

GEMStar-A™ Benchtop Vacuum Anneal System



Molecular Innovation™

The GEMSTAR-A benchtop Anneal system is designed for uniform, high temperature annealing of various size substrates in a vacuum controlled, user selectable, gas environment.

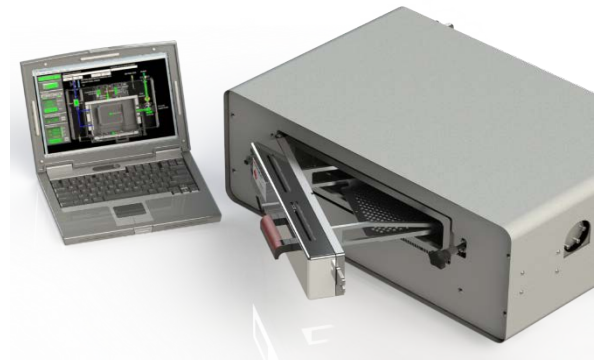
A small, rugged, lightweight machine for heavyweight R&D efforts, GEMStar makes optimal use of lab space and research budgets.

The GEMStar-A Anneal system allows annealing up to 500°C temperature in a gas/vacuum environment with up to three gasses. The Annealing system is a significant addition to the GEMStar line of high quality, high value, tools with features that rival much larger and more expensive systems.

The uniform annealing of many substrates and films can determine how well a process or device works. The GEMStar-A Anneal furnace is designed to provide the user with a flexible annealing capability in a gas controlled environment.

Some key features of the system include:

- ◆ The chamber accommodates up to 200mm diameter wafers or 200mm square plates or 3-dimensional objects up to 50mm in height.
- ◆ Customizable end effector allows simple and repeatable loading/unloading of substrates.
- ◆ The chamber is controlled up to 500°C with a heated door controlled up to 250 °C. Substrate thermal control to $\pm 1.0\%$.
- ◆ Distributed gas delivery insures uniform gas distribution over the entire substrate
- ◆ System pressure monitoring
- ◆ All metal seal gas handling
- ◆ MFC controlled user selectable gas input up to 2000 SCCM
- ◆ CF 2.75 flange reactor interface for easy attachment of in-situ metrology options such as QCM.



Job Control

The Arradiance GEMStar-A™ Control System allows complete user control over key operating parameters such as temperature, gas flow rate and vacuum isolation.

User created/saved jobs allows substrate to substrate and batch to batch consistency without sacrificing flexibility

- ◆ Diagnostic system and job logging automatically creates traceable data of all system parameters during operation.
- ◆ Laptop Dell Mobile Precision M2800 CTO, Windows 7 Professional, 64-bit
- ◆ Internal GEMStar-A USB control module

Easy Maintenance

Simplified tool maintenance results from the use of a modular system design with benchtop access to all critical components.

- ◆ The modular system design allows easy swapping out of parts for service and cleaning, with minimal down time.
- ◆ Convenient and ergonomic benchtop access from the top and back to critical parts, precursor bottles, vacuum, power and gas connections.

GEMStar-A™ Benchtop Vacuum Anneal System

GEMStar-A Specifications	
Reactor Dimensions	3.375" H x 15.375" W x 10" D All Steel Construction
System Dimensions	13" H x 30" W x 27" D- fits on standard desktop or lab bench
Reactor Thermal Control	1800 W reactor zone up to 500 °C ± 1 °C 300 W door zone up to 250 °C ± 1 °C 5 °C / minute heating rate Air Cooled
Door Mounted Tray End Effector	Kalrez door O-ring Custom sample mount end effectors available on request
Input Gas	Up to three different gasses (manually controlled) Up to 2000 SCCM flow rate (GAS TYPE User Selectable)
Control System	GEMStar-A™ Control Software Laptop Dell Mobile Precision M2800 CTO, Windows 7 Professional, 64-bit GEMStar-A USB control module
Spare Port	CF 2.75 Metrology/Spare Reactor Port
Safety	Thermal Touch Safe Exterior 10 Second Watchdog protected (all off for computer connection/ping loss) All valves/MFC are normally closed
Facilities Requirements	
Input Gas	Up to 3 10-20 psig VCR-4 Type Input Gas Lines
CDA (Clean Dry Air)	80 psig ± 5 psi regulated
AC Power	Dedicated 110-120 50/60 Hertz VAC 20 Amps
System Weight	150 lbs.
Vacuum Pump (not included)	KF 25 Vacuum Connection Recommend Dry >12 cfm pump capacity