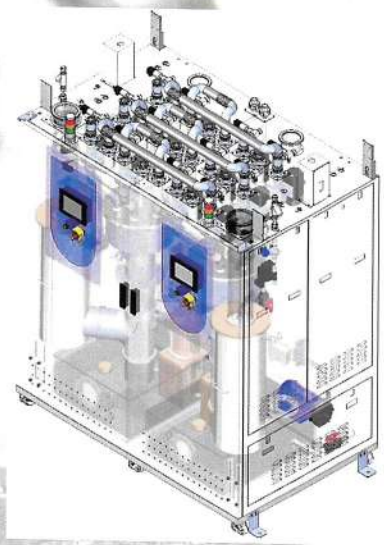
EcoBurn Twin



Burn & Wet Gas Scrubber

- **Two System in One Cabinet**
  - –Each other back–up in one cabinet
- **N2 Sleeve Head**
  - –Anti–clogging for powder, long PM term
- **Water Flowing Wall**
  - –Anti–clogging for powder, long PM term
  - –Excellent thermal insulation
- **Easy Maintenance**
  - –Reduce PM time
  - –Long PM period to 3 months

Specifications

Model	500	1000
Dimension (W*D*H)	1460*1000*1700 mm	1700*1050*2050 mm
Capacity	300 slm (inlet total gas flow) x 2 5000 slm (included scrubber utility) x 2	600 slm (inlet total gas flow) x 2 1000 slm (included scrubber utility) x 2
Head	N2 sleeve	N2 sleeve
Burner	Turbulence 3 burning nozzle INCONEL 600 material UV sensor	Turbulence 3 burning nozzle INCONEL 600 material UV sensor
Reactor	Water flowing wall Sight window	Water flowing wall Sight window
Application	PFC or Flammable, Toxic gas usage process	PFC or Flammable, Toxic gas usage process
Weight	700 kg	1100 kg

Utility

Model	500	1000
Power	1 KW x 2	1 KW x 2
LNG	13 slm x 2	20 slm x 2
O2	33 slm x 2	46 slm x 2
CDA	0 ~ 100 slm	0 ~ 100 slm
N2	20 ~ 100 slm	20 ~ 100 slm
City Water	0 ~ 200 L/min	0 ~ 200 L/min

DRE

	PFC Gas		
	NF3	SF6	CF4
DRE (%)	≥99	≥98	≥90

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EcoBurn

Burn & Wet Gas Scrubber

- **N2 Sleeve Head**
  – Anti–clogging for powder, long PM term
- **Turbulence 3 Burning Nozzle**
  – Improve gas mixing by turbulence
- **Water Flowing Wall**
  – Anti–clogging for powder, long PM term
  – Excellent thermal insulation
- **Easy Maintenance**
  – Reduce PM time

Specifications

Model	500	1000
Dimension (W*D*H)	740*1000*1700 mm	930*1050*1850 mm
Capacity	CVD (NF3): Inlet 300 slm Etch (CF4): Inlet 200 slm	CVD (NF3): Inlet 300 slm Etch (CF4): Inlet 200 slm
Head	N2 sleeve	N2 sleeve
Burner	Turbulence 3 burning nozzle INCONEL 600 material UV sensor	Turbulence 3 burning nozzle INCONEL 600 material UV sensor
Reactor	Water flowing wall Sight window	Water flowing wall Sight window
Application	PFC or Flammable, Toxic gas usage process	PFC or Flammable, Toxic gas usage process
Weight	500 kg	650 kg

Utility

Model	500	1000
Power	1 KW	1 KW
LNG	10 ~ 25 slm	20 ~ 55 slm
O2	20 ~ 50 slm	40 ~ 100 slm
CDA	20 ~ 50 slm	20 ~ 50 slm
N2	5 ~ 50 slm	5 ~ 50 slm
City Water	3 ~ 10 L/min	3 ~ 10 L/min

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Heat & Wet Gas Scrubber

- **2~3 Zone Heater Control**
  - – Backup function to heater fail
  - – Long life time heater
- **Anti-Clogging & Anti-Corrosion**
  - –Air curtain on boundary between heating chamber & cooling chamber
  - –INCONEL600 material in heating chamber
  - –Teflon coating in wet chamber
- **Easy Maintenance**
  - –Reduce PM time

Specification

Capacity	800 slm	1200 slm	2500 slm
Dimension (W*D*H)	720*850*1800 mm	940*1050*1800 mm	1600*1600*1850 mm
Heating Chamber	2~3 Zone Heater Control INCONEL 600 Heater Housing		
Cooling Chamber	Teflon Coating Swirling Overflow Water		
Wet Chamber	Circulation System Teflon Coating		
Application	Flammable or Toxic Gas usage process		
Weight	500 kg	650 kg	1200 kg

Utility

	Consumption		
Model	500 slm	1000 slm	2500 slm
Power	4~6 KW	6~12 KW	16~32 KW
CDA	140 slm	260 slm	520 slm
City Water	3 L/min	5 L/min	12 L/min

DRE

Gas	Flammable	Soluble	PFC
	SiH4 PH3 TEOS WF6 H2	NH3 HF HCl	NF3
DRE (%)	≥99	≥99	≥90

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EcoEpi

Heat & Cooling Gas Scrubber for MOCVD

- **No Water Consumption**
  - –PCW cooling system
- **No CDA Consumption**
  - –Room air combustion by blower intake
- **Epi–optimizedHeating Chamber (MO–CVD Process)**
  - –High efficiency for NH3, H2 → Low TN (TN ≤15ppm)
  - –3 Zone heater control → Backup function to heater fail
  - –Stable H2&NH3 combustion → No back pressure, No pressure oscillation
- **Easy Maintenance**
  - –Reduce PM time
  - –Long PM period to 6 months
- **Low NOx**
  - –Double chamber low NOx design

Specifications

Model	1600	2500	3200
Dimension (W*D*H)	800*900*1750 mm	940*1050*1800 mm	1450*1550*1850 mm
Capacity	H2: 200 slm NH3: 100 slm	H2: 400 slm NH3: 200 slm	H2: 550 slm NH3: 250 slm
Heating Chamber	2~3 one Heater Control Room Air Intake Blower		
Cooling Chamber	PCW no city water use Patent design		
Wet Chamber	Circulation System PCW Heat Exchange		
Application	MO–CVD Process (LED FAB)		
Weight	500 kg	650 kg	1300 kg

Utility

Consumption			
Model	1600	2500	3200
Power	1~4 KW	2~6 KW	3~8 KW
N2	0~20 slm	0~40 slm	0~50 slm
PCW	60 L/min	90 L/min	120 L/min
City Water	Emergency Supply		

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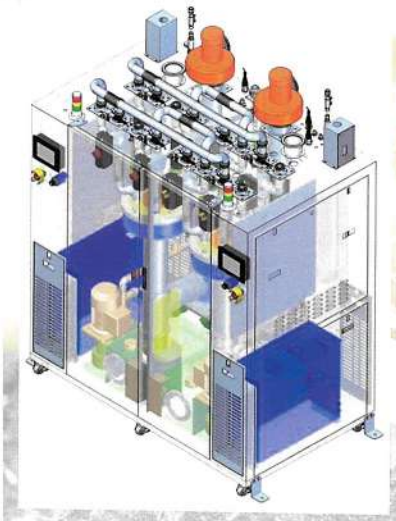
EcoPlasma Twin



Plasma & Wet Gas Scrubber

- **Two System in One Cabinet**
  - Each other back–up in one cabinet
- **Variable Plasma Power**
  - 6 KW ~ 20 KW
- **High DRE for PFCs & HFCs Gas**
  - Low power, high surface discharger: reinforce energy efficiency
  - Plasma swirl effect: improve gas mixing by turbulence
- **Easy Maintenance**
  - Reduce PM time
  - Long PM period to 3 months

Specifications

Dimension (W*D*H)	1700*1000*2000 mm
Capacity	CVD(NF3): Inlet 300 slm x 2, Etch(CF4): 200 slm x 2
Plasma Torch	–Creation method: DC non transferred arc discharge –Max. power: 20 KW –Torch type: rod–nozzle –Cathode, Anode: Tungsten, OFC –Swirling plasma: long life time
Application	Epi process using corrosive gas
Weight	1100 kg

Utility

	Consumption
Power	7~15 KW (AC 208V) x 2
CDA	40 slm x 2
N2	50 slm x 2
PCW	10 L/min x 2
City Water	6 L/min x 2

DRE

	PFC Gas		
	NF3	SF6	CF4
DRE (%)	≥99	≥98	≥90

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EcoPlasma Epi

Plasma & Wet Gas Scrubber for Epi

- **Specialized in Epi Process**
  - –Specialized in much flammable & much corrosive & much powder process
- **High DRE for PFCs & HFCs Gas**
  - –Low power, high surface discharger: reinforce energy efficiency
  - –Plasma swirl effect: improve gas mixing by turbulence
- **Easy Maintenance**
  - –Reduce PM time
  - –Long PM period to 3 months

Specifications

Dimension (W*D*H)	850*1000*2000 mm
Capacity	H2: max. 200 slm, DCS 5slm
Plasma Torch	–Creation method: DC non transferred arc discharge –Max. power: 20 KW –Torch type: rod–nozzle –Cathode, Anode: Tungsten, OFC –Swirling plasma: long life time
Application	Epi process using corrosive gas
Weight	600 kg

Utility

	Consumption
Power	7~15 KW (AC 208V)
CDA	500 slm
N2	50 slm
PCW	10 L/min
City Water	15 L/min

DRE

	Epi Process Gas		
	H2	DCS	HCl
DRE (%)	≥99	≥99	≥99

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EcoPlasma TD

Plasma & Wet Gas Scrubber for CVD

- **Variable Plasma Power**
  - –Lower power 5 KW~10 KW for NF3
  - –7 KW~20 KW for N2O
- **High DRE for PFCs、HFCs Gas**
  - –Low power, high surface discharger: reinforce energy efficiency
  - –Plasma swirl effect: improve gas mixing by turbulence
- **Optimized to N2O Process**
  - –High efficiency for N2O gas with NOx control
- **Easy Maintenance**
  - –Reduce PM time
- **Water Flowing Wall**
  - –Anti–cloggingfor powder, long PM term

Specifications

Dimension (W*D*H)	850*1000*2000 mm
Capacity	CVD: 300 slm~350 slm
Plasma Torch	–Creation method: DC non transferred arc discharge –Max. power: 20 KW –Torch type: rod–nozzle –Cathode, Anode: Tungsten, OFC –Swirling plasma: long Life time
Application	PFC or Flammable, Toxic Gas usage process, N2O
Weight	600 kg

Utility

	Consumption
Power	5~20 KW (AC 208V)
CH4	4 slm
CDA	120 slm
N2	50 slm
PCW	15 L/min
City Water	3 L/min

DRE

	PFC Gas		
	NF3	N2O	Others
DRE (%)	⩾ 99	⩾ 90	⩾ 99

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EcoEpi-W

Heat & Wet & Cooling Gas Scrubber for MOCVD

- **Minimum Water Consumption**
  – PCW cooling system
- **No CDA Consumption**
  – Room air combustion by blower intake
- **Epi-Optimized Heating Chamber (MO–CVDProcess)**
  – High efficiency for NH3, H2 → Low TN(TN ≤15ppm)
  – 3 zone heater control → Backup function to heater fail
  – Stable H2&NH3 combustion → No back pressure, No pressure oscillation
- **Cleaning Gas (Acid Gas) can treated**
  – NH3 & H2 & Cl2(HCl) can treated in one system
- **Easy Maintenance**
  – Reduce PM time
  – Long PM period to 6 months
- **Low NOx**
  – Double chamber low NOx design

Specifications

Model	EcoEpi 2500W	EcoEpi 3200W
Dimension (W*D*H)	1150*1150*2250 mm	1250*1300*2400 mm
Capacity	H2: 400 slm NH3: 200 slm	H2: 550 slm NH3: 250 slm
Heating Chamber	2~3 Zone Heater Control Room Air Intake Blower	
Cooling Chamber	PCW no city water use Patent design	
Wet Chamber	Circulation System PCW Heat Exchange	
Application	MO–CVD Process (LED FAB)	
Weight	800 kg	1000 kg

Utility

	Consumption	
Model	EcoEpi 2500W	EcoEpi 3200W
Power	2~6 KW	3~8 KW
N2	0~40 slm	0~50 slm
PCW	90 L/min	120 L/min
City Water	0~2 L/min	

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EcoWet 500

Wet Gas Scrubber

- **Chambers+1 Venturi Type**
  - –High gas removal efficiency (up to 99.9999% based on HCL)
- **Chemical Neutralization Facility for Chemical Reactive Toxic Gases**
  - –Removal of wide range of gases
- **Powder Control Unit (N2 & Water Spin Unit)**
  - –No SiO2 powder in gas inlet (no plugging) & no back pressure
- **High Pressure Generator**
  - –Automatic control of exhaust gas pressure without main fan blower
  - –> maintain constant pressure

Specifications

Capacity	500 slm
Dimension (W*D*H)	720*710*1650 mm
Weight	350 kg
Interlock	Inlet Pressure, Water Flow, Water Level
Application	HCl, HF, Cl2, BCl3, SiH2Cl2, HBr, POCl3, NH3
DRE	Over 99%

EcoWet 16/40/80

Wet Gas Scrubber

- **Long PM Term**
  - –Inlet cleaning system (anti–powder clogging)
- **Short Piping Between Pump & Scrubber**
  - –Lowposition inlet
- **Easy Maintenance**
  - –Reduce PM time

Specifications

Model	EcoWet 16
Dimension (W*D*H)	1300*1300*2368 mm
Inlet Capacity	16 CMM (5–80CMM)
Application	Acid gas or toxic gas usage process Etch (Cl2, HBr, BC13, ClF3, HF, HCl)

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EcoHeat 500

Heat & Wet Gas Scrubber

- **Dual Control Heaters**
  - Can be operated temporarily during one zone heater fail
- **Anti-clogging**
  - Air curtain structure between reactor & wet zone
- **Easy Maintenance**
  - Easy chamber opening
  - Reduce PM time

Specifications

Dimension (W*D*H)	720*850*1800 mm
Capacity	800 slm
Heater & Heater Housing	– Heater: rod type heater dual control – Max. power: 10 kw – Heater housing: INCONEL 600
Application	Flammable gases using process
Weight	450 kg

EcoEpi 500

Heat & Cooling Gas Scrubber for MOCVD

- **No Water and CDA Consumption**
  - PCW cooling system
  - Room air combustion by blower intake
- **Epi-optimizedHeating Chamber (MO-CVD Process)**
  - High efficiency for NH3, H2 → Low TN (TN ≤15ppm)
  - 3 zone heater control → Backup function to heater fails
  - Stable H2&NH3 combustion → No back pressure, No pressure oscillation
- **Low NOx**
  - Double chamber low NOx design

Specifications

Dimension (W*D*H)	650*650*1720 mm
Power	10 KW
CDA	4 ~ 7 kg/cm^2
N2	4 ~ 7 kg/cm^2
PCW	3 ~ 5 kg/cm^2

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Dry Gas Scrubber

- **Convenient Maintenance**
  - –Discharged the waste gas & particle by canister exchange
  - –Backup canister is included
- **Easy Maintenance**
  - –Quick exchangeable canister
- **Long Life Time Adsorbent**
  - –Excellent adsorption capacity
- **Advantages on Removal of Particle Type Substances**
  - –Pre–filterinstall minimize pressure drop of adsorbent

Specifications

Capacity	100 slm	200 slm
Dimension (W*D*H)	640*840*1600	750*1050*1750
Adsorbent Volume	100 ℓ	200 ℓ
Flow	200 slm	400 slm
Weight	350 kg	450 kg

Absorbent	Target Gas	Absorbent	Target Gas	Absorbent	Target Gas	Absorbent	Target Gas
GZ1	Cl2	GZ3	SiCl2H2	GZ C–1	BCl3	GZ5	AsH3
	HBr		SiH4		Cl2		PH3
	HCl	GZ3–2	SiCl2H2		HBr	GZ6	BF3
	HF		SiH4		HCl	GZ7	ClF3
			B2H6		HF	GZ8	TEOS
					SiCl4	GZ9	CO
					SiF4		

Utility

Utility	Specification	Maximum Requirement	Average Consumption	Connection	etc
Power	AC 220V, 50/60Hz, 1Phase	1 KW	0.1 KW	2.5 ㎟–3Wires	
N2	4 ~ 7 kg/cm²	100 slm	0 slm	1/4" Tube	Purge
Gas Exhaust	50 mm H2O ~ 100 mm H2O	1 m³/min	0.2 m³/min	NW63 Flange	
Cabinet Exhaust	20 mm H2O ~ 50 mm H2O	1 m³/min	1 m³/min	NW100 Flange	

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EcoCat

Wet & Catalyst & Wet Gas Scrubber

- **NOx Free**
  - –NOx does not generated
- **PFC Gas Treatment**
  - –PFC gas treatment in etch process
- **Low Power Consumption**
  - –Low reaction temperature makes low power consumption

Specifications

Dimension (W*D*H)	530*500*1500 mm
Capacity	100 slm
Pre–wet Chamber	Gas Showering
Heating Chamber	–Electrical heater control –Operating temperature: max. 850℃
Waste Gas Inlet	–Wastegas inflow –Inlet pressure monitoring
Application	PFC gas usage process
Weight	190 kg

Utility

	Consumption
Power	3 KW (AC 220V)
CDA	50 slm
City Water	2 L/min

DRE

	Water Soluble	PFC Gas	
	Cl2, BCl3, HBr, HCl, HF	CF4	SF6, C2F6, C3F8, NF3
DRE (%)	≥99	≥90	≥95

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EcoPlasma E

Plasma & Wet Gas Scrubber for Etch

- **Variable Plasma Power**
  - 7 KW~20 KW
- **High DRE for PFCs & HFCs Gas**
  - Low power, high surface discharger: reinforce energy efficiency
  - Plasma swirl effect: improve gas mixing by turbulence
  - Heat conductive lining: waste gas preheating & high energy efficiency
- **Easy Maintenance**
  - Reduce PM time
  - Long PM period to 3 months

Specifications

Dimension(W*D*H)	800*1000*2000 mm
Capacity	Etch (CF4): Inlet 200 slm
Plasma Torch	– Creation method: DC non–transferredARC discharge – Max. power: 20 KW – Torch type: Rod–nozzle – Cathode, Anode: Tungsten, OFC – Swirling plasma: Long life time
Application	PFC or Flammable, Toxic Gas Usage Process
Weight	600 kg

Utility

	Consumption
Power	7~15 KW (AC 208V)
CDA	20 slm
N2	50 slm
PCW	15 L/min
City Water	3 L/min

DRE

	PFC Gas		
	NF3	SF6	CF4
DRE (%)	⩾ 99	⩾ 98	⩾ 90

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EcoPlasma T

Plasma & Wet Gas Scrubber for CVD

- **Variable Plasma Power**
  - Lower power 5 KW ~ 10 KW for NF3
  - 7KW ~ 20KW for N2O
- **High DRE for PFCs、HFCs Gas & CVD Gas and N2O**
  - Low power, high surface discharger: reinforce energy efficiency
  - Plasma swirl effect: improve gas mixing by turbulence
  - High efficiency for N2O gas
- **Easy Maintenance**
  - Reduce PM time
- **Water Flowing Wall**
  - Anti-cloggingfor powder, long PM term
- **De-NOx**
  - Special design for NOx reduction

Specifications

Model	500	1000
Dimension(W*D*H)	900*1000*2000 mm	950*1020*2000 mm
Capacity	CVD: 300 slm~350 slm	CVD: 600 slm
Plasma Torch	Max. power: 20 KW	Max. power: 35 KW
	– Creation method: DC non-Transferred ARC discharge – Torch type: rod-nozzle – Cathode, Anode: Tungsten, OFC – Swirling plasma: long life time	
Application	PFC or Flammable, Toxic Gas Usage Process, N2O	
Weight	600 kg	700 kg

Utility

	Consumption	
Power	5~20 KW (AC 208V)	20~40 KW (AC 220V)
CDA	100 slm	100 slm
N2	50 slm	80 slm
PCW	15 L/min	20 L/min
City Water	7 L/min	14 L/min

DRE

	PFC Gas		
	NF3	N2O	Others
DRE (%)	≥99	≥90	≥99

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