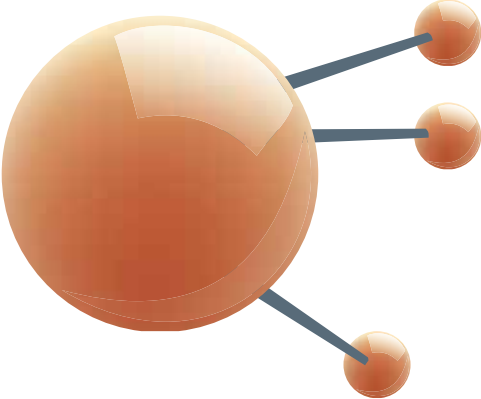


Candi™ Bubbler



The Candi™ Bubbler system is designed to control pressure, temperature, precursor liquid level and carrier gas flow ensuring consistent gas flow and precursor concentration to the downstream reactor process.

Applications

Typical applications: CVD, ALD and EPI

Used in:

- Semiconductor,
- Optical fiber
- Coating industries
- Compound semiconductor
- Solar industry

Typical media

For epitaxy:

- Tri- or Tetra-chlorosilane, (SiCl_3 , SiCl_4)
- Germanium chloride, (GeCl_4)

For ALD: Trimethylaluminum (TMA)



For MOCVD: Trimethylgallium (TMGa)...

Operation

An internal day tank is filled with the liquid precursor. Temperature, pressure and liquid level are accurately controlled.

On customer request, the carrier gas is injected at the liquid downhole and is being saturated while bubbling through the liquid.

Concentration or precursor quantity is adjusted by selecting the targeted temperature and pressure.

- 
-  ✓ Variable flowrate with stable concentration
 - ✓ Individual bubbler or centralised distribution

✓ Up to 30 lpm of 12% TMGa in carrier gas

✓ Candi™ Bubbler can either include shuttle canister up to 20 liters inside the cabinet or be fed with an external liquid source

Product description

Features

- Carrier gas filtration and pressure regulation
- Purging capabilities for maintenance purpose
- Accurate delivery pressure control ($\pm 20\text{mbar}$)
- Accurate temperature control ($\pm 0.15^\circ\text{C}$)
- Bubbler precursor level control
- Liquid refill management
- Specific day tank refill piping design
- PLC based technology with 10" color touch screen Human Machine Interface (HMI)
- Ethernet communication port for SCADA monitoring
- Customized signal interface

Options

- On board shuttle drum (adaptable to any SEMI-compliant shuttle canister up to 20L)
- On line concentration monitoring
- On-board vacuum pump
- Carrier gas purifier
- Multiple point of use:
 - 4 on-board outlet processes
 - Valves Manifold Box (VMB)
- External temperature management device
- Different communication protocols available
- Start-up and operator training

Safety features

- Fully automatic distribution and canister change-out sequences
- Easy to reach "Emergency Machine Off" button
- Standard exhaust flow alarm
- Fire and gas detection alarms if needed
- Leak detection
- Open door detection
- Individual pressure switch and relief valve on pressurized gas lines
- Timers for pressurization / depressurization of each tank, for day tank refill
- Explicit alarm messages
- Reduced operator intervention
- Critical functions protected by multi-level password

Reliability

- MTBF*: > 10,000 hours
 - Uptime: 99.99%
- *Mean Time Between Failure

Technical specifications

Utility requirements

Carrier gas	Depends on targeted flowrate and concentration
Purge gas	Up to 7barg, UHP, min-max: 3-10 Nm ³ /h
Pneumatics	7barg, min-max: 2-5Nm ³ /h
Exhaust	200Nm ³ /h
Vacuum	< 2 Torr
Power	UPS, 110/240VAC, 50/60Hz, 1kVA

Certifications

CE Mark



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

www.airliquide.com

The world leader in gases, technologies and services for Industry and Health, Air Liquide is present in 80 countries with approximately 65,000 employees and serves more than 3.5 million customers and patients.

