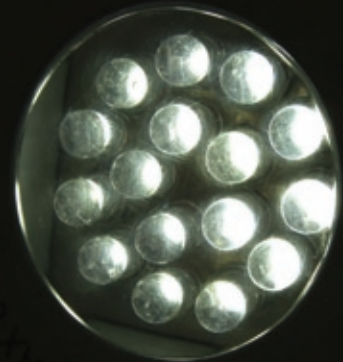


VAPORSTATION™ Delivery System



**A CENTRAL DELIVERY SYSTEM
FOR MOCVD PRECURSORS**



Electronic Materials



Dow Electronic Materials, a global supplier of materials and technologies to the electronics industry, brings innovative leadership to the semiconductor, interconnect, finishing, display, photovoltaic, LED and optics markets. From advanced technology centers worldwide, teams of talented Dow research scientists and application experts work closely with customers, providing solutions, products and technical service necessary for next-generation electronics. These partnerships energize Dow's power to invent.

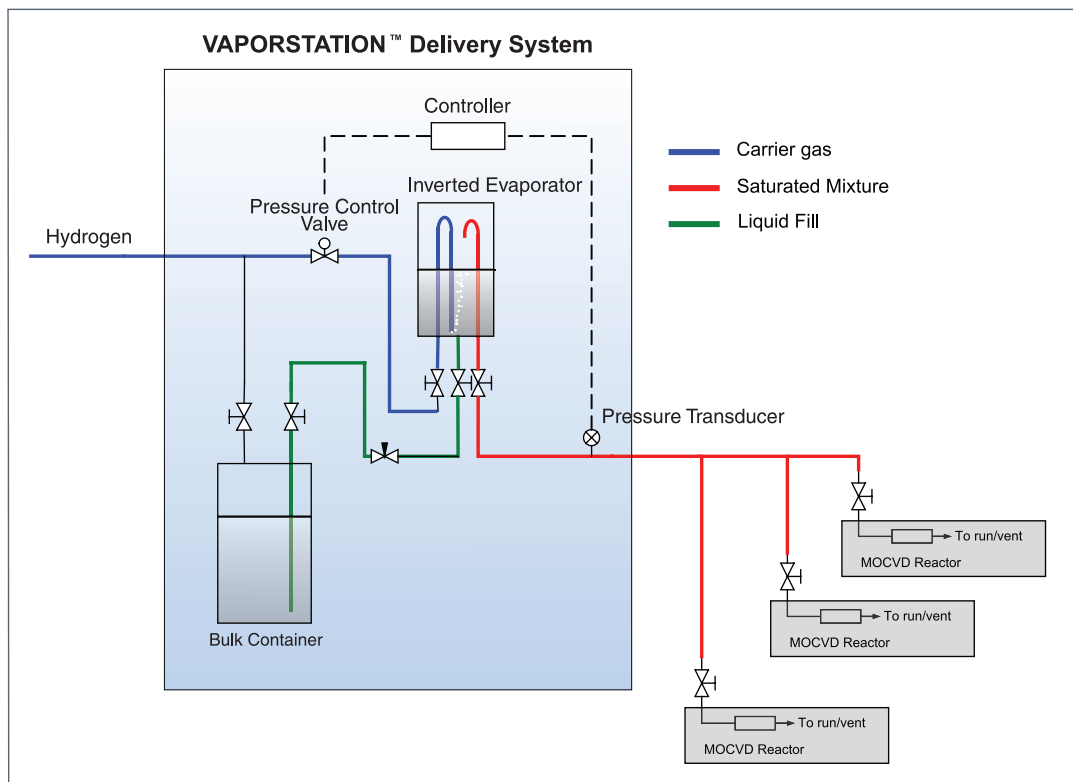
Dow's portfolio includes: CMP, lithography, metallization and ceramic materials for semiconductor applications; surface preparation, metallization and imaging materials for interconnect, electronic and industrial finishing, and photovoltaic applications; precursor materials for LED, solar and semiconductor manufacturing; OLED materials, display films, and display chemicals for LCD and plasma display fabrication; and zinc-based materials for optics.

VAPORSTATION™ Delivery System

The VAPORSTATION™ Central Delivery System is designed specifically for MOCVD precursors. This unit can deliver precursor vapor in a carrier gas simultaneously to multiple reactors. It also eliminates the need to shut down reactors for precursor cylinder changes, thus improving productivity and cost of ownership for the MOCVD process.

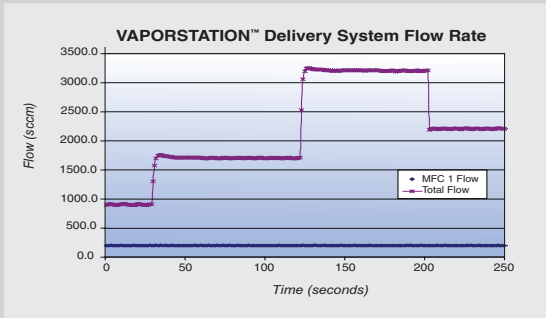
Features	Benefits
Can feed many reactors	<ul style="list-style-type: none"> Eliminates cost of connecting and disconnecting cylinders from each reactor
Eliminates cylinder at each reactor	<ul style="list-style-type: none"> Reactor footprint can be smaller Reduces the number of components for maintenance, thus improving efficiency and reducing cost Minimizes handling of hazardous chemicals
Up to 20 kg supply cylinder	<ul style="list-style-type: none"> Minimizes handling of hazardous chemicals Cylinder change is automated 15 kg (code 65530) and 9 kg (code 65535) supply cylinders commercially available now
Contains an evaporator	<ul style="list-style-type: none"> Reactors do not need to be shut down for supply cylinder changes, as the supply can continue from the evaporator The material that is transported is the precursor vapor in a carrier gas which is much less hazardous than a pyrophoric liquid

Schematic



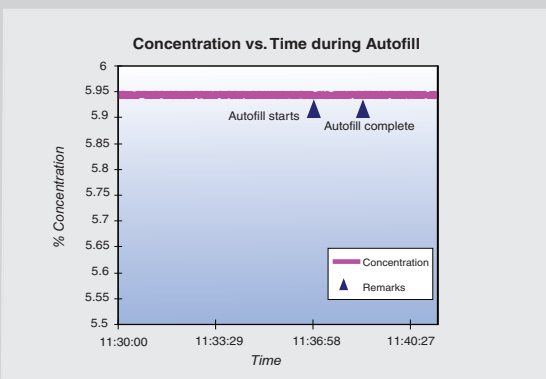
Technology

System Performance



Stable flow for one reactor despite change in vapor demand for other reactors

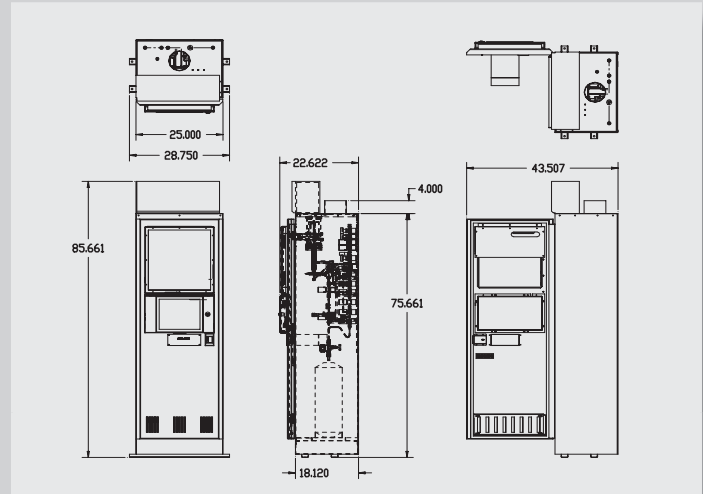
- The output from the VAPORSTATION™ Delivery system was split into 3 mass flow controllers
- Demand from two MFCs was increased while the third one was not changed
- Data shows that the flow through the third MFC stayed constant (within 1%) despite increased demand overall



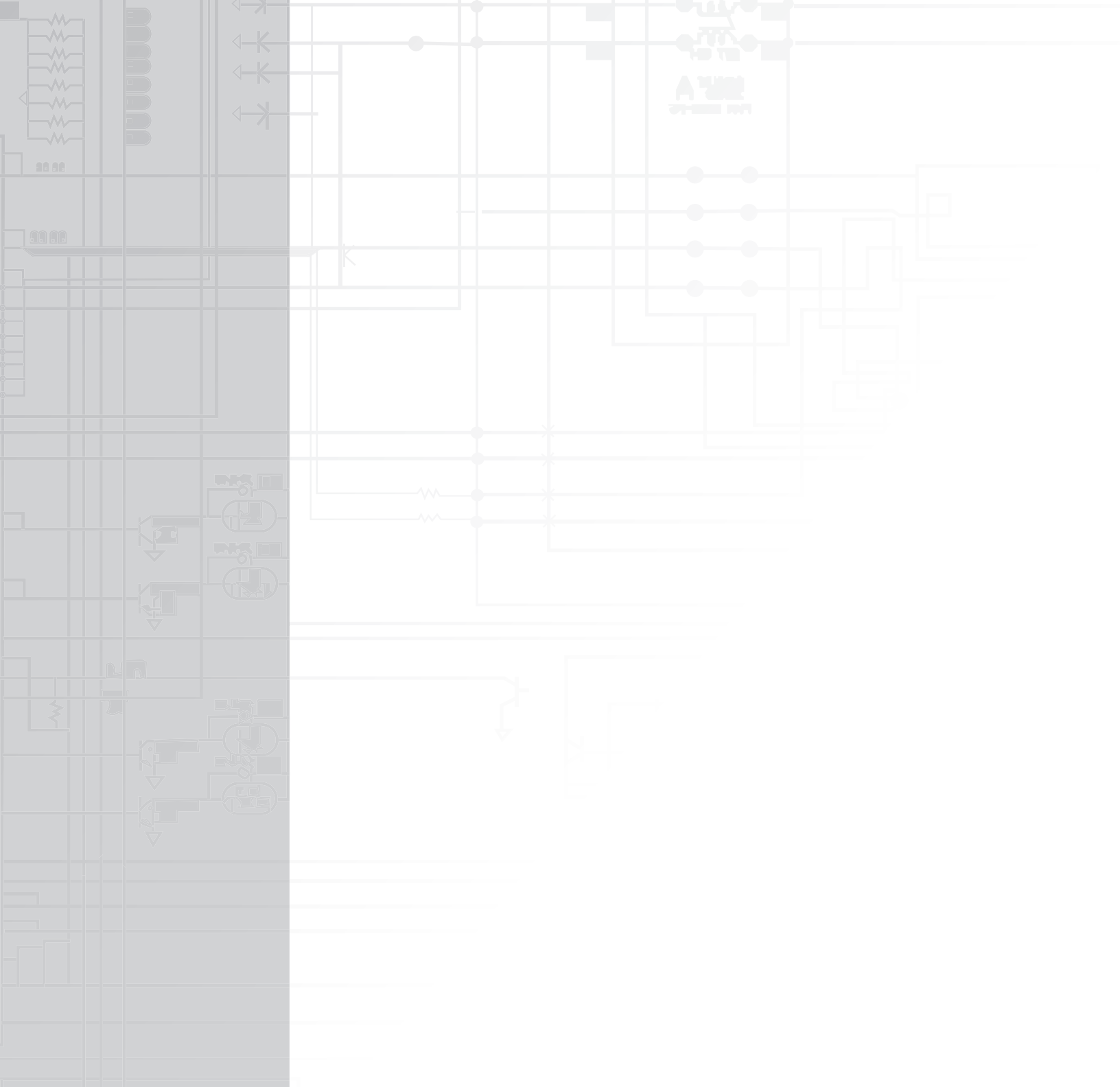
Stable concentration during autofill from evaporator

- Precursor concentration output from the VAPORSTATION™ Delivery system remains constant while the evaporator goes through an auto-fill sequence
- No disruption to the operation of the reactor due to precursor supply replenishment

Dimensions (in inches)



The VAPORSTATION™ Delivery System is designed and manufactured in cooperation with Matheson Tri-Gas, Inc.



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