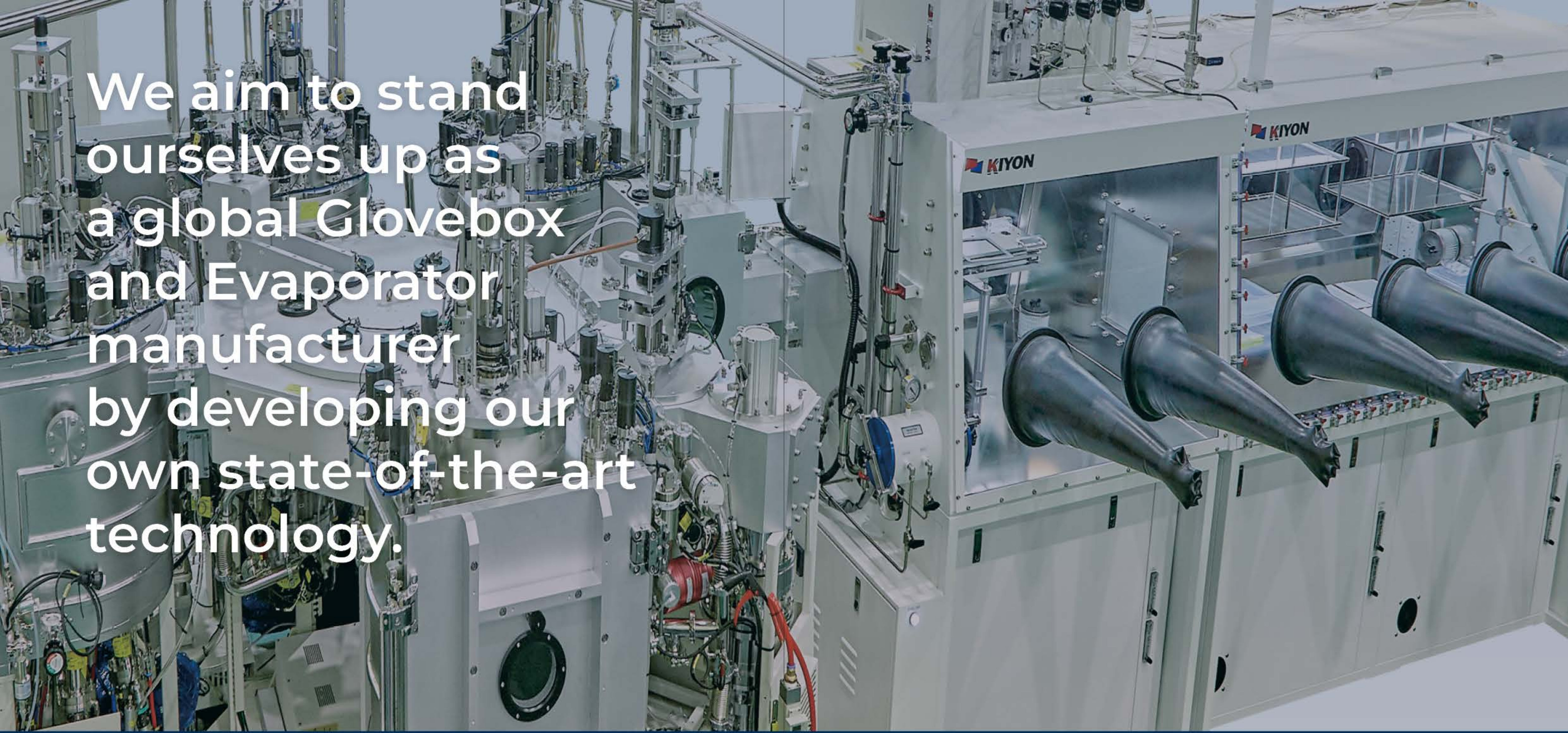
Glovebox & Vacuum Deposition System

For All-Solid-State Batteries, Solar Cell, Semiconductor Components & Nuclear

KOREA KIYON



We aim to stand ourselves up as a global Glovebox and Evaporator manufacturer by developing our own state-of-the-art technology.

- Thermal Evaporator
- Sputter
- E-Beam
- Tandem Deposition system
- Glovebox

You will discover our board range of capabilities built through almost 40 years of exceptional performance by delivering the most technologically advanced glovebox systems to our worldwide customers in the field of high-tech industries such as bio, chemistry, nuclear, solar cell, secondary cell, OLED glass, pharmaceuticals, medical R&D, and mass production automation.

Our product line-up has given many customers a perfectly controlled atmospheric environment and technical solutions. Our glovebox system is designed to provide 'a hermetically sealed and highly customized working space' under a perfectly controlled atmospheric environment, which is regarding 'less than 1 ppm in H_2O and O_2 concentration levels', 'temperature control', 'consistent gas flow system' using an efficient laminar flow system, 'cooling systems' and so on.

As for the customers' higher requirements and stricter industrial standards, we, KOREA KIYON, have been trying to provide more reliable and industry-proven solutions to our existing and potential customers in the various application fields.

We would like to open a new era with our completely controlled atmosphere systems for the most efficient and effective R&D activities and productions of our customers. Thank you!!

Thermal Evaporator / KESD-170

Characteristics

- Standard Chamber Size: 450(W) x 450(D) x 550(H) mm
- Sample Size: 170 x 170 mm
- Vacuum Capacity: 5.0 x 10^{-7} torr
- Chamber Working Pressure: Less than 5.0 x 10^{-6} torr
- Film Thickness Uniformity: <+/-5% within 156 x 156 mm Glass

Design

- Sliding door allows easy and safe sample loading
- Isolated rear door for easy cleaning maintenance

Configuration

- Auto Control by 10.5" Touch Panel
  (Auto Pumping, Auto Venting, Auto System Shut Down)
- Co-Deposition available
- Sample Rotation / Heating or Cooling(Optional)

Sputter / KSSD-100

Characteristics

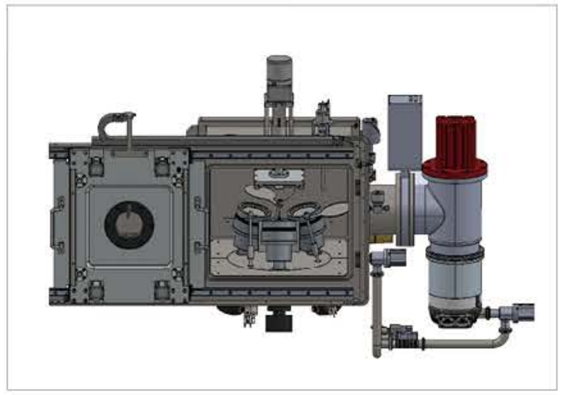
- Standard Chamber Size: 450(W) x 450(D) x 500(H) mm
- Sample Size: Max. 100 x 100 mm
- Vacuum Capacity: 5.0 x 10-7 torr
- Chamber Working Pressure: Less than 5.0 x 10-6 torr
- Cathode size: O.D 3" x 3 Sets
- Plasma Power Supply: RF & DC Power Supply
- Film Thickness Uniformity: <+/-5% within 100 x 100mm Glass

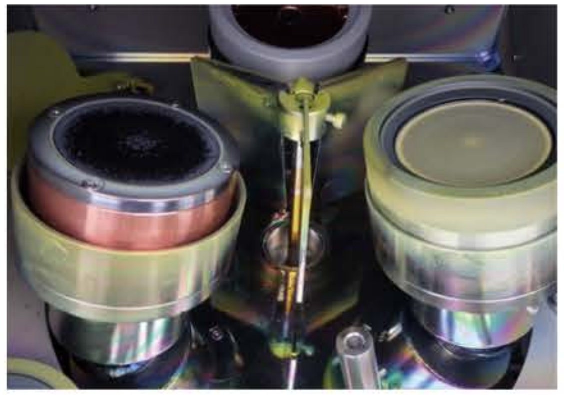
Design

- Sliding door allows easy and safe sample loading
- Isolated rear door for easy cleaning maintenance

Configuration

- Auto Control by 10.5" Touch Panel
  (Auto Pumping, Auto Venting, Auto System Shut Down)





E-Beam / KBSD-100

Characteristics

- Standard Chamber Size: 450(W) x 450(D) x 500(H) mm
- Sample Size: Max. 100 x 100 mm
- E-Beam Power Capacity: 6 KW
- E-Beam Gun: 7cc x 6 Pockets
- Vacuum Capacity: 5.0 x 10^{-7} torr
- Chamber Working Pressure: Less than 5.0 x 10^{-6} torr
- Film Thickness Uniformity: <+/-5% within 100 x 100 mm Glass

Design

- Sliding door allows easy and safe sample loading
- Isolated rear door for easy cleaning maintenance

Configuration

- Auto Control by 10.5" Touch Panel
  (Auto Pumping, Auto Venting, Auto System Shut Down)
- Co-Sputtering (Optional)
- Sample Heating, Up to 300°C / Cooling, Down to 5°C (Optional)

Solid-State Battery Deposition / Thermal Evaporation & Sputtering Process

Characteristics

Thermal Evaporator Chamber

- Metal source deposition, extra open port for future upgrading
- Sample heating Max. 300°C
- Thickness controller for Co-Deposition
- Dedicated Pumping System
- Bolt free sample loading / unloading

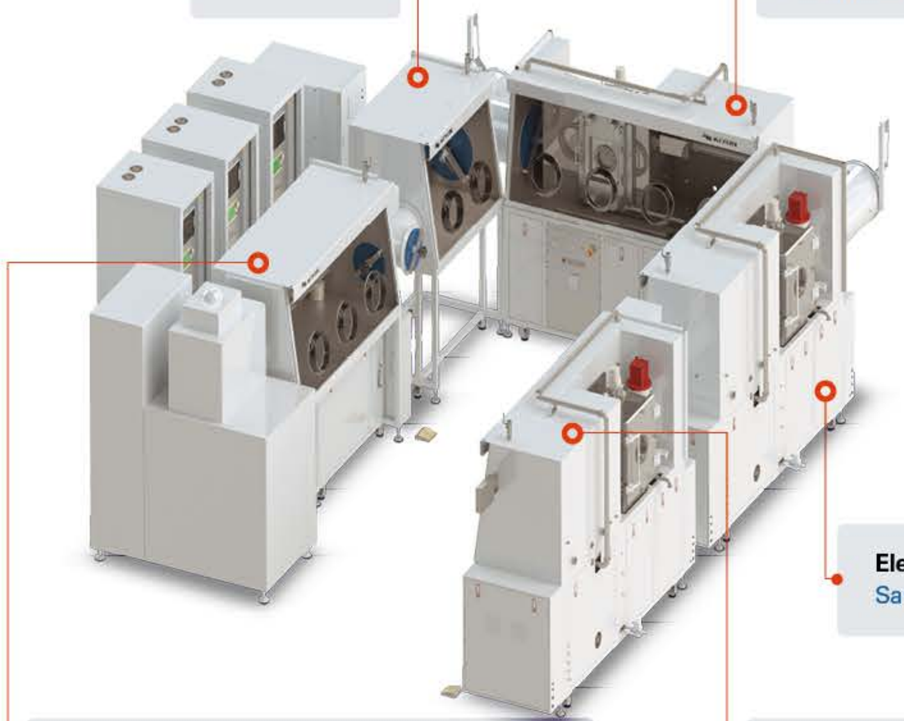
Sputter Chamber

- Sputter Gun 3 sets + 1 Metal Thermal Evaporator
- Sample heating Max. 500°C
- Co-Sputtering
- Dedicated Pumping System
- Special Chamber design to reduce cross-contamination
- Bolt free target loading / unloading

ASSB (All Solid State Battery) / ASSB Electrode Process

1. **Preparation**	Material Feeder → Weighing Balance → Sieve Shaker
2. **Mixing**	Ball Mill → Paste Mixer → Binder Disperser → Rheology → Grindometer
3. **Coating**	Mini Coater → Coating Plate, Micrometer Film, Adjustable Applicator, etc.
4. **Press**	Heating Roll Press → Newton Press → Pellet Mold → KS Solid Cell
5. **Punching**	Hand Operated Punching Toll for Li Metal, etc.
6. **Vacuum Oven**	-

ASSB (All Solid State Battery) / Deposition system to fabricate lithium-based thin-film solid-state batteries



Preparation Glovebox

Anode Chamber_(Thermal Evaporator)
Sample : Lithium

Electrolyte Chamber_(Sputter)
Sample : LiPON, LLZO, etc.

Passivation / Encapsulation Chamber_(ALD)
Sample : AL_2O_3, SiO_2, HfO_2, AIN, Si_3N_4, etc.

Cathode Chamber_(Sputter)
Sample : $LiCoO_2$, $LiMn_2O_4$, $LiFePO_4$, etc.

Separated Vacuum Chambers for Depositing

- Cathode material
- Electrolyte material
- Anode material
- Encapsulation layer

All the deposition chambers integrated with gloveboxes, and interconnected through the gloveboxes, allowing samples to be transferred without exposure to oxygen or humidity.

Perovskite Solar Cell / Metal Chamber + Perovskite Chamber

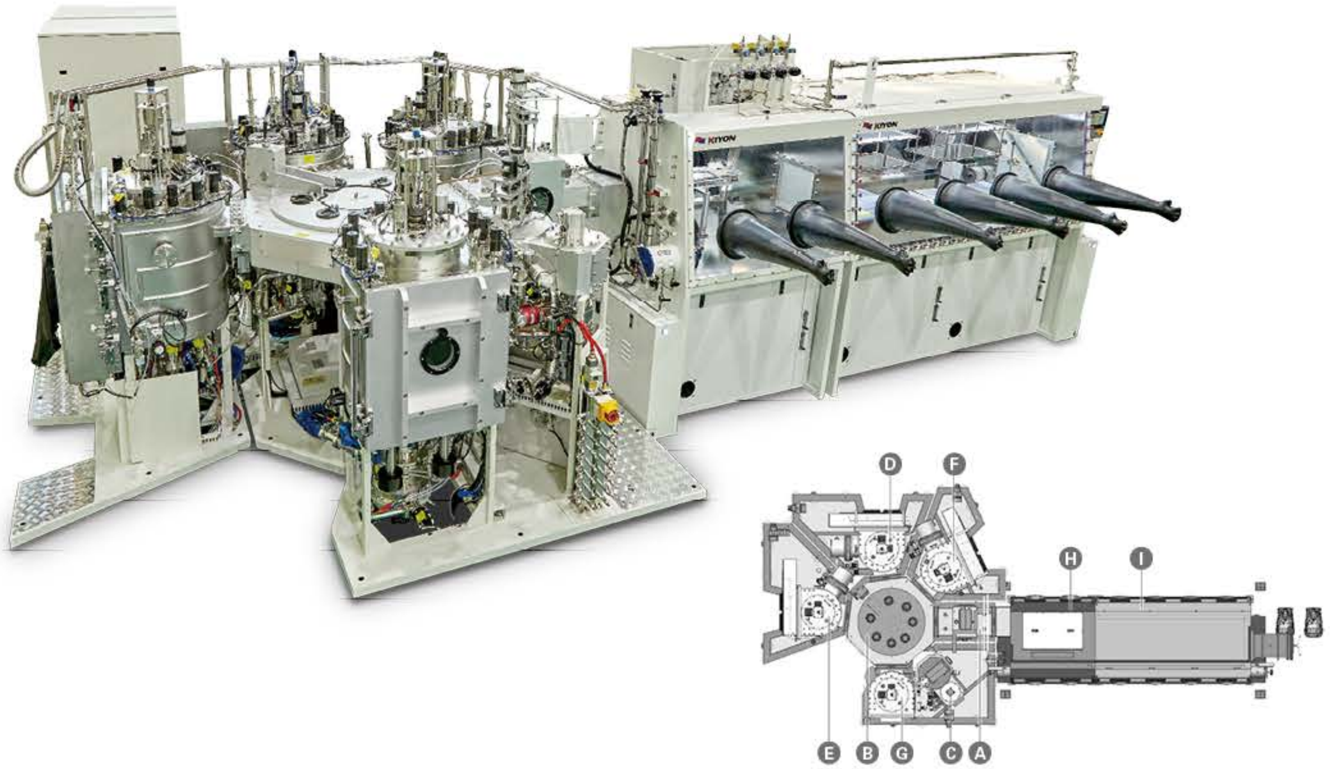
Characteristics

- Chamber Ultimate Pressure: Below than 5.0 x 10-7 torr within 12 hours
- Chamber Working Pressure: Below than 5.0 x 10-6 torr within 30 Minutes
- Film Thickness Uniformity: <+/-5% within 150mm * 150mm Glass
- 4 Metal + 4 Organic source deposition
- Sample Size: 150mm * 150mm Glass 1ea

Configuration

- Front Side Door - Sliding Door Type (Full Open Type)
- Chamber Purging before door opening; interlocking system
- Rear Side Door - Push / Pull Door Type (Full Open Type)
- Rear Side Door - Easy Maintenance & Chamber Cleaning in Glovebox Condition
- Thickness controller Co-Deposition

Perovskite Solar Cell / Perovskite / Si Tandem System Cluster System



A. Load lock	D. HTL layer dep. module	G. TCO layer dep. Module
B. Transfer module	E. Perovskite layer dep. module	H. 2-port glove box
C. Plasma treatment module	F. ETL layer dep. module	I. 4-port glove box

- **Sample Size:** Max. 200mm * 200mm
- **Source Materials:** Perovskite Materials
- **HTL/ETL Chamber:** E-beam
- **PVK :** Thermal Evaporator
- **TCO :** Sputter Technology
- **Wet Process:** Spin coater, Slot Die System inside Glovebox

Glovebox is designed to provide a hermetically sealed &
highly customized working space under a very tightly controlled atmosphere.

Glovebox

KK-011AS

Optional Accessories

- N2 Safety Interlock & N2 Hazard System
- Oxygen & Moisture sensor
- Solvent Trap
- Vacuum Oven
- Freezer
- Feedthroughs
- Others

Number of Users	Glove Ports	Oxygen & Moisture
1 Person	2 EA	Less than 1 PPM

Specifications

Basic Composition	Dimension	1,200 (L) x 900 (H) x 780 (D) mm
	Material	SUS304
	Windows	Poly-Carbonate PC or Safety Glass
	Glove	Butyl Rubber 1 Pair
	External Light	1 ea (LED)
	Service Port	KF (NW40): 2 ea
	Leak Test	0.05 vol%/hr in accordance with ISO 10648-2
Antechamber	Size	390 x 600 mm
	Vacuum Capacity	1 x 10^{-3} torr
	Tray	220 x 580 mm
Mini-Antechamber	Size	150 x 290 mm
Purifier System	Purifity Level	Less than 1 ppm O_2 and H_2O
	Catalyst	Oxygen Catalyst and Modecular Sieve
	PLC	Automatic PLC Control
	Control Panel	7"Full Color Touch Screen
	Purifier Regeneration	Auto Regeneration Programmed on PLC
	Blower Speed Control	Max. 63 CFM (1.78 m^3/min)
	Vacuum Pump	180 ℓ/min
Stand	Dimension	1,200 (L) × 936 (H) × 780 (D) mm

Glovebox

KK-011AS EXTRA

Optional Accessories

- N2 Safety Interlock & N2 Hazard System
- Oxygen & Moisture sensor
- Solvent Trap
- Vacuum Oven
- Freezer
- Feedthroughs
- Others

Number of Users	Glove Ports	Oxygen & Moisture
1.5 Person	3 EA	Less than 1 PPM

Specifications

Basic Composition	Dimension	1,800 (L) x 900 (H) x 780 (D) mm
	Material	SUS304
	Windows	Poly-Carbonate PC or Safety Glass
	Glove	Butyl Rubber 1.5 Pair
	External Light	1 ea (LED)
	Service Port	KF (NW40): 2 ea
	Leak Test	0.05 vol%/hr in accordance with ISO 10648-2
Antechamber	Size	390 x 600 mm
	Vacuum Capacity	1 x 10^{-3} torr
	Tray	220 x 580 mm
Mini-Antechamber	Size	150 x 290 mm
Purifier System	Purifity Level	Less than 1 ppm O_2 and H_2O
	Catalyst	Oxygen Catalyst and Modecular Sieve
	PLC	Automatic PLC Control
	Control Panel	7" Full Color Touch Screen
	Purifier Regeneration	Auto Regeneration Programmed on PLC
	Blower Speed Control	Max. 63 CFM (1.78 m^3/min)
	Vacuum Pump	180 ℓ/min
Stand	Dimension	1,800 (L) × 936 (H) × 780 (D) mm

Glovebox is designed to provide a hermetically sealed &
highly customized working space under a very tightly controlled atmosphere.

Glovebox

KK-021AS

Optional Accessories

- N2 Safety Interlock & N2 Hazard System
- Oxygen & Moisture sensor
- Solvent Trap
- Vacuum Oven
- Freezer
- Feedthroughs
- Others

Number of Users	Glove Ports	Oxygen & Moisture
2 Person	4 EA	Less than 1 PPM

Specifications

Basic Composition	Dimension	2,200 (L) x 900 (H) x 780 (D) mm
	Material	SUS304
	Windows	Poly-Carbonate PC or Safety Glass
	Glove	Butyl Rubber 2 Pair
	External Light	1 ea (LED)
	Service Port	KF (NW40): 2 ea
	Leak Test	0.05 vol%/hr in accordance with ISO 10648-2
Antechamber	Size	390 x 600 mm
	Vacuum Capacity	1 x 10^{-3} torr
	Tray	220 x 580 mm
Mini-Antechamber	Size	150 x 290 mm
Purifier System	Purifity Level	Less than 1 ppm O_2 and H_2O
	Catalyst	Oxygen Catalyst and Modecular Sieve
	PLC	Automatic PLC Control
	Control Panel	7" Full Color Touch Screen
	Purifier Regeneration	Auto Regeneration Programmed on PLC
	Blower Speed Control	Max. 63 CFM (1.78 m^3/min)
	Vacuum Pump	180 ℓ/min
Stand	Dimension	2,200 (L) × 936 (H) × 780 (D) mm

Glovebox

KK-011AD

Optional Accessories

- N2 Safety Interlock & N2 Hazard System
- Oxygen & Moisture sensor
- Solvent Trap
- Vacuum Oven
- Freezer
- Feedthroughs
- Others

Number of Users	Glove Ports	Oxygen & Moisture
2 Person	4 EA	Less than 1 PPM

Specifications

Basic Composition	Dimension	1,200 (L) x 900 (H) x 1200 (D) mm
	Material	SUS304
	Windows	Poly-Carbonate PC or Safety Glass
	Glove	Butyl Rubber 2 Pair
	External Light	2 ea (LED)
	Service Port	KF (NW40): 2 ea
	Leak Test	0.05 vol%/hr in accordance with ISO 10648-2
Antechamber	Size	390 x 600 mm
	Vacuum Capacity	1 x 10^{-3} torr
	Material	SUS 304
Mini-Antechamber	Size	150 x 290 mm
Purifier System	Purifity Level	Less than 1 ppm O_2 and H_2O
	Catalyst	Oxygen Catalyst and Modecular Sieve
	PLC	Automatic PLC Control
	Control Panel	7" Full Color Touch Screen
	Purifier Regeneration	Auto Regeneration Programmed on PLC
	Blower Speed Control	Max. 63 CFM (1.78 m^3/min)
	Vacuum Pump	180 ℓ/min
Stand	Dimension	1,200 (L) × 936 (H) × 1,200 (D) mm

Glovebox
KK-021AD

Optional Accessories

- N2 Safety Interlock & N2 Hazard System
- Oxygen & Moisture sensor
- Solvent Trap
- Vacuum Oven
- Freezer
- Feedthroughs
- Others

Number of Users	Glove Ports	Oxygen & Moisture
4 Person	8 EA	Less than 1 PPM

Specifications

Basic Composition	**Dimension**	2,200 (L) x 900 (H) x 1,200 (D) mm
	Material	SUS304
	Windows	Poly-Carbonate PC or Safety Glass
	Glove	Butyl Rubber 4 Pair
	External Light	4 ea (LED)
	Service Port	KF(NW40): 2 ea
	Leak Test	0.05 vol%/hr in accordance with ISO 10648-2
Antechamber	**Size**	390 x 600 mm
	Vacuum Capacity	1 x 10^{-3} torr
	Material	SUS 304
Mini-Antechamber	**Size**	150 x 290 mm
Purifier System	**Purifity Level**	Less than 1 ppm O_2 and H_2O
	Catalyst	Oxygen Catalyst and Modecular Sieve
	PLC	Automatic PLC Control
	Control Panel	7" Full Color Touch Screen
	Purifier Regeneration	Auto Regeneration Programmed on PLC
	Blower Speed Control	Max. 63 CFM (1.78 m^3/min)
	Vacuum Pump	180 ℓ/min
Stand	**Dimension**	2,200 (L) × 936(H) × 1,200 (D) mm

Glovebox
KK-PURI

Optional Accessories

- N2 Safety Interlock & N2 Hazard System
- Oxygen & Moisture sensor
- Solvent Trap
- Vacuum Oven
- Freezer
- Feedthroughs
- Others

Specifications

Purifier System	**Automatic Atmosphere Reduction Control**	Less than 1 ppm O_2 and H_2O
	Oxygen/Moisture Removal to less than 1 ppm, Control	PLC type (Heat, Vacuum, Purge, Refill: 13 hours)
	Circulation Blower Capacity	63 CFM (Variable Speed Control)
	Controller	Automatic Pressure Controller (7" Full Color Touch Panel)
	Pressure Range	-12.5 to 12.5 mbar, Limits easily adjustable
	Manual Foot Switch	Operable
	Circulation port	NW 40
	Vacuum Pump	180 ℓ/min.
	Catalyst	Oxygen Catalyst and Modecular Sieve
	Power	220 V
	Phase	1 Phase

Glovebox

Customization


Vibration-free Glovebox for SEM, AFM, Photolithography


Microscope


Quick Clamp


Laminar flow + Evaporator


Elevator chamber + hoist


Anti-Explosion


Stand-alone Purification System


Electric Furnace Integration


Freezer


[Battery] R2R coating, Vacuum Cleaner, Ar. Gun


UV Coating


Slot Die integration


Multi-Ports


Teflon Coating

Glovebox

Optional Item

Moisture Analyzer

Specifications

- Thin-film aluminum oxide type
- Microprocessor based, all digital technology for reliable operation
- Compact size
- Loop powered 4 to 20 mA output
- NIST traceable calibration
- Accuracy : +/- 2 °C
- Measurement range : 0 ~ 1,000 ppm
- Output : 4-20 mA DC Active
- Sensor :Thin-film capacitive polymer sensor

Oxygen Analyzer

Specifications

- Measurement system: Zirconia Oxygen concentration cell
- Measurement range: 0.1 ppm – 100%
- Display range: 0-1,000 ppm
- Compliant standard: CE marking and RoHS
- Microprocessor based, all digital technology for reliable operation
- Loop powered 4 to 20 mA output

N2 Analyzer

Specifications

Analyzer to selectively measure trace N2 in Ar/He gas, that influence materials oxidation such as Lithium, etc

Gas Hazard

Specifications

Gas hazard system is for system mechanical safety, monitors Glovebox inside pressure, and automatically shutting down working gas inlet.

Refrigerator

Specifications

- Stainless steel shelves be fitted on left side
- Temperature Range: Room temp. to -35°C
- Refrigerant: 404A
- Working Size: 220 (L) x 515 (H) x 170 (D) mm

Vacuum Oven

Specifications

- Inner diameter: 300 mm
- This device can be installed inside an existing Antechamber in accordance with customer's requirement.
- It can also be installed alone in the other direction of the glovebox.
- SIngle wall S/S cylinder, internally inconel mounted.
- Working Size : 180 (W) x 200 (H) x 600 (L) mm
- Operational Temperature: up to 200°C
- Using Temp. : 150°C

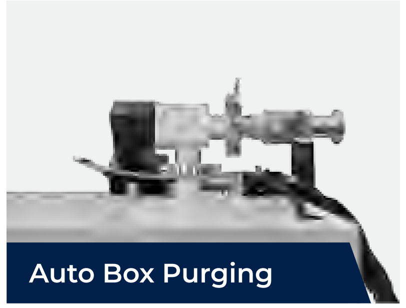
Water Jacket

Gas Interlock / Safety

Solvent Trap

Door Cooling

APC

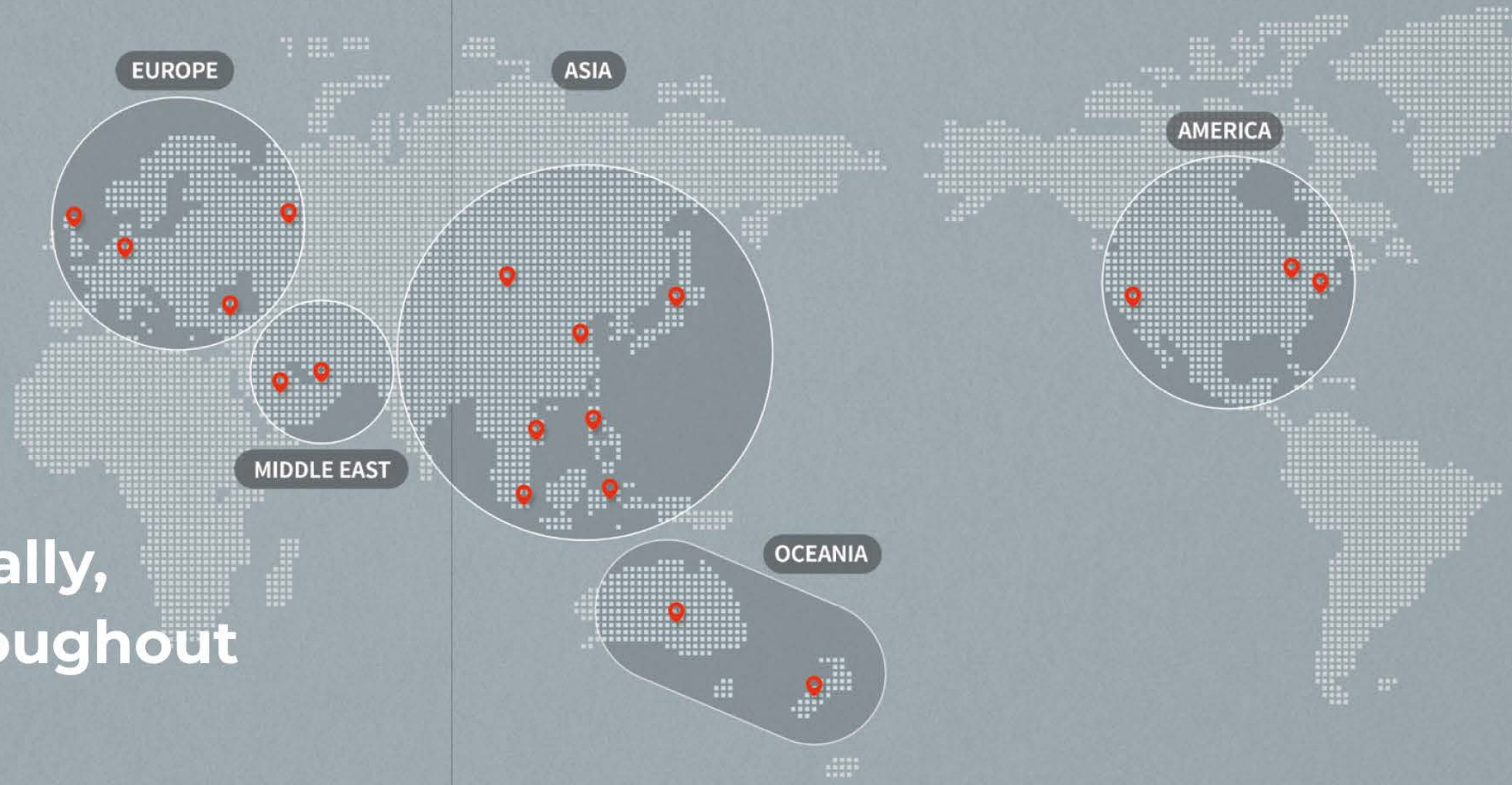


Auto Box Purging

NW40, PCB Feedthru

Korea Kiyon

Global Presence



KOREA KIYON, recognized globally, is spreading throughout the world!!

EUROPE	U.K RUSSIA	NETHERLAND TURKEY
MIDDLE EAST	UAE	SAUDI
OCEANIA	AUSTRALIA	NEW ZEALAND

ASIA	INDIA TAIWAN VIETNAM CHINA	JAPAN THAILAND SINGAPORE
America	CANADA	USA

KOREA KIYON

E-Mail sales@glovebox.co.kr **Web** www.glovebox.co.kr