



Korea Semiconductor System  
고려반도체시스템

# Wafer Solder Ball attach system



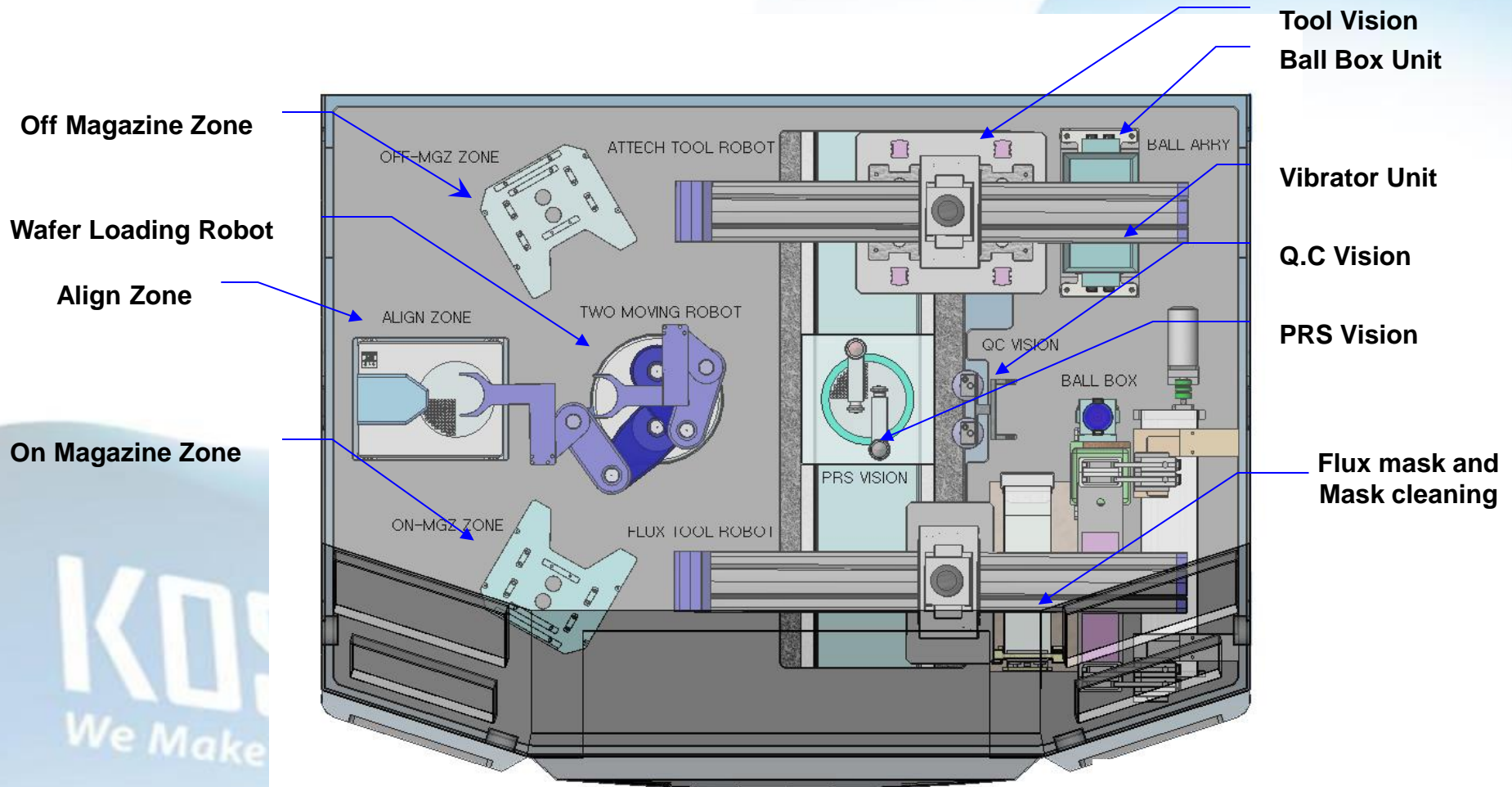
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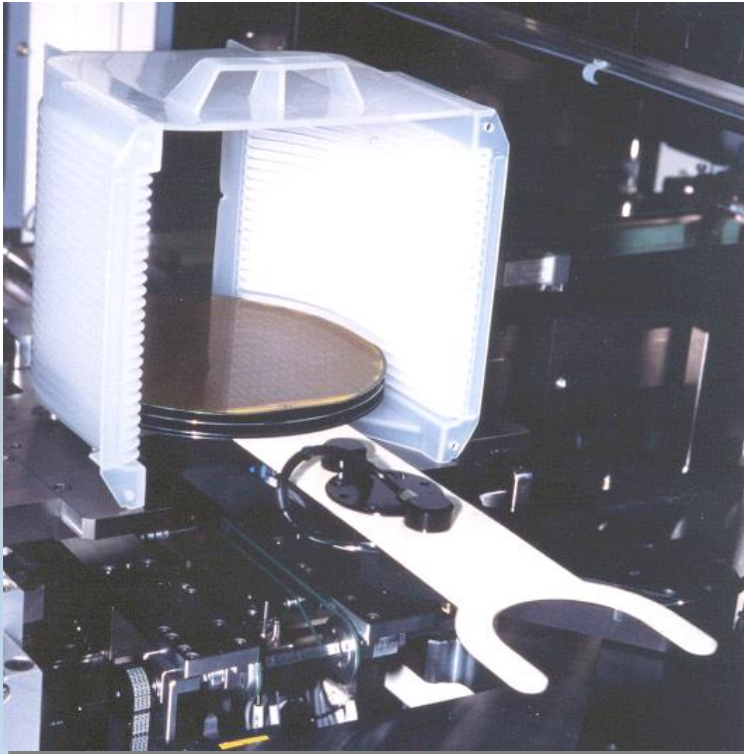
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# General Schematic



# Loader & Off loader

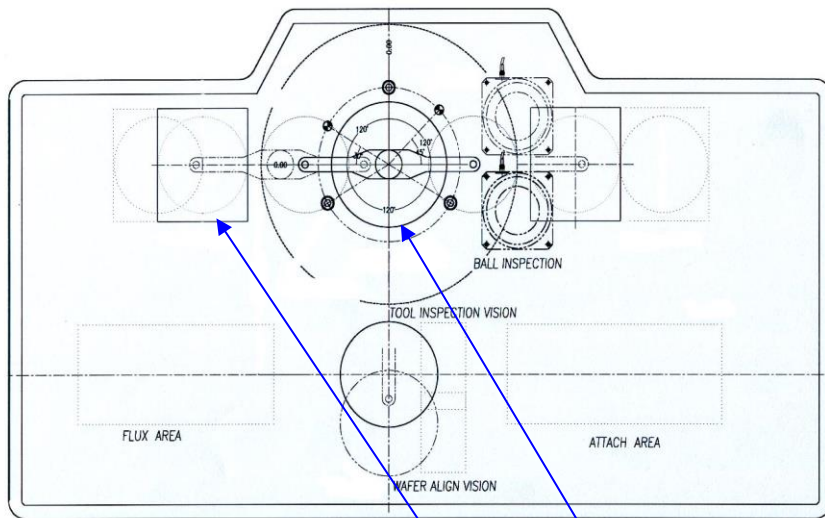
Loader/Off Loader can be interchangeable by user selection by set-up function



- 6 ~ 8 inch Wafer Application
- <Loading / Reject / Unloading - Optional>
- Easy Accessible Design

# Robot system

## Robot System embodies wafers at 8 points in 340°



- Wafer Damage Prevention by Soft & Precise Movement
- Optional Pre-alignment System
- Transfer Arm with sensor identify the wafer

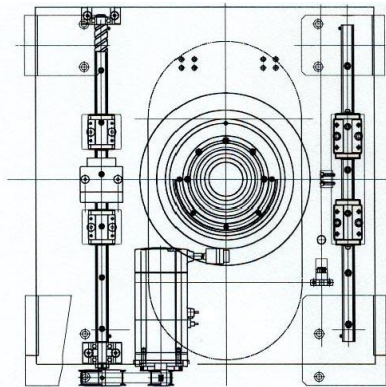
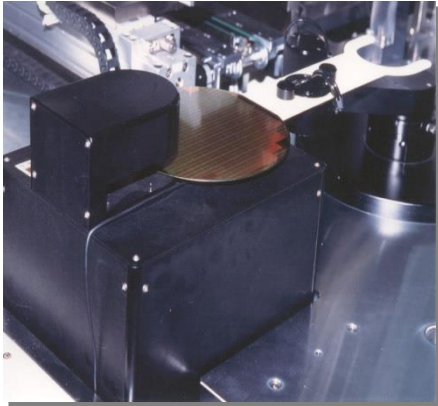
Precise wafer handling robot system

Transfer arm with sensor vacuum

# X, Y and Theta table

## X, Y, $\theta$ Table were controlled by PRS Vision System

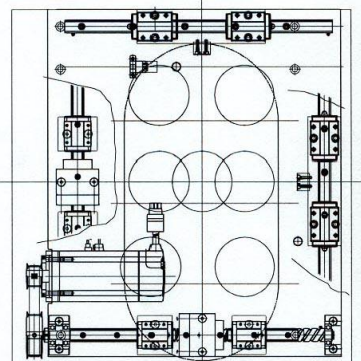
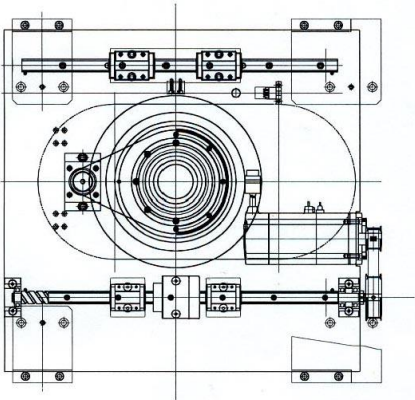
Pre-Aligner



- PRS Vision System scanned the wafer pattern and provide the alignment data to X, Y, and  $\theta$  Table

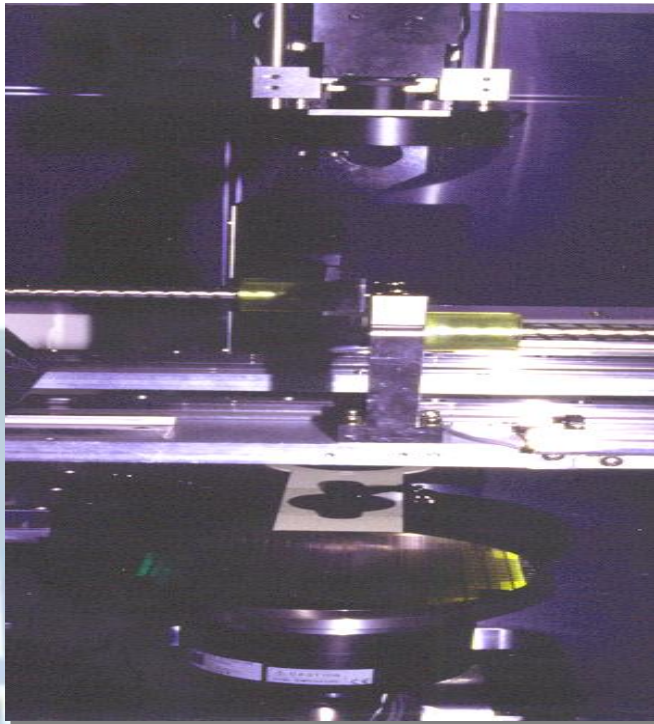
- Servo motor controlled turn table with vacuum System

- All X, Y, and  $\theta$  motors are Servo to ensure the precise movement



# PRS Vision system

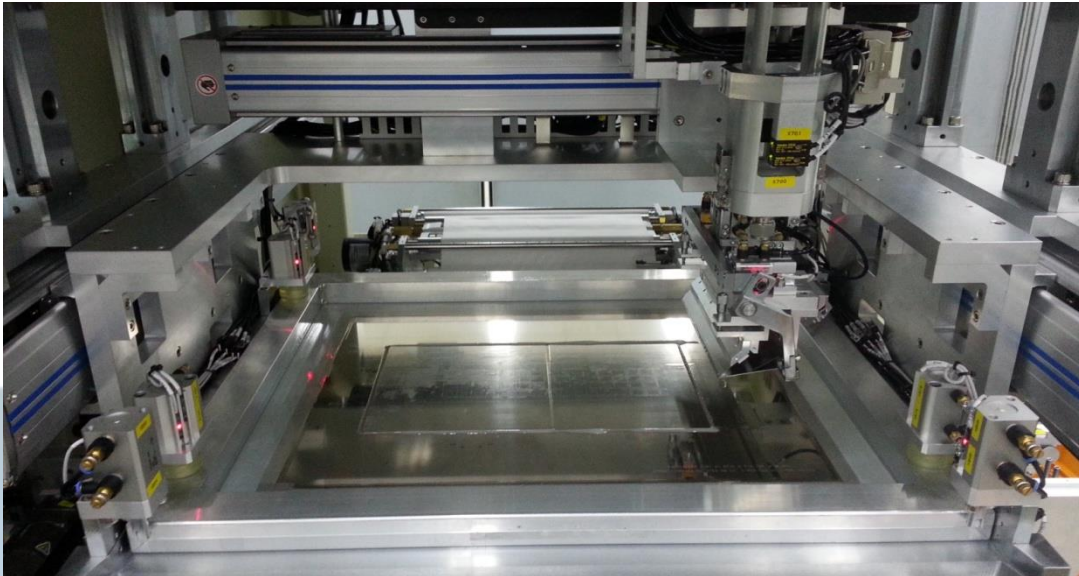
PRS vision system is designed to check certain area of wafer surface to provide the wafer aligning data



- PRS Vision System scanned each four corner of the wafer to ensure the accurate solder ball placement
- PRS Vision capture the position data to give X, Y,  $\theta$  Table

# Flux (Mask print)

Flux mask printing system ensure the exact flux volume and flux position



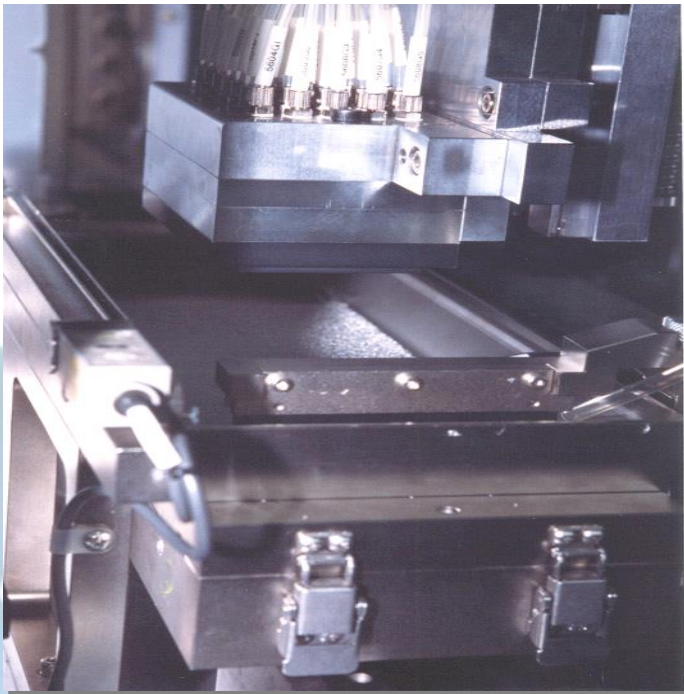
- Prevent wafer damage by unique pattern
- Auto Flux Supply system
- Even amount of flux by Flux blade design
- Flux volume control by loadcell
- Minimize flux bridge by auto cleaning system

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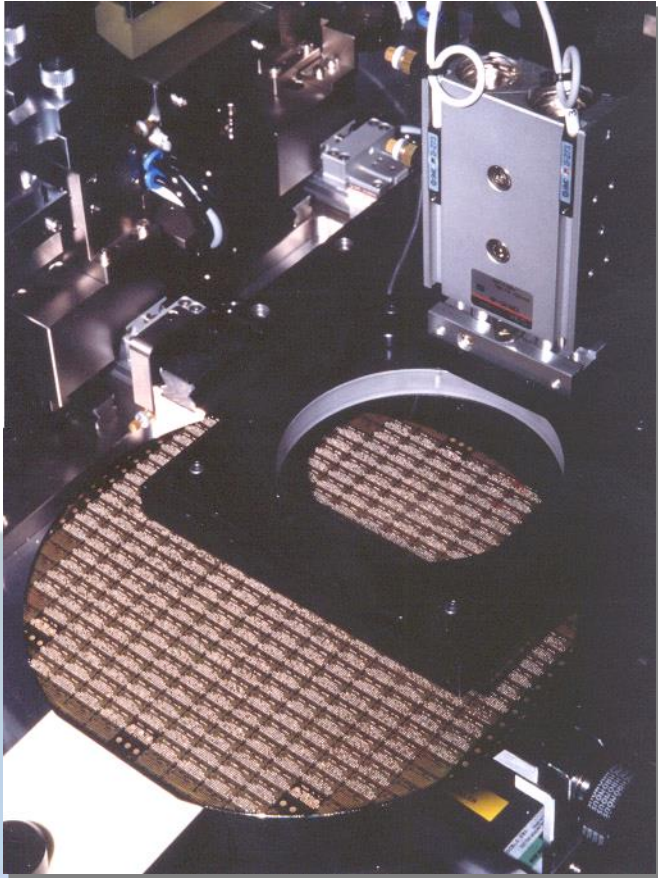
# Ball attach

Individual vacuum control system make ball placement on the wafer edge corner



- Jumping the balls in ball box by electronic vibrator.
- Auto Solder Ball Supply
- Bubbling, Floating, Blowing type of ball pick up
- Stable ball Jump control insure high yield of ball pick up.

# Vision section



## 1. Pre-Vision

- Applied before Solder ball placement
- Prevent any missing, double, small / over sized ball, and black balls
- Line Scanning Method

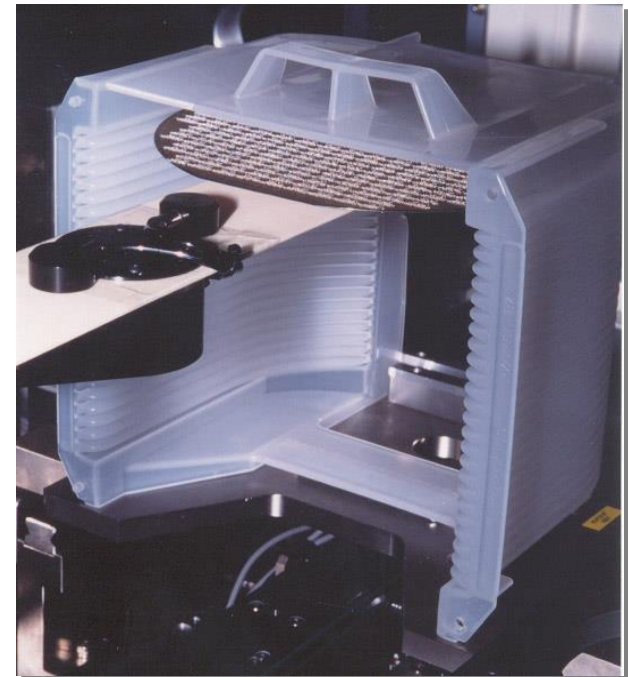
## 2. Post Vision

- Checks missing, double, alignment, and small / over sized, and black balls
- Option as line scanning or area scanning

# Quality inspection



- ❑ After Post Vision, Good wafer is pick up by Robot Arm and transferred to Loader or Off Loader by user's preference



- ❑ Rejected wafer transferred to the reject station
- ❑ Design of reject station is same as Loader /Off Loader

# Specification

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<b>Ball Size</b>	<b>: 0.12~0.76mm</b>
<b>Ball Pitch</b>	<b>: 0.25~1.27mm</b>
<b>Application</b>	<b>: Wafer (Semi/LED..), COG... Etc.</b>
<b>Wafer Size</b>	<b>: 6~8inch</b>
<b>Cycle time</b>	<b>: 8inch 120sec/wafer</b>
<b>MTBA</b>	<b>: 1hrs</b>
<b>1<sup>st</sup> Pass yield</b>	<b>: 99.98%</b>
<b>MTBF</b>	<b>: 144hrs</b>
<b>Up Time</b>	<b>: 99%</b>
<b>Position Accuracy</b>	<b>: ±25um</b>

End Presentation

Thank You



**Korea Semiconductor System Co., Ltd.**

739-5, Ojeong, Ojeong, Bucheon, Gyeonggi, Korea #421-170

Main : +82. 32. 662. 2224

Fax : +82. 32. 662. 2214

<https://www.koses.co.kr>