



KINETICS CB 100

Chemical Blend & Dispense System

- **Accurate**— Proven blending and measuring technologies to meet stringent process requirements
- **Economical**— More cost-effective than buying pre-mixed chemicals
- **Flexible**— Configurable, to meet a variety of process & usage requirements

SYSTEM OVERVIEW

Kinetics chemical blending systems provide a winning combination of blending accuracy and capacity required to meet a variety of process and productivity requirements. Based on proven weight-based blending technology, the CB 100 is a medium-capacity blend and dispense system, with a maximum blend capacity of 8000 liters per day. The blending algorithm controls the quantity of chemical constituents introduced into the load cell-mounted blend tank. An optional flow-rate-based blending module is available, where each chemical is introduced by time into the blend tank at a pre-determined flow rate. The chemical blend is thoroughly mixed by recirculating through a pump and conductivity monitoring loop. The measured conductivity is continually compared to the pre-determined conductivity set-point, which has been calibrated to chemical concentration. The blend tank continues to circulate the mixture until the desired concentration level is reached, upon which the contents are pumped into the day tank and dispensed subsequently to the process tools.

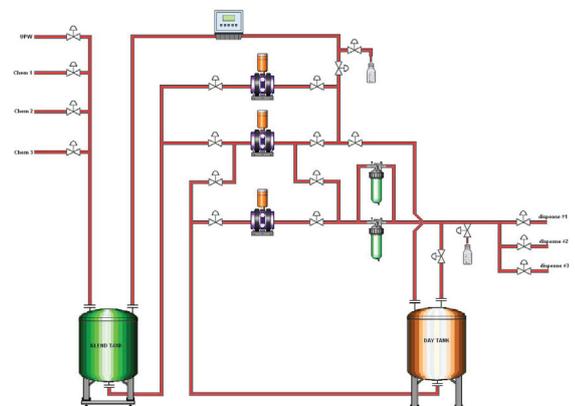
KEY FEATURES:

- Total blend capacity of 2000, 4000 or 8000 L, depending on configuration
- High-accuracy load cells for precise blending
- User-selected blend recipes
- Absolute blend accuracy of 0.1, 0.01 or 0.003 weight percent, depending on configuration
- Up to three (3) chemical constituents, plus DI water
- Dual-cell conductivity monitor
- Diaphragm or centrifugal blend circulation pumps
- Polypropylene cabinet material
- DI/N₂ maintenance services for pumps and filters

OPTIONS:

- Flow meter-based blending module
- Alternative metrology packages - auto-titration, index of refraction, or sonic velocity
- Shared back-up pump for blend circulation and dispense
- Day tank recirculation, through the distribution pumps
- Cabinet for blend tank, up to 500 L
- Pump stroke and leak detection
- Radar level sensor in day tank

PROCESS FLOW DIAGRAM



Configuration showing weight-based blending technology, on-line metrology, and back-up pump for blend and dispense

RELIABILITY

- MTBF > 4500 Hours
- MTBA > 2500 Hours
- MTTR < 2 Hours
- Availability > 99.9%

TECHNICAL DATA

CONTROLS

- Allen-Bradley SLC 500 or Siemens S7 series PLC
- Allen-Bradley Panelview 550 or Siemens TP177B HMI, displaying:
 - System P&ID status
 - Alarm and warning screens
 - Blend and flush recipe and calibration screens (password-protected)
 - Distribution valve box status
 - Pump and filter runtime screens
 - Maintenance screens (password-protected)
- Connectivity to factory control system

SAFETY FEATURES

- Segregated electrical and chemical compartments
- Local and remote EMO
- Cabinet leak detection and door interlocks
- Audible and visual warnings and alarms
- Transparent door panels for viewing

FACILITY REQUIREMENTS

UTILITY	REQUIREMENT	CONNECTION TYPE
Chemical Inlet (1, 2 or 3)	8 GPM @ 30 psi (30 LPM @ 2 barg)	¾" PFA Flare
DI Water	14 GPM @ 45 psi (50 LPM @ 3 barg)	1" PFA Flare
N ₂	2 SCFM @ 90 psi (3.5 Nm ³ /hr @ 6 barg)	½" SS Swagelok
CDA	15 SCFM @ 90 psi (26 Nm ³ /hr @ 6 barg)	3/8" SS Swagelok
Exhaust	236 SCFM @ 2" H ₂ O (400 Nm ³ /hr @ 2" H ₂ O)	6" Pipe Flange
Process Drain	5.5 GPM @ 30 psi (40 LPM @ 3 barg)	1" FNPT, polypropylene
Cabinet Drain	Gravity	1" FNPT or DN15 butt weld, polypropylene
Power ¹	100 to 240 VAC, 50-60 Hertz, 15 amps	¾" Conduit

¹Power requirements higher for magnetically-levitated centrifugal pumps; consult factory

SPECIFICATIONS

PARAMETER	CAPABILITY
Application	Acids, Bases, Oxidizers
Blend Make-up Rate	3.5 to 5.6 Liters per minute
Accuracy, absolute weight %	Three options available: <ul style="list-style-type: none"> • Level 1 < 0.1 wt. % • Level 2 < 0.01 wt. % • Level 3 < 0.0033 wt. %
Number of chemical inputs	2 or 3, plus DI water
Blend Tank Sizes	100, 200, 500 or 1000 Liters
Day Tank Sizes	2000, 4000, 8000 Liters
Dispense Flow Rate	20 LPM*
Flow Path Size	¾-inch
Cabinet Materials	Polypropylene (optional FM4910 compliant material)
Cabinet Footprint (WxDxH)	107" x 40" x 75" (2700mm x 1000mm x 1900mm)
Component Materials— Economy Set (standard)	<ul style="list-style-type: none"> • PTFE valves • PE pumps and pulse dampeners (PTFE diaphragms) • PFA tubing and fittings • Polypropylene filter housings • HDPE or PE blend and day tanks
Component Materials— Performance Set (optional)	<ul style="list-style-type: none"> • PFA or PTFE valves • PTFE pumps and pulse dampeners • PFA tubing and fittings • PFA filter housings • PFA or PTFE-lined blend and day tanks

*Dispense Rate based on water; chemical blends with higher viscosities will have lower flow performance.