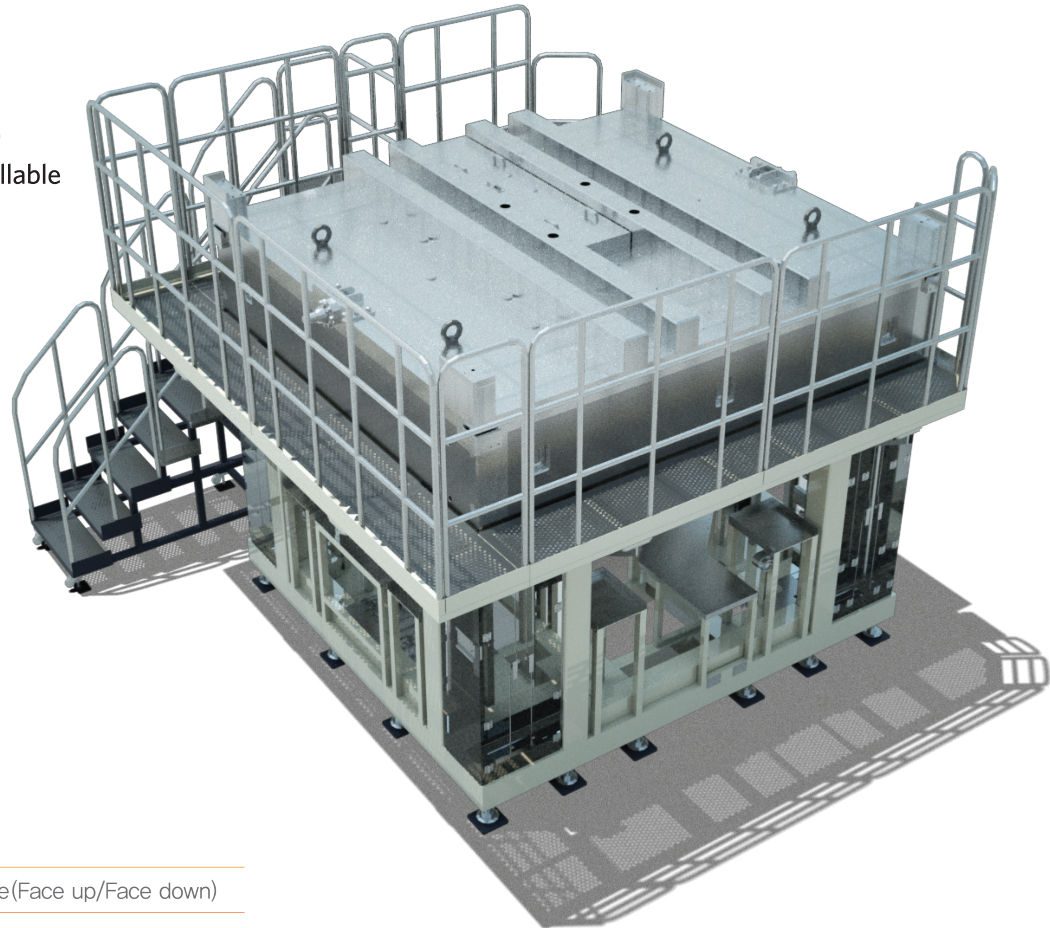
# OLED

## Plasma Treatment

### Key Features

- ▶ 3.5G ~ 8.5G for OLED treatment
- ▶ Wide process window
  (Excellent uniformity &
  surface treatment characteristic)
- ▶ Excellent productivity
  (No pattern damage, Particle free)
- ▶ Wettability selectivity controllable



### Specification

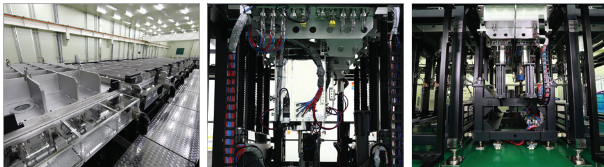
| Type | | CCP type(Face up/Face down) |
|---|---|---|
| Process | Uniformity | ≤ 15% |
| | Contact angle | ≤ 5˚ |

# OLED

## Thermal Evaporator

### Key Features

- In-Line Evaporating system for Gen8
- Heater & Cooler movable organic source for preventing OLED material degradation
- Good uniform & process repeatable leakage free tube type organic source
- Organic material Re-charging system
- High stable metal source



### Specification

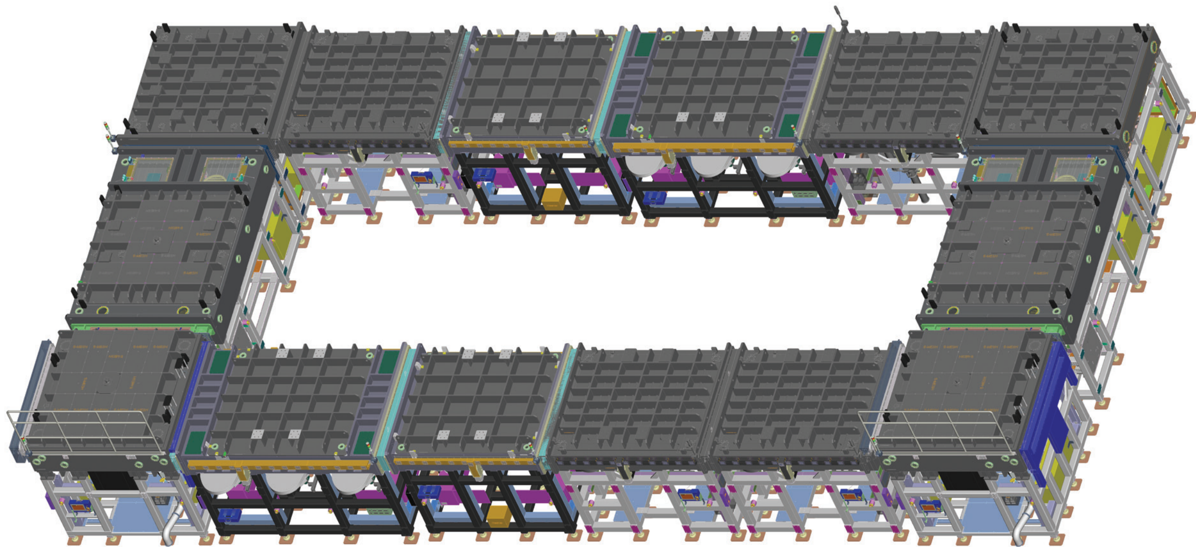
| Glass size | 2500×2200mm |
|---|---|
| Uniformity(Organic/Metal) | 〈 ±2% / ±5% |
| Rate stability(Organic/Metal) | 〈 ±3% / ±5% |
| Organic material Usage | 68% |

# OLED

## Vacuum Transfer

### Key Features

- High vacuum In-line transfer system
- Excellent tack time
- Low particle roller module



### Specification

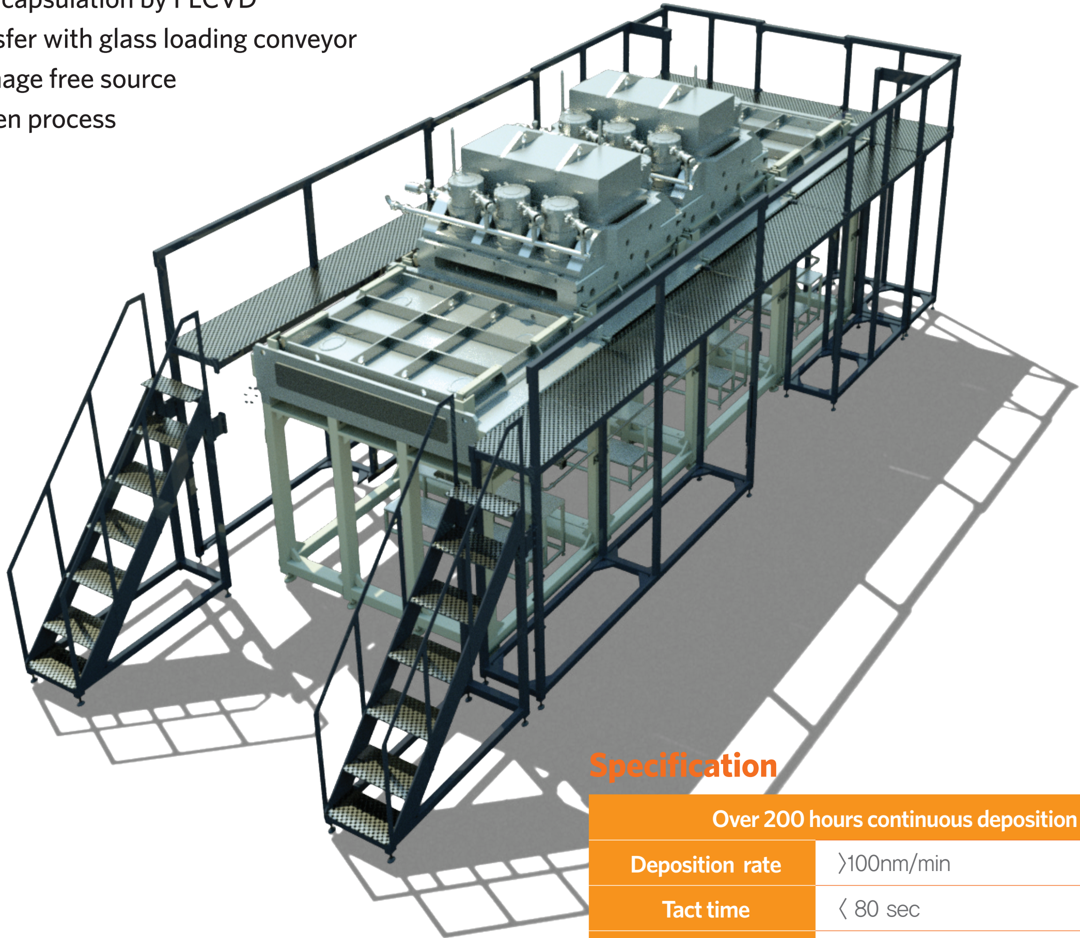
| Glass size | ~ 2,200×2,500mm |
|---|---|
| Max. vacuum pressure | 5*10E$^{-7}$ Torr |
| R.O.R(Leak Rate) | ≤ 10mTorr/10min |

# OLED

## PECVD

### Key Features

- ▶ Thin-film encapsulation by PECVD
- ▶ In-Line transfer with glass loading conveyor
- ▶ Plasma damage free source
- ▶ Low hydrogen process



### Specification

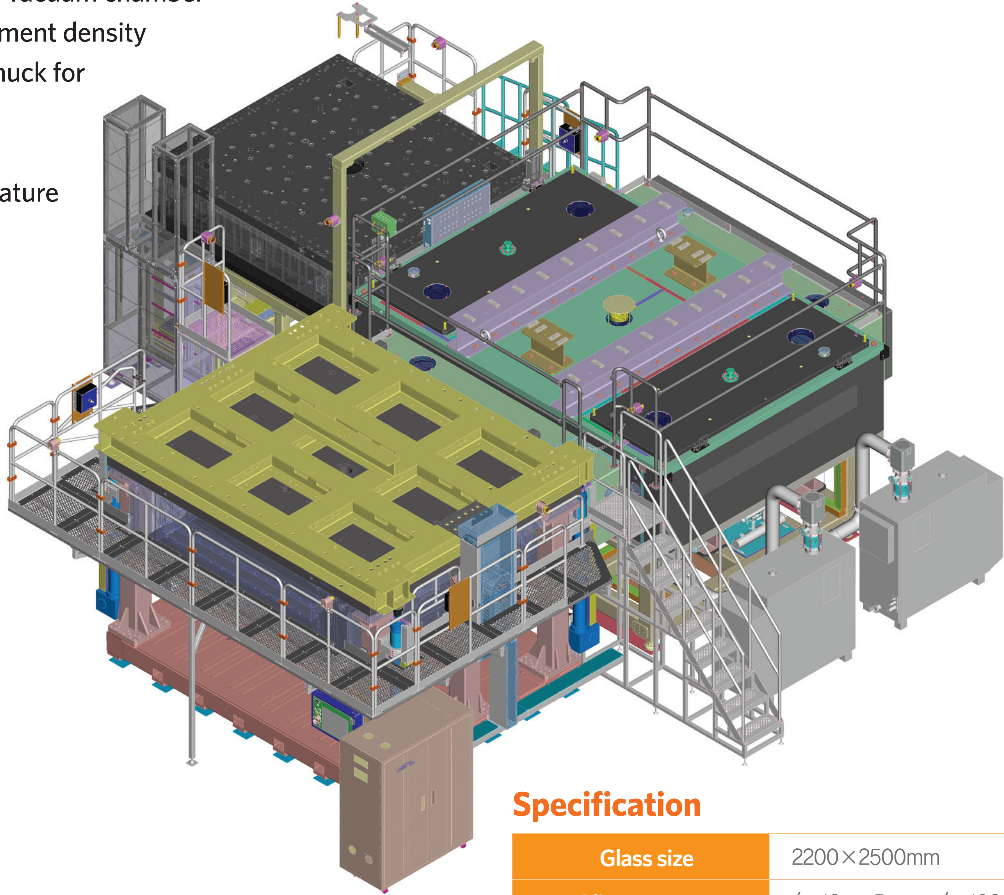
| Over 200 hours continuous deposition | |
|---|---|
| Deposition rate | 〉100nm/min |
| Tact time | 〈 80 sec |
| Uniformity | 〈 6% |
| Deposition materials | silicon nitride, silicon oxide, aluminum oxide, zinc oxide, & etc.. |

# OLED

## Align & Hot Press

### Key Features

- ▶ In-Line type closed vacuum chamber
- ▶ High vacuum alignment density
- ▶ Advanced sticky chuck for upper glass holder
- ▶ High uniformity of pressure & temperature



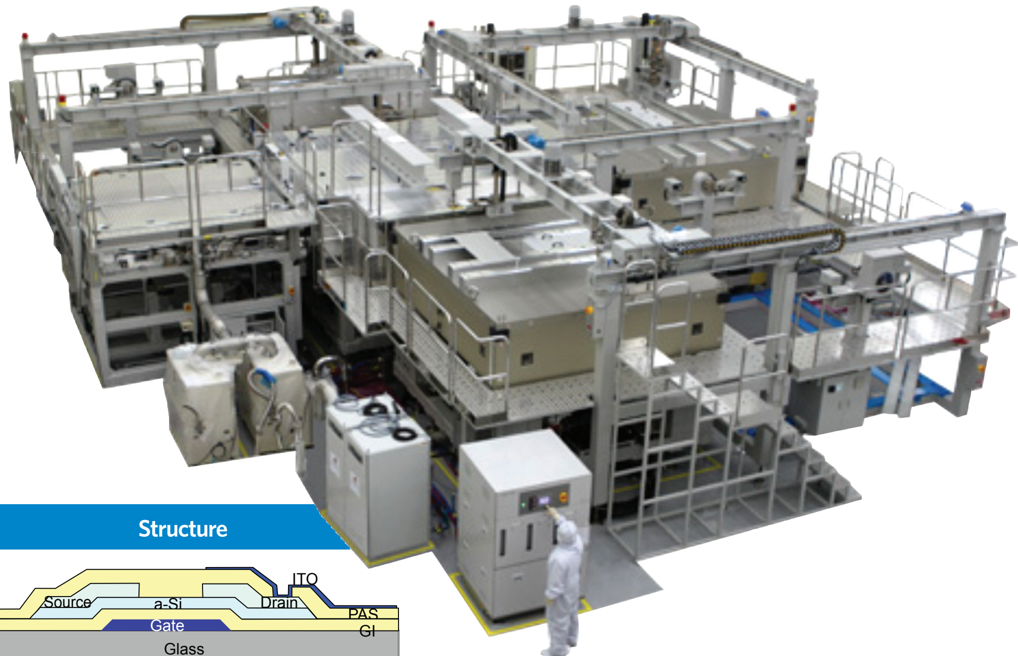
### Specification

| | |
|---|---|
| Glass size | 2200×2500mm |
| Align accuracy | 〈±10㎛, Press: 〈±100㎛ |
| Max. vacuum pressure | 0.13 Pa |
| Pressure & Temp | 0.1 ~ 0.6Mpa 〈±5%<br>20℃ ~ 150℃ 〈±3.5% |

# Dry Etcher [a-Si, LTPS, Oxide]

## Key Features

- ▶ CCP etcher for G4.5 ~ G8.5
- ▶ Wide process window for all application(a-si TFT, LTPS, Oxide)
- ▶ Excellent productivity (Anti-(ESD, Mura, Dint, ARC))
- ▶ Reliability(high uptime) & technical support



## Specification

| TFT | Applicable Layer | Structure |
|---|---|---|
| a-Si (4~5mask) | Active(Island) | ITO, Source, a-Si, Drain, PAS, GI, Gate, Glass |
| | N+(Channel) | |
| | Passivation(Contact) | |
| Oxide | Contact (SiOx & SiNx) ESL(SiOx) | ITO, PAS(Oxide), ESL, IGZO, GI, Source, Drain, Gate, Glass |
| LTPS (P-MOS) (N-MOS) (C-MOS) | Poly-Si | Pixel, PAS, Passi., Drain, Source, ILD, Gate, Power Line, GI, Active, Barrier Layer, Glass |
| | Doped PR ashing | |
| | Contact(SiOx) | |
| | Gate Metal (Mo) | |
| | S/D Metal(Mo, Al, Ti) | |

# Dry Etcher [LTPS, Oxide]

## Key Features

- ICP etcher for G4.5 ~ G8.5
- Wide process window for all application (LTPS , Oxide TFT)
- Excellent Etch Rate & Uniformity (Unique antenna design & Zone Control)
- Excellent productivity (Anti-(ESD, Mura, Dint, ARC))
- Reliability(high uptime) & technical support

## Specification

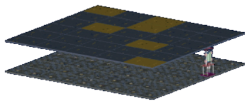
| TFT | Applicable Layer | Structure |
|---|---|---|
| Oxide | Contact (SiOx & SiNx)<br>ESL(SiOx) | ITO, PAS(Oxide), ESL, IGZO, GI, Source, Drain, Gate, Glass |
| LTPS<br>(P-MOS)<br>(N-MOS)<br>(C-MOS) | Poly-Si | Pixel, PAS, Passi., Drain, Source, ILD, Gate, Power Line, GI, Active, Barrier Layer, Glass |
| | Doped PR ashing | |
| | Contact(SiOx) | |
| | Gate Metal (Mo) | |
| | S/D Metal (Mo, Al, Ti) | |

# LCD

## Vacuum Alignment System

### Key Features

- Reduce tact by fast vacuum pumping (22sec)
- Advance sticky chuck for upper glass hold
- High assembly class quality ($\sigma$/0.36㎛)



| Competitor | Item | LIG ADP |
| --- | --- | --- |
| 1500ℓ | Chamber volume | 800ℓ |
| | 47% down | |
| 150sec | Average of TACT | 110 sec |
| | 36% down | |

### Specification

| Glass size | GEN8 2200×2500mm |
| --- | --- |
| Align Accuracy | 〈±1㎛ |
| Max Vacuum Pressure | 0.13 Pa |
| Vision Resolution | 0.625㎛ |
| Tact | 100sec |

LCD

# Oxide/LTPS Pattern Inspection System

## Key Features

### ▶ Particle Filtering

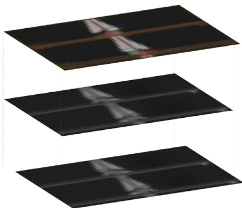
Maximizing MP and Inspection efficiency by filtering hundreds of useless defects that detected during Submicron level inspection automatically.

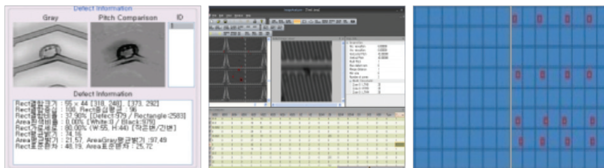
### ▶ Long Pitch Inspection

Applying special algorithm to the inspection model that has irregular design pattern and needs long-pitch comparison

### ▶ Glass all-area inspection(Panel to Panel)

All-areas inspection available for both irregular and complicated pattern.





## Specification

| | | |
|---|---|---|
| Inspection System | Detection Range | ≤ 0.3um(Submicron), 0.8~1.5um |
| | Light Source | Metal Halide |
| Main Module | | Hi Precision Motor, Air Bearing System & Special Optic |
| Main Function | | Selectable Zone Inspection, Defect Filtering, |

# TFT Pattern Inspection System

## Key Features

▶ A-π

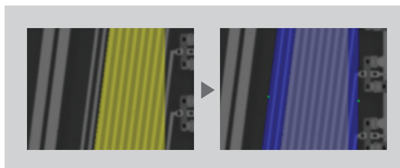
Automatically searching for Glass Inspection zone that guarantee us leading position in the Inspection zone technology

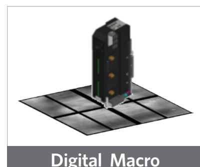
▶ Auto(Digital) Macro

For the mura defects happened in Photo process, change them into Macro image, and detect during the process real-time

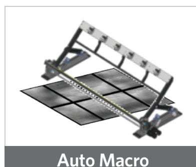
▶ Defect Inspection & Review process

simultaneously, so that inspection efficiency can be optimized. (RTR)





Digital Macro



Auto Macro

## Specification

| | | |
|---|---|---|
| Inspection System | Detectio Range | 1.0 ~ 5.0um |
| | Light Source | RGB LED(full Color Change), Metal Halide |
| Review System | Capture Time | ≤ 0.3sec/Point(≥ 4M Camera) |
| Main Module | | Air Floating Module, High Speed Camera |
| Main Function | | CD-OL, Back Side Inspection, YMS |

LCD

# CF Pattern Inspection System

## Key Features

▶ **Video Classification**

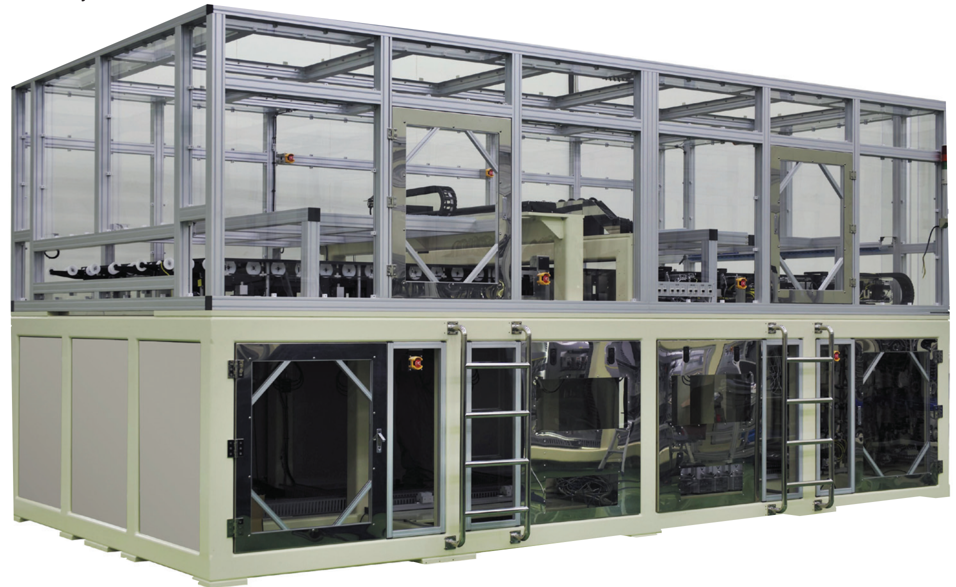
(1st time to Apply it into mass production in the world)
Classifying and defining the defects automatically according to the importance of them.

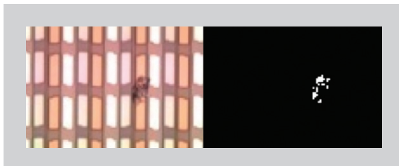
▶ **Light Control by zone**

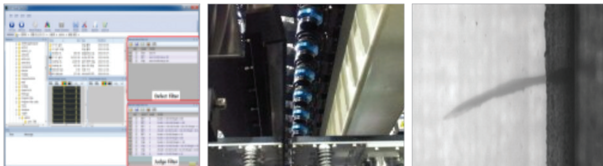
Improving the detectability by overcoming the pattern's brightness of active area and surrouding-area (COA, COT)

▶ **Scratch & Crack Inspection**

Glass Edge Auto Inspection during normal inspection







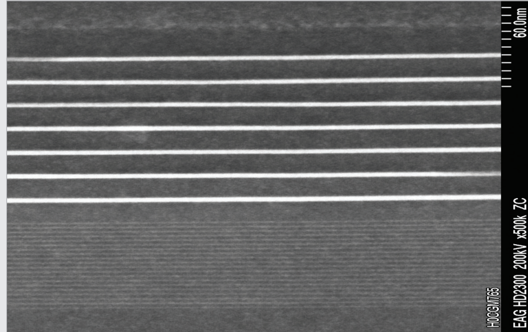
## Specification

| | | |
|---|---|---|
| Inspection System | Detection Range | 5um, 7.5um, 10um |
| | Light Source | LED(Reflection, Transmission) |
| | Tact Time | ≤ 25sec(@7.5um) |
| Main Module | | Scan + Review Deck |
| Main Function | | CD-OL, Digital Macro, Large Defect Inspection |

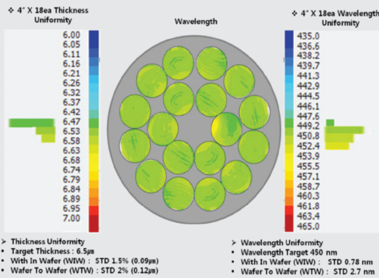
# LED

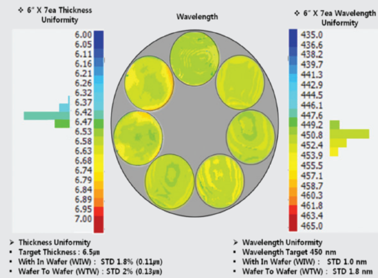
## MOCVD

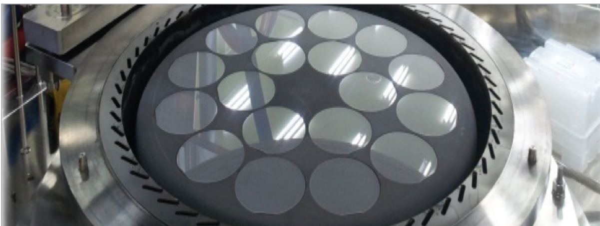
4" X 18



6" X 7



## Specification

| | |
|---|---|
| Performance | Deposition rate 3.5㎛ / hr |
| | Uniformity with in reactor : 〈 2% |
| | PL Spectrum within Wafer : 450nm(0.78nm) |
| | PL Spectrum within Reactor : 450nm(2.7nm) |