

UPAS Wet: Abatement System

Universal Plasma Abatement System is a **fuel free** solution for point-of-use treatment of effluents containing **high GWP gases**

Patented microwave plasma technology with a PFC destruction rate up to **99.5%**

The UPAS operates at **atmospheric pressure** in high nitrogen flows since it is installed downstream the primary pumps



→ Applications

Typical applications: PFC destruction to achieve environmental friendly levels. Varied examples of possible manufacturing processes realizing high amount of PFC's:

- Silicon Oxide and deep oxide etch : C_4F_8 , CF_4 , CHF_3 , CH_3F , CH_2F_2 , C_5F_8
- Silicon and polysilicon etch: SF_6 , CF_4 , CH_2F_2 , CHF_3 , C_2F_6 , HBr
- Tungsten etch: WF_6 , SF_6

→ Operation

The effluent stream to be treated is directed to the plasma discharge tube where the PFC are converted in radicals. The addition of controlled amount of air and DIW supplies oxygen and hydrogen atoms allowing the PFC conversion to simple molecules like HF, COF_2 , F_2 , CO_2 . After cooling these highly reactive molecules are transferred to the customer Wet Scrubber.



- Very low Total Cost of Ownership compared to other abatement solutions
- Patented microwave surface wave atmospheric plasma source with low reflection, negligible Joule heating losses and undetectable residual microwave radiation to the outside
- A dielectric discharge tube with excellent thermal conductivity for calories extraction and excellent chemical compatibility to F_2 , HF and F radicals

→ Recognition





Product description

Features

- Energy saving:
 - Standby mode
 - Plasma power self adaptation to the flow
- Up to 4 etch process chambers connection
- 5 Gal DI Water tank
- DI Water injection
- PLC based technology with colour touch screen
- Ethernet communication port for SCADA monitoring
- Customized signal interface with tool manufacturers
- Gas cooling before releasing for treatment by external scrubber

Options

- Extension module with by pass valves to adapt power consumption
- HF & CO gas detectors
- Communication card: Profibus, Ethernet or RS485

Reliability

- Uptime > 99.5%
- MTTR < 2 h
- MTBF > 4000 h
- MTBPM > 4200 h

Safety features

- Easy to reach "Emergency Machine Off" button
- Standard exhaust flow alarm
- Leak detection
- Precise alarm messages
- Operator intervention reduced to a minimum
- Multi-level password protection to restrict access to critical functions
- Optional gas detection alarms



Technical specifications

Utilities requirements

Cooling water	4-6 bars; 13-18 °C; Flow rate minimum 6 slm reusable
DI Water	>3 barg min - 2 l/day for wet injection
Argon	5-7 bars, peak flow < 40 slm; average flow 0,2 slm
CDA	5-7 bars; peak flow <15 slm; average flow 5 slm
Nitrogen	5-7 bars; peak flow <50 slm; average flow 16 slm
Cabinet exhaust	200 Nm ³ /h; Inlet total depression -25 Pa
Power	<ul style="list-style-type: none"> • Three-phase: 14 A, 11100 W (max), 50/60 Hz; 380 V-415 V (208 V optional) • Single phase: 7 A; 1600 W (max); 50/60 Hz; 230 V (110 V optional)

Dimensions

	Height	Width	Depth
Overall dimensions	1 902mm	625mm	840mm
Total dimensions	2 243mm	625mm	840mm

Process data

- Max Total flow rate: 120slm
- Min Total flow rate: 40slm (option 20slm)
- Abatement SF6: > 95% up to 100 slm
- Abatement CF4: > 95% up to 50 slm / > 70% up to 80 slm
- Abatement (other PFC) > 99%

Certifications

- CE mark
- SEMI standards compliant
- Third party certification upon request



Contacts

Air Liquide

Electronics Systems

8, rue Méridiens – Sud Galaxie

38130 Echirolles – France

Phone: +33 (0)4 38 49 88 00

E-mail: frales-contact@airliquide.com

ales.airliquide.com