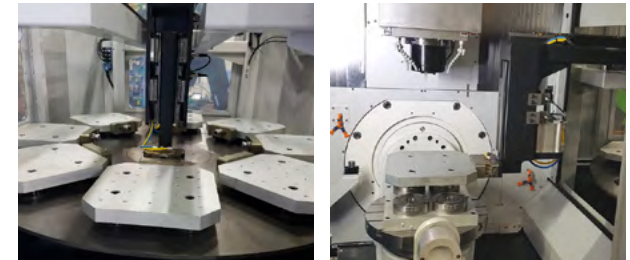
DNM5700 with AWC

DVF 5000 with AWC

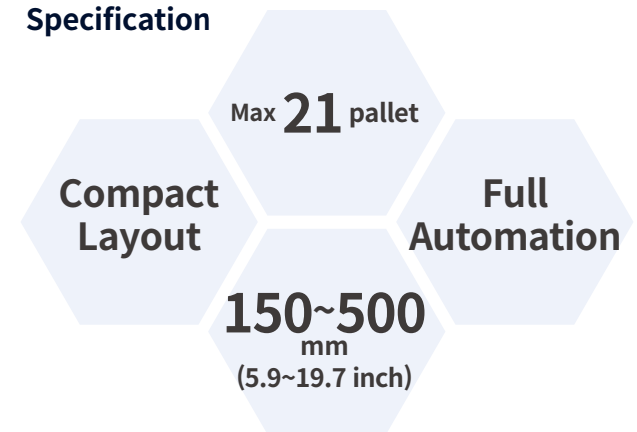


AWC was attached to 25% of DVF machines

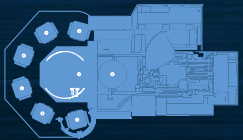
## System



## Specification



# *Round Pallet System*



# RPS Introduction

Intro

Workpiece Handling

Gantry Loader  
Robot Solution

Pallet Change

AWC  
LPS  
RPS

Full Customized

Referential Cases

## Solution

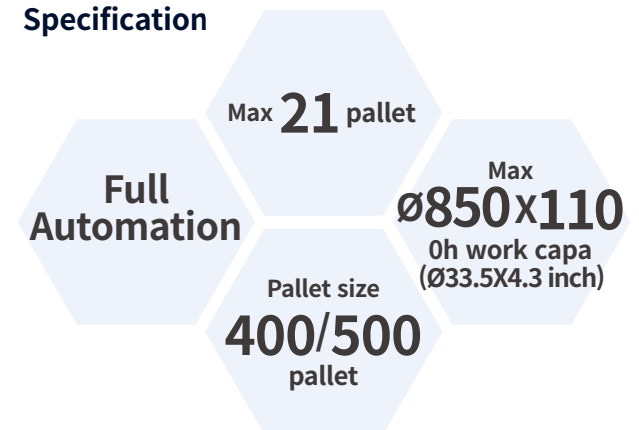


## System

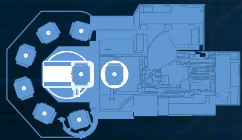


Separated Special Operation Panel for RPS

## Specification



# *Linear Pallet System*



# LPS Reference 1

Intro

Workpiece Handling

Gantry Loader  
Robot Solution

Pallet Change

AWC  
LPS  
RPS

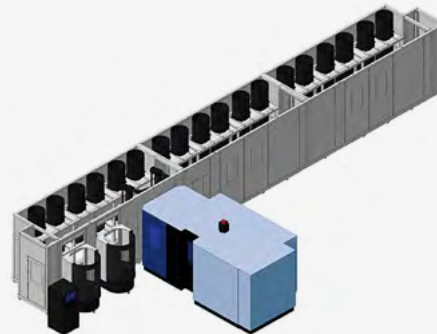
Full Customized

Referential Cases

## Solution



### Layout



Length  
**18870** mm  
(742.9 inch)

Width  
**8332** mm  
(328.0 inch)

Height  
**3300** mm  
(129.9 inch)

## System

### Machine

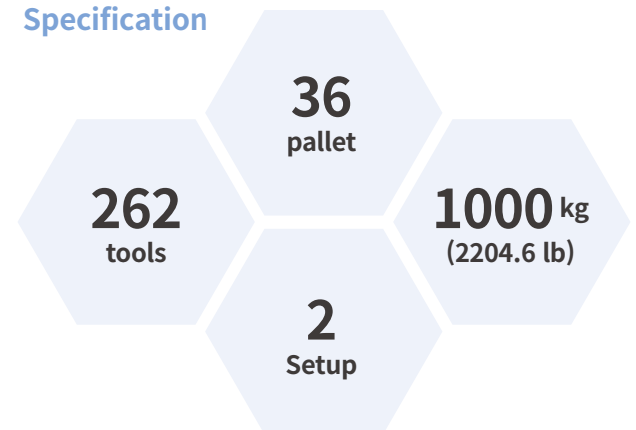
HP 5100 1Set, LPS 500



HP 5100

LPS 500

### Specification



# LPS Reference 2

Intro

Workpiece Handling

Gantry Loader  
Robot Solution

Pallet Change

AWC  
LPS  
RPS

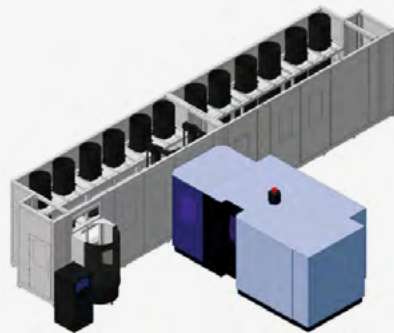
Full Customized

Referential Cases

## Solution



### Layout



Length  
**15220** mm  
(599.2 inch)

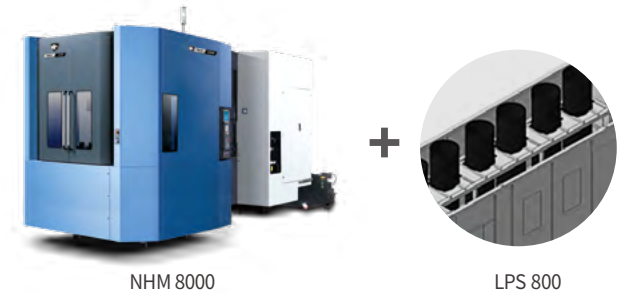
Width  
**12770** mm  
(502.8 inch)

Height  
**4040** mm  
(159.1 inch)

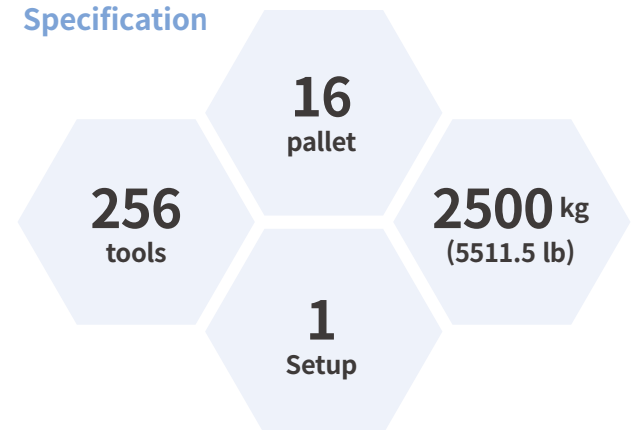
## System

### Machine

NHM 8000 1Set, LPS 800



### Specification



# LPS Reference 3

Intro

Workpiece Handling

Gantry Loader  
Robot Solution

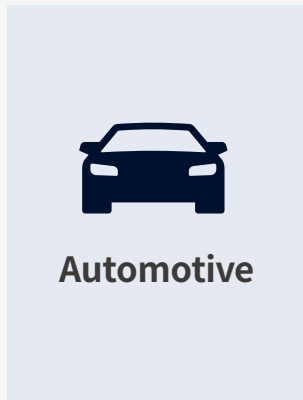
Pallet Change

AWC  
LPS  
RPS

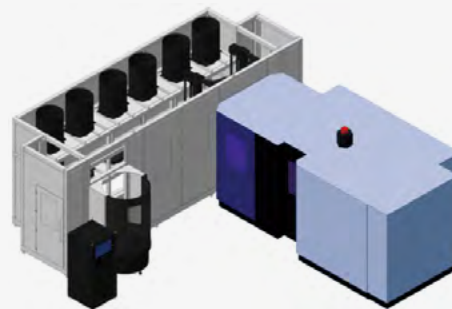
Full Customized

Referential Cases

## Solution



### Layout



Length  
**8460 mm**  
(333.1 inch)

Width  
**10970 mm**  
(431.9 inch)

Height  
**3620 mm**  
(142.5 inch)

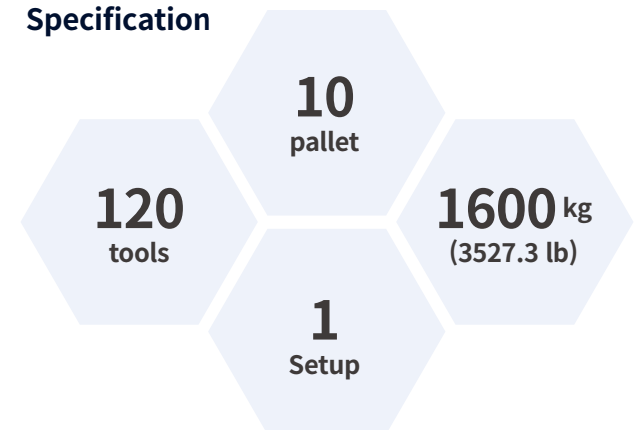
## System

### Machine

NHM 6300 1Set, LPS 630



### Specification



# LPS Reference 4

Intro

Workpiece Handling

Gantry Loader  
Robot Solution

Pallet Change

AWC  
LPS  
RPS

Full Customized

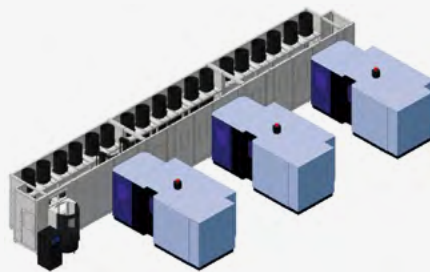
Referential Cases

## Solution



Machine tool  
(DN Solutions)

### Layout



Length  
**42880** mm  
(600.0 inch)

Width  
**10400** mm  
(409.4 inch)

Height  
**5820** mm  
(229.1 inch)

## System

### Machine

NHP 8000 3Set, LPS 800



NHP 8000

LPS 800

### Specification

**262**  
tools

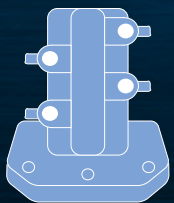
**36**  
pallet

**1000** kg  
(2204.6 lb)

**2**  
Setup



# *Full Customized Solution*



# Full Customized Solution Reference

자동차 솔루션 개요

## Workpiece Handling

Gantry Loader  
Robot Solution

## Pallet Change


AWC  
LPS  
RPS

## Full Customized

Referential Cases

## Solution



<b>Machine</b>	Lynx 220G super 2set	
<b>Capacity</b>	200,000 ea/year	
<b>Cycle Time</b>	10 sec	
<b>Main Option</b>	<ul style="list-style-type: none"> <li>• Auto Loader</li> <li>• Air Gap Sensing</li> </ul>	<ul style="list-style-type: none"> <li>• Special Tool</li> </ul>
<b>Equipment Description</b>	<p><b>Lynx 220G super</b> Compact economical turning center</p> 	

## Jig & Fixture



## Workpiece

### Inner Bearing



# Full Customized Solution Reference

자동차 솔루션 개요

## Workpiece Handling

Gantry Loader  
Robot Solution


## Pallet Change

AWC  
LPS  
RPS

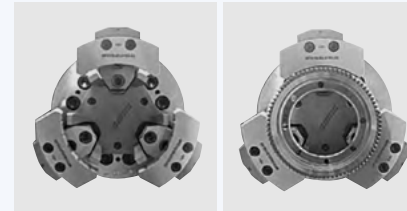
## Full Customized

Referential Cases

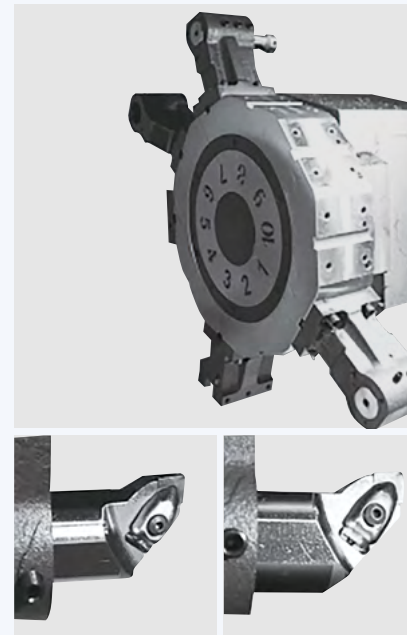


<b>Machine</b>	PUMA TW2600-GL 2Sets	
<b>Capacity</b>	100,000 ea/year	
<b>Cycle Time</b>	68 sec	
<b>Main Option</b>	<ul style="list-style-type: none"> <li>• In, Out Stoker</li> <li>• Special Chuck</li> </ul>	<ul style="list-style-type: none"> <li>• Inspection &amp; NG Chute</li> </ul>
<b>Equipment Description</b>	<p><b>PUMA TW series</b> High-productivity 2-spindle horizontal turning center</p> 	

## Jig & Fixture



## Tooling



## Workpiece

### Gear



# Valuable Supports / Success Story

Intro

Workpiece Handling

Gantry Loader  
Robot Solution

Pallet Change

LPS

Full Customized

Referential Cases

## Automotive

ANHUI JIANGHUAI AUTOMOBILE · China  
FAW-VOLKSWAGEN · China  
HONDA AUTOMOBILE · Thailand  
LINAMAR AUTOMOTIVE SYSTEMS · USA  
SCANIA · Sweden  
THYSSENKRUPP · Brazil  
TRW · Brazil, Canada, China, Malaysia,  
Mexico, Thailand, USA  
VOLVO · Sweden

## Medical

BIOMET · USA  
MEDTRONIC SOFAMOR DANEK · USA  
SANDVIK MEDICAL · USA  
SMITH & NEPHEW · USA, China

## Energy

BOSCH REXROTH OIL CONTROL SPA · Italy  
DRILLQUIP · UK  
FMC · UK  
GE OIL AND GAS · USA, Saudi Arabia  
NOV · USA, Singapore  
OMS OILFIELD SERVICES · Malaysia  
WEATHERFORD · China, India, USA,  
Argentina, France, UAE  
WOOD GROUP · USA, Saudi Arabia

## Aerospace

AEROSPACE HIWING (HARBIN) TITANIUM  
INDUSTRY · China  
Bombardier · UK  
CHINA AVIATION INDUSTRY CHENGDU  
ENGINE · China  
GENERAL ELECTRIC · USA, China  
HONEYWELL AEROS · USA, Mexico  
M.S. AEROSPACE, INC. · USA  
Rolls Royce · UK, Germany

## IT

APPLE · USA  
BALDOR ELECTRIC CO. · USA  
HITACHI ELEVATOR  
MOTOR(GUANGZHOU)Co., Ltd. China  
LG · China  
SAMSUNG · China, Malaysia  
WESTINGHOUSE ELECTRIC · USA

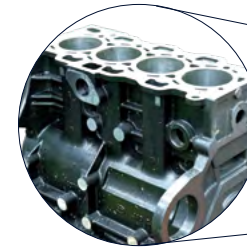
## General Machinery

CATERPILLAR · Italy  
FOTON LOVOL INTERNATIONAL HEAVY INDUSTRY  
· China  
BOBCAT · USA  
BOSCH REXROTH BEIJING HYDRAULIC Co., Ltd. ·  
China  
PARKER HANNIFIN LTD. · USA  
SIEMENS MECHANICAL DRIVE SYSTEM (Tianjin)  
Co., Ltd. · China  
SANY HEAVY INDUSTRIAL · China  
TEREX · UK

## Reliable customer services

"We had confidence in DN Solutions's machines due to their stable operation rate and durability. This is already our fourth project with DN Solutions. While we were conducting the system line project, DN Solutions shared its technology with us unreservedly, and accepted all our requirements including any additional functions we needed in connection with various regulations."

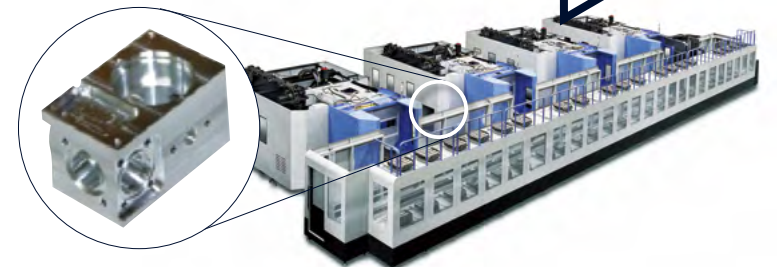
B Company (China)



## Maximum efficiency with minimum workforce

"DN Solutions's LPS system, introduced by HYPI, is a linear pallet system designed to maximize productivity and quality with a minimum workforce. The 12-pallet LPS is suitable not only for large factories but also for small and medium-sized firms. Another great advantage is the perfect service offered by DN Solutions after the design, establishment and installation of the automated system. We are currently using the HP 5100 primarily because it can respond very quickly to frequent changes of workpieces."

A Company (U.S.A)



# DN Solutions in the World

In an effort to provide solutions that fit each partners' unique needs, we constantly innovate our thinking, processes, and the way we do business. These optimal solutions lay the foundation for the success of our partners, which adds value to our partners' businesses.

## Global Sales and Service Support Network

**4** Corporations

**155** Dealer Networks

**51** Technical Centers

**200** Service Post

**3** Factories

Technical Center: Sales Support, Service Support, Parts Support



## Supplying Parts

- Supplying parts without charges
- Supplying parts with charges
- Parts repair



## Field Services

- On-site services
- Installation and trials
- Scheduled maintenance/ Preventive maintenance
- Repairs with/without charges



## Technical Support

- Supporting machining technology
- Responding to technical inquiries
- Providing technical materials



## Training

- Programming / Machine operation
- Maintenance
- Application engineering

**DN SOLUTIONS**

www.dn-solutions.com



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**Fire Safety Precautions**

There is a high risk of fire when using non-water-soluble cutting fluids, processing flammable materials, neglecting use coolants and modifying the machine without the consent of the manufacturer. Please check the SAFETY GUIDANCE carefully before using the machine.

\* For more details, please contact DN Solutions.

\* The specifications and information above-mentioned may be changed without prior notice.