TRICHEM™ CHEMICAL DELIVERY SYSTEM

The TriChem™ Chemical delivery system supports the supply of both TEOS and Dopants/Precursors in a single system with up to four (4) independently controlled/maintained outputs. Our unique design utilizes a fixed TEOS reservoir which feeds the outlets and a replacement source tank that refills the fixed reservoir. This allows the system to operate continually without the need to requalify the delivery system when new chemical is added.

ADVANTAGES:
- Supplies Three (3) Chemicals to up to Four (4) Tools/Chambers with Independent Operation & Maintenance
- Continuous TEOS/Primary Chemical Supply eliminates Process Requalification after Tank Changes
- Compatible with Multiple Tool Types
- Compatible with Multiple Source Containers

DESIGN & OPERATION:

TEOS/Primary Chemical:
- 5 gallon source tank feeds 3 gallon fixed tank.
- 3 gallon fixed tank automatically refills to maintain 45% level.
- Source tank exchange does not affect chemical delivery to host tools/chambers. Manual valve control for tank exchanges.

Dopants:
- Supports 2 Dopant source containers up to 2 gallon
- No fixed tanks. Dopant source tanks are changed when the process is idle. Manual valve control for tank exchange

Level Monitoring & Control:
- Discrete controller monitors fixed tank levels and automatically refills tank as needed
- Scale monitors and displays source tank weight
- Dopant container levels monitored by level sensor interface or scales (for 1 gal and larger tanks)

Chemical Distribution:
- Distribution manifolds have dedicated chemical and inert gas purge valves
- Each branch operated independently from the others.
- Each outlet can be fitted with an optional degas module.

Tool & Facility I/O:
- Controller has DI/DO port for each outlet. DI tool permissive contact signal controls chemical supply from System. DO signals include chemical levels and general system status fault.
CONFIGURATION OPTIONS SPECIFIED AT TIME OF ORDER:

- **Undoped TEOS**: 2-outlet (Standard), 4-outlet (Optional). Continuous TEOS dispensing.
- **Doped TEOS**: 2-outlet (Standard), 4-outlet (Optional). Continuous TEOS dispensing. 5-gal TEOS Source (User Supplied). Two source Dopant containers 1.2-liter to 2-gallon (User Supplied). Dopants are not continuously delivered.
- **Degas Module Option**: Each outlet is configurable with a degas module (Added Cost Option)
- **Dopant Level Monitoring**:
  - Direct interface to float switch level sensors that close on decreasing level.
  - Direct interface to Air Products-Schumacher Type “SSN” Containers with quartz optical level sensor probes (Added Cost Option)
  - Scales (Added Cost Option. Not suitable for containers less than 1 gallon volume.)

**Source Tanks & Ampoules**: Available upon request at additional cost.

**SPECIFICATIONS**:

**Mechanical**
- Dimensions H x W x D, in. (cm): 78” (198) x 30” (76) x 18” (46)
- Clearances, in. (cm): Front 48” (122), Sides 4” (10), Top 24 (61)
- Spill Containment Volume: 11 gal (41.6 liters)

**Utility Requirements**
- Electrical: 100-240 VAC, 50/60 Hz, 750mA max.
- Enclosure Exhaust: 85 CFM, -0.03 in. H2O duct static pressure, (6” duct)
- Process Helium: 85 psig min., 20 slm max flow rate
- CDA: 85 psig min., 2 slm max flow rate
- General N2 (Vacuum Generator): 80 psig, 20 slm max flow
- Vacuum source for degasser

**SD4-C CONTROLLER DETAIL**:

**Power**: 100-240 VAC, 50/50 Hz, 750 mA

**Control Inputs**:
- Source Tank Scale/Level switches
- Fixed Tank Leels: (4 Levels)
- Spill Sensor
- CDA Pressure
- Helium Push/Purge Gas Pressure
- Degasser Vacuum
- Degasser Liquid Leak

**Chamber I/O**:
- Source A, B, C Level Empty Output
- TEOS System OK Output
- Chamber OK Input

**Facility I/O**:
- Source A, Level Low & Empty Outputs
- External Shut-Down Input
- System General Warning Output
- System General Fault Output

**Controls**:
- Auto Fill On-Off
- Manual Fill Pushbutton
- Reset Sonic Alarm

**Display**:
- Source A (TEOS) Tank Weight (kg), Color changing display (Grn
- Source A, B, C Low & Empty
- Fixed Tank Level / Filling Status
- System Status
  - CDA, Inert Gas, Degas Vacuum
  - Chem Spill, Degas Leak, Status (GRN, YEL, RED)
  - Tool (Chamber) 1-4 Permissive Status

Since 2000, Critical Systems, Inc. (CSI) has been supporting the breakthrough technologies of our customers with practical, cost effective solutions that “surround the process tool”.

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