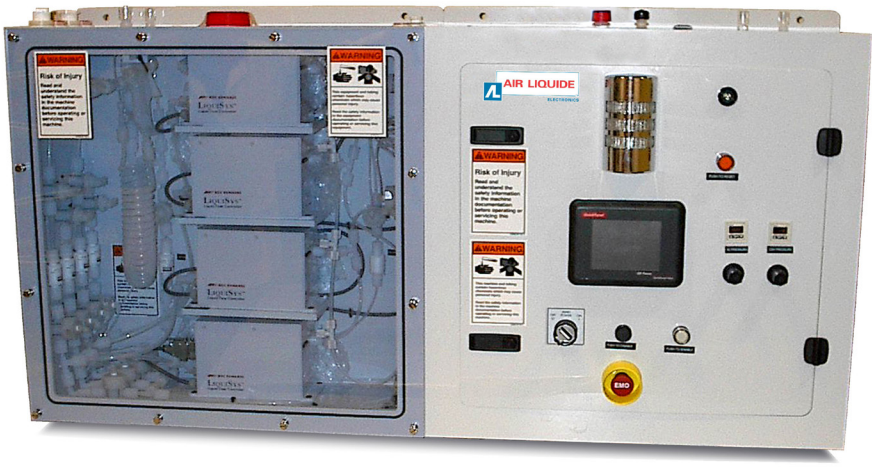
ChemPrep™ NTM Blend System

The ChemPrep NTM is a low-cost blend system. The flow-based blend technology enables a highly configurable blend system in a small, cost-effective package.



Product Overview

ChemPrep NTM blenders ("near tool module") are configured with a dedicated flow controller for each blend constituent. The flow controllers are sized to provide the specified blend ratio and blend capacity. The design enables a wide range of capabilities. The NTM can be configured to produce blends from 1:1 up to 500:1 and blend rates from 2 LPM to 40 LPM. Conductivity-based validation is available as an option.

Features and Benefits

- Highly configurable product platform
  - Typically 2-4 blend constituents
  - Wide range of blend ratios (1:1 to 500:1)
  - Wide range of blend rates (2-40 LPM)
  - 10:1 turn-down ratio enables recipe changes without hardware changes
- Inline blend technology for recipe flexibility
  - Fast and easy recipe changes
  - Multiple "saved" recipes
- Straightforward design for simplicity
  - Easy start-up and intuitive operation
  - Easy access to all components for maintenance
- Built in a center of manufacturing excellence
  - ISO9001 certified
  - Formal QA/QC procedures, documentation standards, and final test procedures

Performance and Reliability

- Typical blend capacity: 5-20 LPM
- Blend accuracy: 3% relative error
- Uptime >99.9%

Theory of Operations

Chemical and water are supplied to the NTM by pressurized supplies elsewhere in the fab. Each constituent passes through a dedicated flow controller. The flow controllers are managed by a single PLC that makes real-time adjustments of the chemical and DIW flow rates to achieve the target blend ratio.

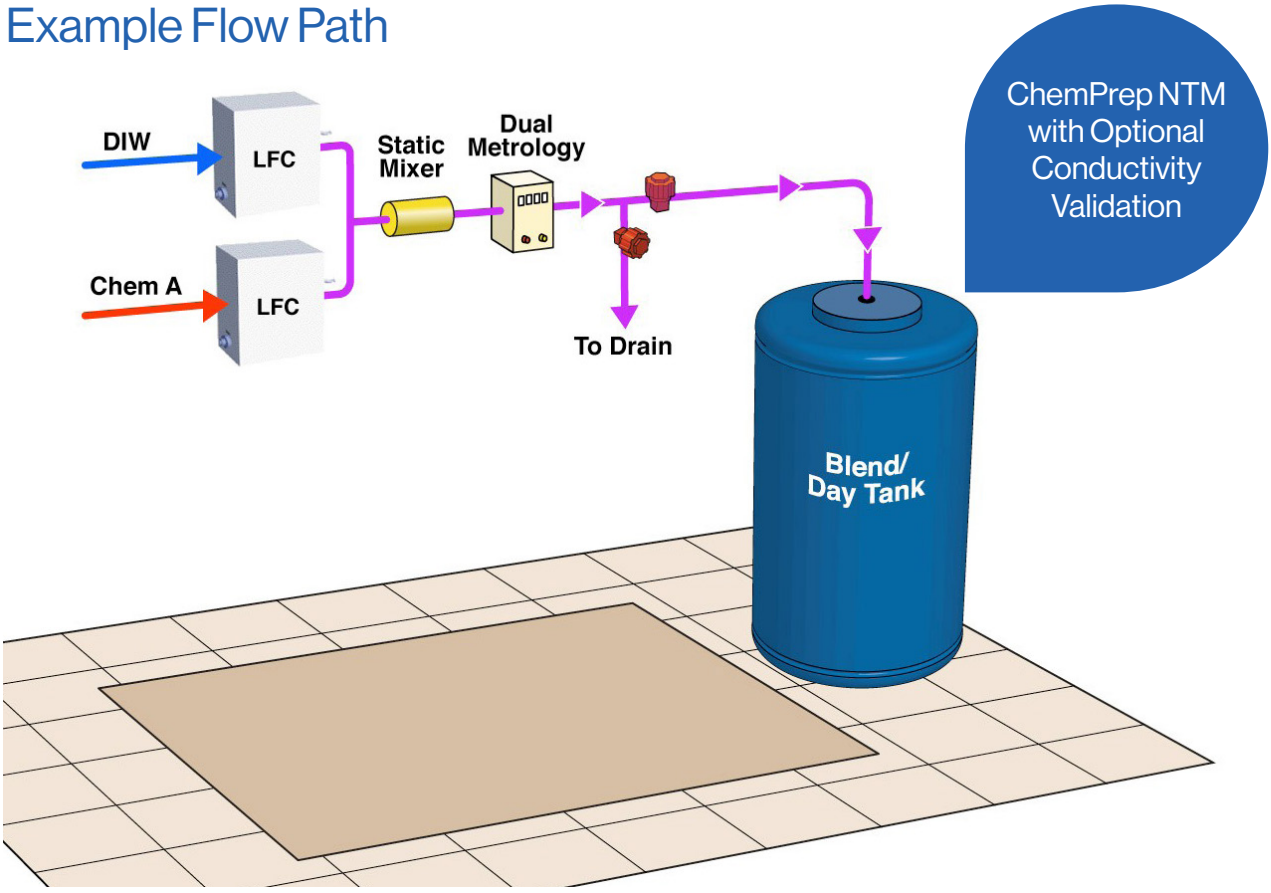
When the constituents exit the flow controllers, the streams are combined in a static mixer to ensure homogeneity of the blend. As an option, an inline metrology device can be used to monitor the assay of the blend. The metrology signal is used for validation only, not to provide feedback control.

If the blended chemical is out-of-spec, either because the flow rates are not within the specified range or the optional metrology indicates an out-of-spec assay, the blended stream is diverted to drain until the chemical is within the specified ranges. In-spec chemical can either be used to fill a system daytank or dispensed directly to the process tool or Point of Use.

Configuration Options

- 2, 3 or 4-constituent blend configuration
- Low, medium or high blend capacity (approximately 5 LPM, 10 LPM or >20 LPM)
- External drum transfer unit utilized when a pressurized source is not available
- Optional inline conductivity validation
- Direct dispense to process tool or daytank
- Wall-mounted or floor-mounted cabinet
- Requires a separate chemical dispense system to manage a tank and dispense to multiple POU's

Example Flow Path



Safety Features

- Cabinet rated for 110% volume containment
- Dual-level cabinet leak detection
- Door interlocks
- DIW spray gun
- CDA-purged electrical compartment
- Audible and visual warnings and alarms
- Local and remote EMO
- LSS and CSS communication
- Transparent door panels for safe viewing and trouble-shooting
- Designed for compliance with SEMI S2, S8 and S14 guidelines, and CE low-voltage, Machinery and EMC directives

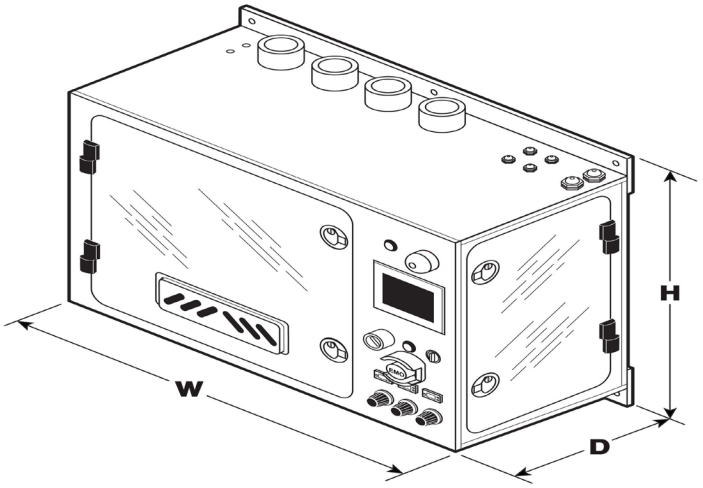
Typical Utility Requirements

Utility	Connection Type	Flow/Pressure
Electrical	N/A	24 VDC, 7A
UPW Supply	½" Flaretek	40-60 psi
UPW Return	½" Flaretek	<25 psi
CDA	½" Flaretek	100-125 psi
Process N_2	½" Flaretek	100-125 psi
Exhaust	2" connection	0.5" WC minimum

Typical Cabinet Layout & Dimensions

W x D x H in Inches (mm)
60" x 13" x 33" (1524 x 330 x 8389)

The cabinet dimensions and layout are determined by the blend configuration. A low-capacity, two-constituent blend can be built in a small cabinet with the dimensions listed above and wall-mounted. A more complex blend may require a larger, free-standing cabinet.



ChemPrep NTM

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Air Liquide
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