

장비 세부 사양서

장비명 : Magnetron Sputtering System

* Performance Specifications

- Chamber Ultimate Pressure : Below than 5.0×10^{-7} Torr
- Film Thickness Uniformity : $<+/-5\%$ within 4" Wafer
- Sample to Sample Thickness Uniformity : $<+/-5\%$
- Sample Size : Piece to Max 4" Wafer
- System Semiauto Control & Manual Control by PLC Based Touch Control (10" Touch Panel)
Auto Pumping and Auto Venting , System Shutdown
- Warranty : 1 Year

1. Main Processing Vacuum Chamber 2 Set

1) Main Process Chamber

- ① Material : SUS 304L
- ② Dimension : I.D 420 x 350(H) (설계 시 일부 변경 가능)
- ③ Top Flange Full Open/Close Type (Pneumatic)
- ④ Top Flange with Sputter Gun Mount Port (Down Sputter Type) : 3 ea
: Sputter Gun Setting - 2 Sets
- ⑤ I.D 6" Flange for Substrate Rotator Mount Port : 1 ea
- ⑥ I.D 6" Flange for Turbo Molecular Pump Mount Port : 1 ea
- ⑦ I.D 2" * 8" Flange for Loadlock Gate Valve Mount Port : 1 ea
- ⑧ 다양한 기능 주입구(펌핑, 배기, 게이지 포트 등)
- ⑨ 기타 표면처리

2. Vacuum Pumping Unit 2 Set

- ① Turbo Molecular Pump
 - Model : TG450FBAB
 - Brand : Osaka Vacuum
 - Pumping Capacity : 450 L/sec(N₂ Base)
- ② Main Rotary Pump
 - Model : W2V60

- Brand : WSA (Made in Korea)
- Pumping Capacity : 600 L/min
- ③ Vacuum Pumping Accessories
 - I.D 6" Main Valve (Pneumatic) : 1 ea
 - NW25 Angle Valve (Pneumatic) : 3 ea
 - NW25 Flexible Metal Hose : 1 Set
 - Pumping Line & Solenoid Valve for Rotary Vent : 1 ea
 - Diaphragm Valve for Chamber Vent (Pneumatic) : 1 ea
 - Electrical Safety Valve for Rotary Venting : 1 ea
 - All Electric Safety Alarm & Interlock

3. Vacuum Gauge Control Unit 2 Set

- ① Full Range Vacuum Gauge (1 Set)
 - Model : PKR 251 (NW25)
 - Brand : PFEIFFER Vacuum (Made in Germany)
 - Reading Range : $7.6 \times 10^{+2} \sim 1.0 \times 10^{-10}$ Torr
- ② Low Vacuum Gauge (1 Sets)
 - Model : TPR 280 NW16
 - Brand : PFEIFFER Vacuum (Made in Germany)
 - Reading Range : $760 \sim 1.0 \times 10^{-4}$ Torr
- ③ Baratron Gauge Sensor (1 Set)
 - Model : CDG025D Series
 - Brand : INFICON (Made in Germany)
 - Full Range : 0.1 Torr
- ④ ATM Sensor (1 Set)
 - Model : PSE Series
 - Brand : SMC (Made in Japan)
 - Reading Range : $760 \sim 1.0 \times 10^{-1}$ Torr

4. Sample Rotation & Substrate Heating Ass'y Unit

1) Sample Rotation Ass'y - 2 Set

- ① Substrate Holder Size : Piece to Max 4" Wafer
- ② Rotary Motion Feed-through for Substrate Rotation : 1 ea
- ③ High Temperature Rotation Bearing & Bearing Housing
- ④ DC Motor & Motor Controller : 1 Set
(Include the R.P.M Sensor : 1~20 R.P.M)
- ⑤ Pneumatic Shutter for Sample Screen : 1 Set

- ⑥ 90 Degrees Rotation Air Cylinder & Solenoid Valve : 1 Set

2) Substrate Heating Ass'y – 1 Set

- ① Heating Element : SiC Coated Graphite (O.D 4" Element)
- ② Heat up Temp. : Max 700 °C
- ③ Programmable PID Temperature Control & SCR Unit : 1 Set
 - Heating Control Transformer
 - Voltage & Current Meter
- ④ K-Type Thermo Couples for Heater PID & Sample Real Temp. : 2 ea

5. Auto Pressure Control Unit 2 Set

- ① Throttle Valve : 1 Set
 - Mount : ISO 160
 - Brand : GENIUS (Made in Korea)
- ② Pressure Control Range : $1.0 * 10^{-1} \sim 1.0 * 10^{-3}$ Torr
- ③ Interface Cable Kit : 1 Set

6. Sputter Cathode & Shutter Unit

1) Sputter Cathode : 4 Sets

- ① Target Size : O.D 3" (Target은 고객 지급 품목임)
 - Thickness : 1/8" to 3/8"
- ② Material : Cu (OFHC)
- ③ Magnet : Nd-Fe-B
- ④ Cooling : Water Cooling Type (Water Groove Type)

2) Individual Shutter Unit : 4 Sets

- ① CF 1.33" Rotary Motion Feed-through : 1 ea
- ② Rotation Shaft & Shutter Plate : 1 Set
- ③ 90 Degrees Rotation Air Cylinder & Solenoid Valve : 1 Set

7. Sputter Power Supply Unit

1) DC Power Supply 2 Set

- ① DC Power Capacity : 1 KW
 - Co-Sputtering Available
- ② Brand : PungJeon PS(구. PS Plasma, Made in Korea)
- ③ All Digital Display Type
- ④ Power On/Off : PLC Remote Control Type
- ⑤ Power Cable Kit

2) RF Power Supply 2 Set

- ① Power Capacity : 600 W (Model : YSR-06AF)
 - Co-Sputtering Available
- ② Frequency : 13.56 MHz 1 Set, 12.56 MHz 1 Set,
- ③ Auto Matching Network : Air Cooled Type
- ④ Brand : YoungShin (Made in Korea)
- ⑤ All Digital Display Type
- ⑥ Power On/Off : PLC Remote Control Type
 - Soft Down Control for Target Protecting
- ⑦ RF Power Cable Kit

8. Process Gas Supply Unit 2 Set

- ① MFC(Mass Flow Controller) : 1 Set
- ② Processing Gas : Ar, O2, N2
- ③ Full Scale : Ar (50sccm), O2 (10 sccm), N2 (50 sccm)
- ④ MFC Brand : CELERITY (Made in USA)
- ⑤ Mount : 1/4" LOK Type
- ⑥ MFC Readout : 3 Channel (PLC Touch Panel Display)
- ⑦ Shut Off Valve : 1/4" Diaphragm Valve (3 ea)
- ⑧ Main Chamber Vent Valve : 1 ea
- ⑨ 1/4" VCR/Swagelok Fitting & Accessories

9. Utility & Electric Control Panel Unit 1 Set

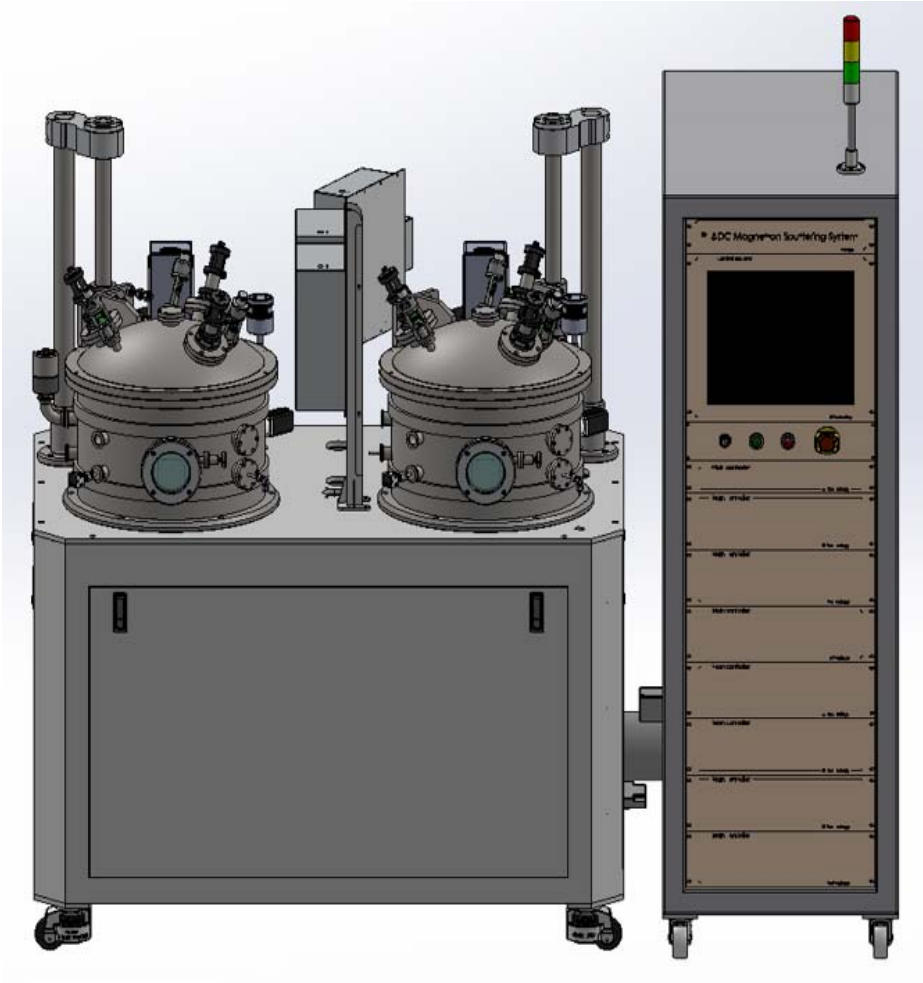
- ① Main Frame (Fe Frame Ivory Painting)
 - Size : 850(W) x 1000(D) x 800(H) (설계 시 일부 변경 가능)
- ② 19" Standard Control Rack Mountable
 - Size : 600(W) x 1100(D) x 1800(H)
 - Electric Distribution & Inter Connection Box With Safety Interlock
 - Emergency Button On The Front Panel
 - Safety Interlock for Electric, Pump, Valves, Utilities
 - System Semiauto Control & Manual Control by PLC Based Touch Control (10.5")
- ③ Compressed Air(CDA)
 - Include the Air Regulator
 - Air Pressure Switch for Safety Interlock
- ④ Water(PCW) Control Unit
 - Water Flow-meter for Safety Interlock

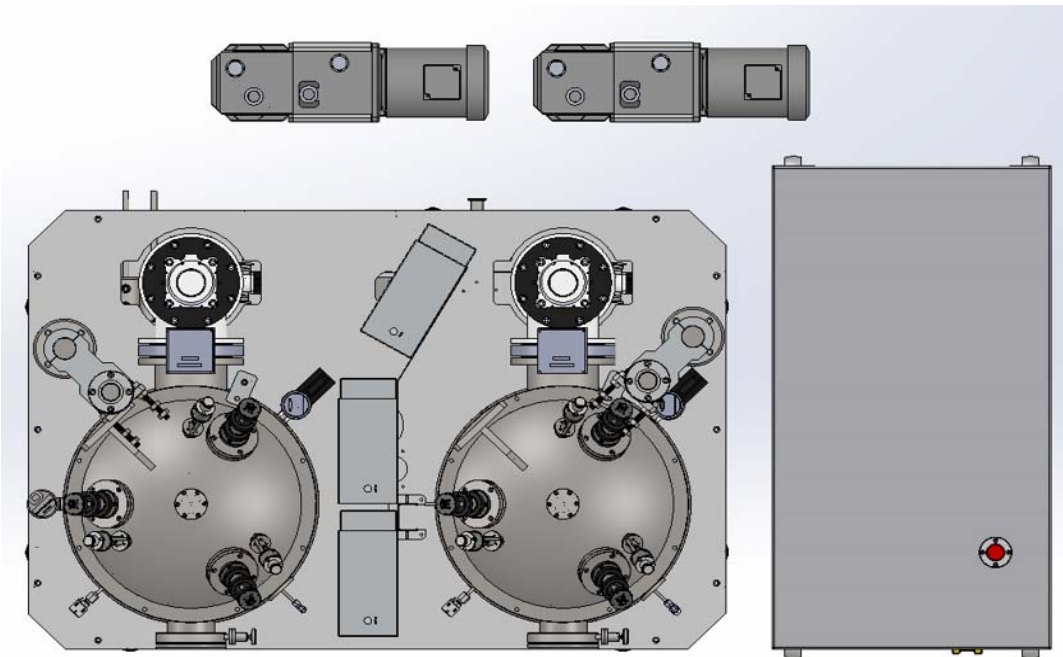
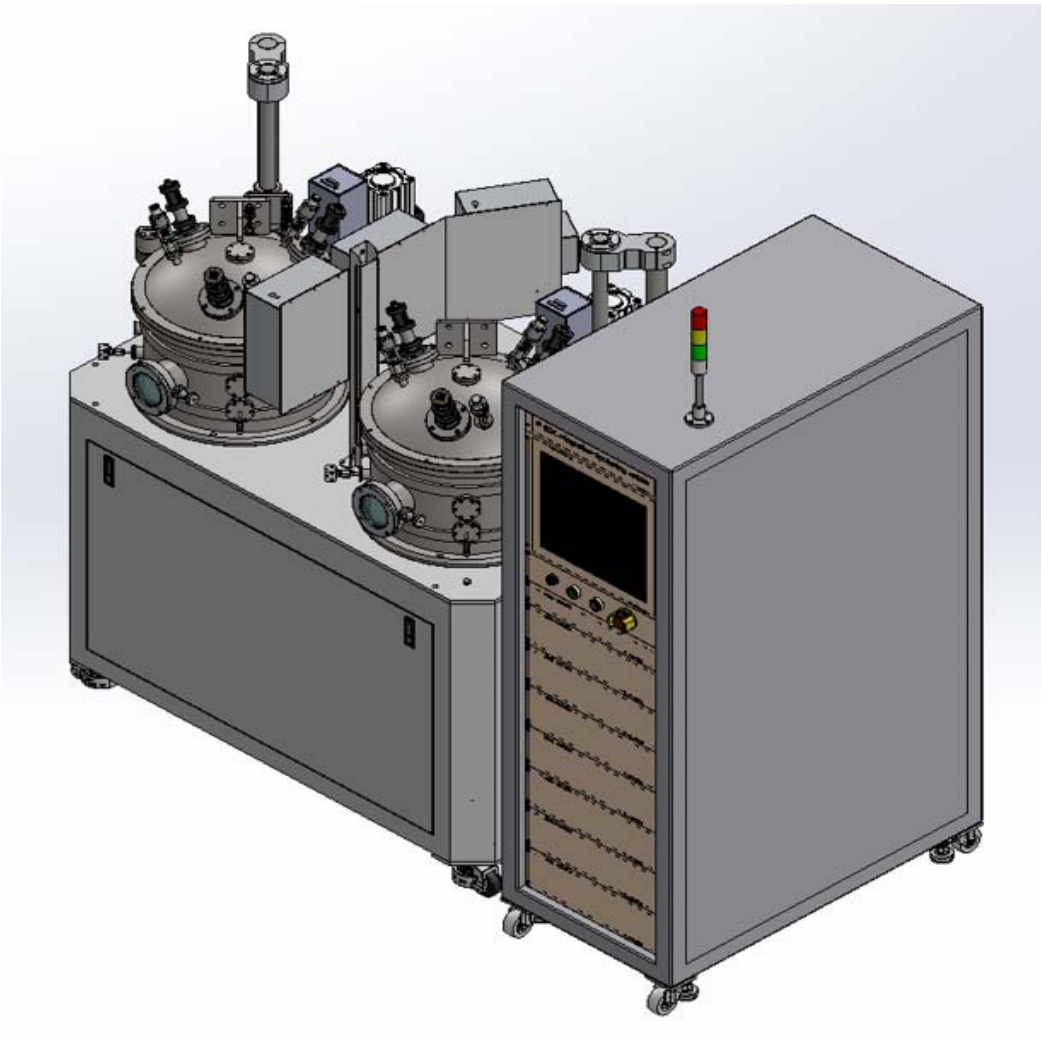
10. 고객사 준비사항

System Utility

- Main power : 220V or 380V, 3phase, 60Hz => 협의진행
- Compressed Air Pressure : 5 ~ 7 kg/cm² , 1/4" Swagelok Type
- Cooling Water Pressure : 3 ~ 6 kg/cm² , 1/2" Swagelok Type
- Dry Air for Vent Pressure : 2 ~ 3 kg/cm² , 1/4" Swagelok Type

11. System 이미지 도면 & Layout(예시)





Layout(예시)

