



**Vacon**

**Value Creation Of Neotech**

# **Vacuum Equipment for OLED & Solar Cell**

**VACON CO.,LTD.**

# Vacuum Equipment Company

## for OLED & Solar cell

### Business Area

- OLED Deposition & Encapsulation System
- Solar Cell Deposition System(CIGS, OPV...)
- Thermal Evaporation System
- Sputtering & PE-CVD System

➤ *System Development, Manufacture, Sales & Service*

#### • Vacuum deposition & encapsulation system manufacturing for OLED & Solar cell

- VACON Co., Ltd is engineering company composed of the members that have over ten years of experience in FPD, semiconductor companies.
- Korea's first development for OLED equipment, a number of experiences in setting up OLED & Solar cell equipment.

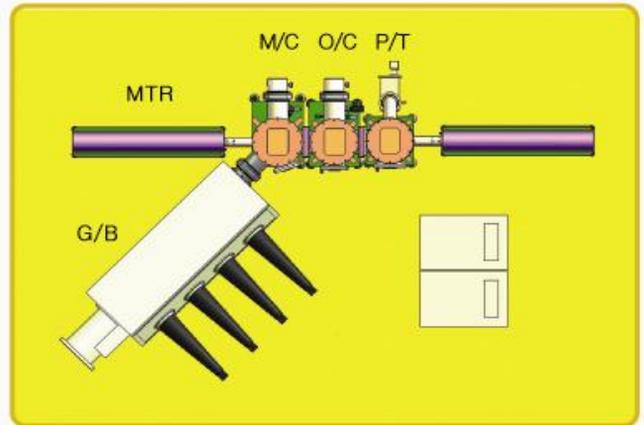
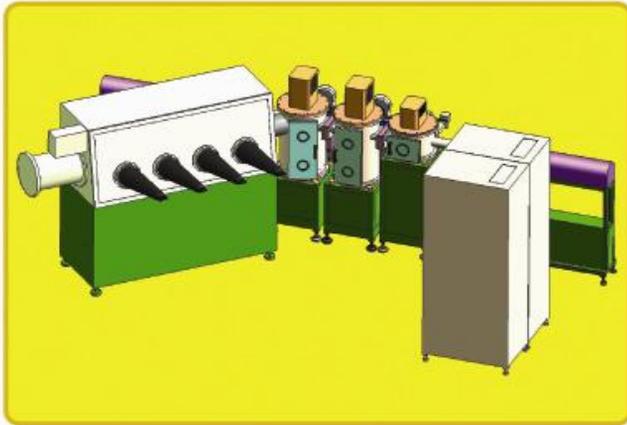
### CUSTOMER

#### 24Hrs Technical Support

- Customer-centric business based on customers point of view
  - Quick and accurate sales and customer service
  - Providing with stable and reliable systems based on mature experience
  - Building up continuous mutual Win-Win partnership
- For customer to achieve successful business, we provide with the best technology & competitive price building up continuous and fast technical support system

# VEL-R200

## OLED Deposition & Encapsulation



### Features

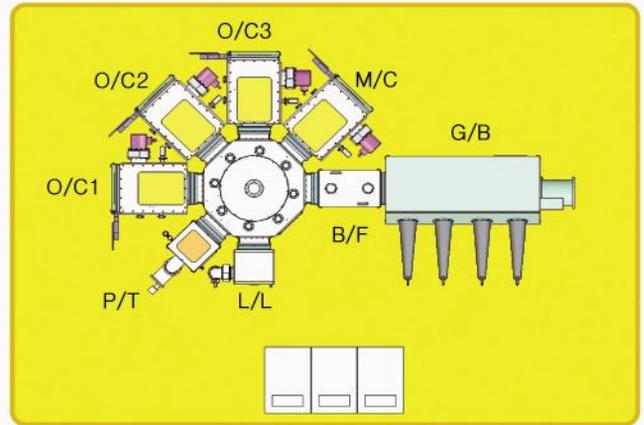
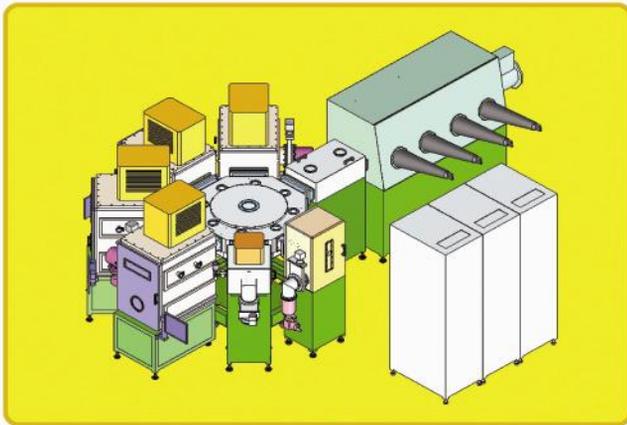
- VACONEL-R200 is configured as a linear system to process OLED display, OLED Lighting & Organic solar cell device for customer's R&D
- Flexible combination of evaporation
- Extensible chambers according to customer's R&D purpose from 3 to 4 chambers

### Specifications

Substrate Size		~200mm × 200mm
Pre-treatment Chamber		CCP type plasma source with RF power
Organic & Metal Chamber	Evaporation Source	Organic : cell type(Temp : RT ~ 500°C) Metal : cell & BN boat type(Temp : 500~1000°C)
	Film Uniformity	Organic : $\leq \pm 5\%$ (Alq3) Metal : $\leq \pm 7\%$ (Al)
	Align Mechanism	Mechanical align accuracy( $\leq \pm 200 \mu\text{m}$ )
Glove Box	Substrate transfer system, UV Curing & Auto dispensing system	

# VEL-P300

## OLED Deposition & Encapsulation



### Features

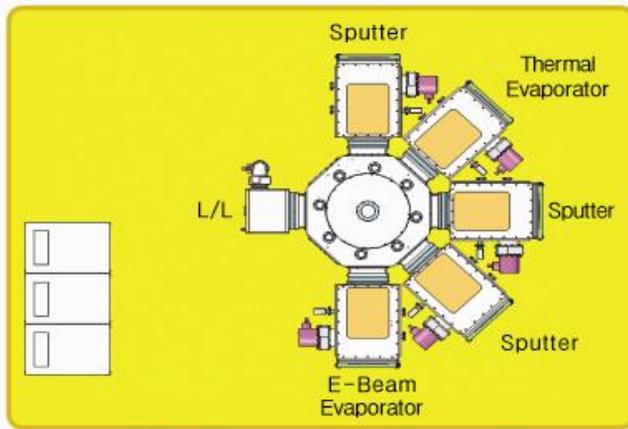
- VACONEL-P300 is configured as cluster system to process **OLED Display, OLED Lighting & Solar Cell** device for R&D and Pilot production
- Flexible combination of evaporation
- Extensible clusters according to customer's M/P purpose from 2 to 3 clusters

### Specifications

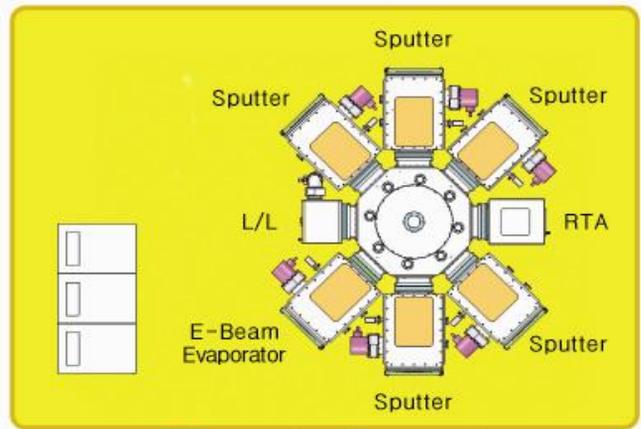
Substrate		~370mm × 470mm
Vacuum Performance	Process chambers	2 E-7 torr
	Other chambers	5 E-7 torr
Film Uniformity	Organic	≤ ± 5%(Alq3)
	LiF & Al	≤ ± 7%(Al)
Alignment Accuracy		CCD Vision : ≤ ± 5 $\mu$ m / Mechanical ≤ ± 200 $\mu$ m
Rate Stability	Organic	± 2% @ 2.0 Å/sec (Standard deviation)
	Metal	± 2% @ 20.0 Å/sec (Standard deviation)

# VSO-C200

## CIGS Thin Film Solar Cell



[Co-Evaporation Process]



[Sputtering Process]

### Features

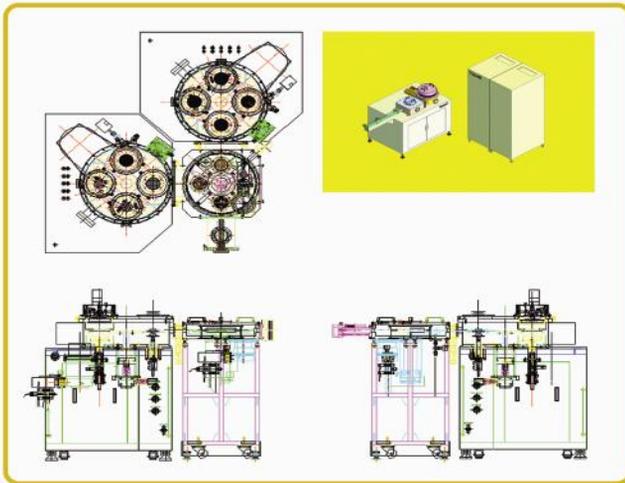
- Enables co-evaporation or sputtering / selenization
- Enables compositional variation throughout the film
- Enables substrate temperature variations
- Enables to make high quality thin film layers

### Process for CIGS Device

Structure	Co-Evaporation Process	Sputtering Process
Substrate	Soda-lime glass	
Bottom Electrode	Mo(DC Sputtering)	
Absorber Layer	Cu / In / Ga / Se (Thermal Evaporation)	Cu : Ga alloy / In (DC Sputtering) + Selenization(RTA)
Buffer Layer	i-ZnO or ZnS (RF Sputtering)	
Window Layer	ZnO (RF Sputtering)	
Anti-reflection Layer	MgF <sub>2</sub> (E-Beam Evaporation)	
Top Electrode	Al:Ni (E-Beam Evaporation)	

# VVA-R200

## SPUTTER & PE-CVD



[SPUTTER]



[PE-CVD]

### Features

- Installed a RF Pre-cleaning station and up to 4 sets of sputtering sources in one process chamber for multi-layer or co-deposition process
- Independent chamber for p-, i-, n- layer
- a-Si, Si oxide, Si nitride using SiH<sub>4</sub> or TEOS gas
- Choice of number of chambers to scale production throughput

### Sputter Specifications

Vacuum Performance		8 E-7 Torr
Film Uniformity		≤ ± 5% @ Metal ≤ ± 7% @ TiN, TiO <sub>2</sub> , SiO <sub>2</sub> , Si <sub>3</sub> N <sub>4</sub>
Power source	Metal	3KW DC power supply, changeable connection by switch
	Dielectric	1.2KW 13.56Mhz RF generator & matcher box
Process Gas		Ar, O <sub>2</sub> , N <sub>2</sub>
Heat performance		RT ~ 300°C, uniformity < ± 2% @ 250°C, Bias & floating

## Solutions

### OLED System

- Deposition & Encapsulation System
  - OLED Display
  - OLED Lighting

### Solar Cell System

- CIGS Thin Film System
- OPV(Organic Solar Cell) System
- Si Thin Film System
- DSSC(Dye Sensitized Solar Cell) System

### Vacuum System

- PECVD System
- Sputtering System

## Core Technology

- Evaporation source & Fine alignment technology
- Vacuum & Plasma Technology
- System control & Programming technology
- Solar cell process technology

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