Specifications
VariTech **BLIND BOSS™**
Automatic Three Product Chemical Blending System

1.0 Scope:

This specification covers requirements for an Automatic Three Product Chemical Blending System intended for use as a generator of quality blended liquid solutions that are used as a prewetting, anti-icing, and/or a de-icing agent on pavement or roadways. The system shall be fully automated eliminating the need for manual testing, monitoring, and adjustment.

The system shall be capable of blending up to 3 different liquid deicing chemicals in order to create a custom blended solution on demand. The user interface shall be capable of selecting a 2 product blend in the range of 60/40 to 95/5 and a 3 product blend in the range of 50/40/10 to 90/5/5. The desired blends shall be controlled automatically through the use of flow meters and 12 volt PWM regulating ball valves. In addition, the system must also have the capability to inject an anti-foam agent through the use of a 12 volt dispensing pump.

2.0 Pumps:

The brine pump shall be a 1 ½” stainless steel centrifugal pump that is close coupled to a 2 HP, 115/230 volt, single phase electric motor. Based on water, this pump shall be capable of pumping 120 GPM at 10 TDH. The discharge side of the brine pump shall include a 2” poly flanged flowmeter with flow capabilities from 10 to 100 GPM.

The primary additive pump shall be a 1 ½” stainless steel centrifugal pump that is close coupled to a 2 HP, 115/230 volt, single phase electric motor. Based on water, this pump shall be capable of pumping 120 GPM at 10 TDH. The discharge side of the brine pump shall include a 2” poly flanged flowmeter with flow capabilities from 2 to 70 GPM. In addition to the flowmeter, the discharge line shall also include a 2” 12 VDC, PWM regulating ball valve.

The secondary additive pump shall be a 1” stainless steel centrifugal pump that is close coupled to a 3/4 HP, 115/230 volt, single phase electric motor. Based on water, this pump shall be capable of pumping 40 GPM at 10 TDH. The discharge side of the brine pump shall include a 2” poly flanged flowmeter with flow capabilities from 2 to 70 GPM. In addition to the flowmeter, the discharge line shall also include a 2” 12 VDC, PWM regulating ball valve.

The anti-foam injection pump shall be a ¼” stainless steel piston driven pump with EPDM elastomers that is coupled to a 115 volt solenoid operated piston. The pump shall be capable of 120 ml/min based on a stroke rate of 120 strokes/minute.

The discharge lines of the brine pump and additive pumps must each include a 2” 3-way electric ball valve that will divert flow back to storage tanks while the interface is calculating the user defined blend percentages. Once the percentages have been verified these 3-way valves shall automatically shift allowing the liquid to be discharged to the truck.
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3.0 Enclosure:

The pumps, flow meters, valves, and mixing manifold shall be enclosed in a cabinet that is constructed of a galvanized frame with stainless steel top and side panels. The enclosure shall have a means for accessing the pumps and plumbing for troubleshooting and maintenance while protecting all of the components from the outside elements.

4.0 Controller:

The controller shall include a 2.8” LCD color display that has LED illumination and adjustable brightness controls. The display shall include 5 silicone keyboard function keys with tactile feedback that will allow for all calibration and operating functions. The display shall have an IP rating of no less than 67 and shall have a single CAN connection point on the back of the display for cable routing to control all functions. The controller shall be capable of 12 configurable inputs and 12 configurable outputs and shall also include a 2 color status LED.

The display shall be mounted in a NEMA 4 rated plastic enclosure that is large enough to enclose the controller and also allow for the following switch mounting: On/Off, Blend/Recirculate, Reset, and E-Stop. The enclosure shall be mounted on the stainless steel pump enclosure in order to provide a turnkey package.

5.0 Remote Fill Pendant:

The system shall include a remote fill pendant that allows the operator to have start/stop and E-stop controls while standing at the truck during the filling process. The pendant must include a minimum 25’ cable and pendant and switches shall be able to withstand the outside elements.

6.0 Installation:

The system shall come prewired and ready for connection to a customer supplied 220V, 30 amp, single phase power service.

7.0 Warranty:

The unit shall be warranted for a period of 1 year from the date of purchase.