

UPAS Dry: 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

No waste water generated



→ 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 supplies oxygen atoms allowing the PFC conversion to simple molecules like COF_2 , F_2 , CO_2 . After cooling these highly reactive molecules are driven towards a dry scrubber (provided by the customer) through a cold trap to avoid clogging.



- 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
- No waste water generated, no water consumption

→ Recognition



Winner of the «Eurosemi IC Industry Awards» in 2005



Product description

Features

- Energy saving:
 - Standby mode
 - Plasma power self adaptation to the flow
- Up to 4 etch process chambers connection
- PLC based technology with colour touch screen
- Ethernet communication port for SCADA monitoring
- Cold trap (to be regularly cleaned)
- Customized signal interface with tool manufacturers

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 < 2h
- MTBF > 4000h
- MTBPM > 1200h

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
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
Dry Scrubber Treatment	Total flow 120 slm; P = 0,1 bar max F ₂ , HF, COF ₂ < 1% V/V
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



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