

1. We are not bidding the Brine Production System outlined in Exhibit 1. Rather, we are providing pricing on our own BPS3000-SS and BPS5000-SS Brine Production Systems which are better than the system outline in Exhibit 1. Our BPS3000-SS Brine Production System is already being used by several Oklahoma DOT operations and they like its durability (heavy duty all stainless construction, fast and easy cleanout system (hydraulic controlled), control panel, salinity adjustment features and more). Our new BPS5000-SS Brine Production System includes all the same excellent features as our BPS3000-SS system plus it includes an "internal overflow weir" that allows it to handle fine salt used in brine production. So we are providing pricing on both of these Brine Production Systems.
2. We are bidding as a manufacturer of our Brine Production System and 1,800 Gal Deice Sprayer included in this Bid Packet, and also for the Pump Units and Plumbing Kits (Value Added Accessory Products). We do not have an authorized distributor for this equipment in Oklahoma as we provide direct tech support (phone and email) and on-site training with our own technical & experienced personnel. This actually provides better technical support to the end user than working thru an authorized distributor for these equipment items. We use this same direct support model in several other states and it works very well. We have several references (see Section VII) that can attest to the excellent technical support we provide directly to customers of these same products (and also to existing OK DOT customers who are already using our Brine Production Systems and 1,800 Gal Deicing Sprayers).
3. Tanks & Salt Screener (Valued Added Accessory Products): We are an authorized distributor of the Vertical Storage Tanks and Stainless Salt Screener shown in the Value Added Section. Letters indicating our authorization to sell these items are included.
4. Repair Services: We also provide repairs for all equipment items included in this Bid Packet using our own repair personnel. We have a repair shop in our Omaha, NE facility that can repair equipment quickly. We also stock common repair parts for all equipment items included in this Bid Packet.
5. Return Policy: Our return policy is one year from date of first use, as long as items are in like new condition. Return shipping is generally paid by the customer.
6. Service Level Agreements: We do not have any applicable service level agreements at this time. However, we are willing to develop and provide an agreement upon request. We do stock all key replacement parts for the BPS3000-SS and BPS5000-SS (and other Value Added Accessory Products we are proposing for this Contract). We also provide technical phone support and on-site training for all systems. If we cannot resolve a technical problem over the phone, we will send a qualified tech to the site if necessary.

OFFICE OF MANAGEMENT & ENTERPRISE SERVICES  
EXHIBIT 1

EQUIPMENT SPECIFICATION

Brine Maker

**COMPLIANCE:**

Supplier shall furnish a statement in writing on the Bid or by attached letter and in the Supplier's Statement below if his Equipment proposed strictly meets these Specifications. If not, he shall list each variation thereof.

SUPPLIER'S STATEMENT (EQUIPMENT PROPOSED COMPLIES): YES: \_\_\_\_\_ NO: X

DEALER: DVHmeier Sales LLC PHONE: 402-333-1444

SIGNATURE: Tom Hansen DATE: Oct 31, 2022

ADDRESS: 13808 Industrial Rd, Omaha, NE 68137

see next sheet & our  
spec included

OFFICE OF MANAGEMENT & ENTERPRISE SERVICES  
EXHIBIT 1

EQUIPMENT SPECIFICATION

Brine Maker

**Brine Maker**

GENERAL: This specification describes a Brine Making System is to be used in the making of Salt Brine used in snow and ice control operations.

**For Comparison Only: Varitech Industries Model SB600**

**FILL IN ALL SPACES SHOWING SPECIFIC INFORMATION.**

**MINIMUM REQUIREMENTS**

**SUPPLIER'S PROPOSAL**

**Brine Maker**

**1.0 Scope:**

This specification covers requirements for Salt Brine Production Systems (SBPS) intended for use as a generator of quality salt brine that is used as a prewetting, anti-icing, and/or a de-icing agent on pavement or roadways.

Comply Yes

**2.0 Dimensions:**

Model # SB600 - 62" W X 62" H X 119" Long

Comply Yes

**3.0 Storage/Holding Capacity (U.S. Gallons):**

Main Tank Hopper Tank Total

Model SB600 600 800 1400

Rock Salt Holding Capacity (Cubic Yards)

Model SB600 ..... 3.68

Comply No - see our spec included

**4.0 Production Rate:**

Model SB600... ..... 3600

Gallons Per Hour (Based on Customers Water Supply)

Comply No - see our spec included

**5.0 Materials:**

The salt brine production systems shall be comprised of rotationally molded, one-piece tanks. Rotationally molded polyethylene SBPS tanks shall be manufactured from a polyethylene compound that conforms to the following properties....Density- ASTM D-1505 .942 g/cm<sup>3</sup>

Comply Yes

Comply No - see our spec included



**OFFICE OF MANAGEMENT & ENTERPRISE SERVICES**  
**EXHIBIT 1**

**EQUIPMENT SPECIFICATION**

**Brine Maker**

Melt Index- ASTM D-1238 2.0  
g/10min.

Tensile Strength- ASTM D-638  
2,700 PSI

Flexural Modulus- ASTM D-790  
103,000 PSI

Low Temp Impact- ARM-Low  
Impact (1/4") 175 ft. lbs.

*Main Salt Brine Tank:*

Rotationally molded one piece  
(no welds, joints, or seams)  
polyethylene plastic tank-  
UV stabilized to provide  
protection from sunlight- 5/8"  
nominal thickness- Open floor  
with interior rib to prevent any  
type of tank bulging - Pitched  
bottom to lower sump area  
provides total drainage- 3"  
schedule 80 PVC drain pipe  
with threaded plug end

*Hopper/Rock Salt Tank:*

Rotationally molded one - piece  
(no welds, joints, or seams)  
polyethylene plastic tank-UV  
stabilized to provide protection  
from sunlight- 5/8" nominal  
thickness-Open floor  
(No interior floor ribs to hinder  
cleaning)- Pitched bottom to  
lower sump area provides total  
drainage- 6" schedule 80 PVC  
drain pipe with threaded plug  
end- Full length 1 1/2" PVC  
water in-feed manifold provides  
even filling and salt saturation

*Secondary Containment Tank:*

Rotationally molded one piece  
(no welds, joints, or seams)  
polyethylene plastic tank- UV  
stabilized to provide protection  
from sunlight- 5/8" nominal  
thickness- Self supporting,  
molded in vertical support ribs

OFFICE OF MANAGEMENT & ENTERPRISE SERVICES  
EXHIBIT 1

EQUIPMENT SPECIFICATION

Brine Maker

and 3" high skid bottoms  
provide easy forklift entry-  
Requires no complex saddling  
or support structures- 2-1" PVC  
threaded plug drain fittings-  
Minimum 110% containment  
capacity

**6.0 Plumbing and Plumbing  
Components:**

Epoxy coated cast iron effluent  
ejector pump- UL Listed -  
thermal overload protected, oil  
filled motor- 1/2 HP- 110 GPM  
at 0 head/ft. - 1 1/2" discharge -  
manually controlled by a 25'  
remote waterproof toggle  
switch. Water service piping is  
1 1/2" PVC throughout entire  
system- Water service is  
controlled by a 1 1/2" Glass  
filled polypropylene, non-  
electric hydraulic diaphragm  
valve- automatically controls  
the water infeed to the hopper  
tank and maintains the level of  
brine in the main tank.

- 1 1/2" PVC water infeed and  
salinity dilution ball valves- One  
piece sealed unit requires no  
adjustments- EPDM O-ring  
seals and Teflon seats.

- Plastic float valve controls  
water to the diaphragm valve-  
Non-hammering- Valve body is  
celcon plastic with Buna-N  
plunger.

- 2-3" Brine overflow pipes to fill  
main brine tank- 1 1/2" PVC  
salinity dilution piping  
connected to the overflow pipes  
provide fine-tuning of salinity  
percentage adjustments.

2-6" Round stainless steel  
overflow screens- #8 mesh

Comply No, see our  
spec included

OFFICE OF MANAGEMENT & ENTERPRISE SERVICES  
EXHIBIT 1

EQUIPMENT SPECIFICATION

Brine Maker

1 1/2" glass filled polypropylene  
quick disconnect cam lock  
coupling from pump discharge.

**7.0 Electrical Service:**

Entire electrical service to  
SBPS is protected from  
hazardous shock through a 15  
Amp, 110VAC Ground Fault  
Interrupter Circuit Receptacle  
with trip and reset- Enclosed in  
a waterproof outdoor service  
PVC plastic junction box and  
weatherproof plastic outlet  
cover. 25" 16/3 AWG outdoor,  
waterproof 15 Amp, 110VAC  
remote toggle switch to pump-  
Watertight plastic strain relief  
connectors on both ends of  
remote cable.

**8.0 Installation:**

Installation of SBPS is  
accomplished by connection to  
the 2" PVC threaded male end  
of the water infeed piping to  
customer supplied water  
service- Electrical connection is  
made by plugging in the power  
service cord equipped on the  
SBPS to the customer supplied,  
electrically adequate power  
supply- See instructions manual  
for detailed start-up, operational  
and maintenance information.

**8.0 Warranty:**

The unit shall be warranted for  
a period of 1 year from the date  
of purchase. The only  
exception to this would be the  
tank warranty, which would  
extend for a period of 2 years.

Comply No, see  
our spec included

Comply No, see our  
spec included

Comply Yes

\$ 0 - no extra cost

**OPTION 1:**  
Automation

Upgrade to an automated unit  
in lieu of manual.

\$ No, see our  
spec included



OFFICE OF MANAGEMENT & ENTERPRISE SERVICES  
EXHIBIT 1

EQUIPMENT SPECIFICATION

Brine Maker

**OPTION 2:**  
Accessories or

Variation to larger tank

List Price Less % Discount

\$ 0 - See our spec included

**NOTE:**

END USER WILL SUPPLY FOUNDATION, ELECTRICITY, AND WATER SUPPLY  
TO BE USED WITH BRINE MAKER

INSPECTION AND DELIVERY OF EQUIPMENT MUST BE IN ACCORDANCE WITH  
SUPPLIER'S INSTRUCTION SHEET.  
SPECIFICATIONS:

Each Supplier shall submit complete Manufacturer's Specifications in duplicate and shall submit all  
other Data to show that his proposal meets these Specifications.

*see enclosed  
complete specs*

**PAINT:**

All exposed metal shall be Powder Coated or Stainless steel.

*& hopper is all stainless (Poly Control Panel, Valves) - No paint.*

**PARTS:**

Supplier shall furnish upon request, a list of established manufacturer's authorized locations  
within the State Of Oklahoma where parts can be ordered. *- Yes*

**SERVICE POLICY:** *- Yes*

Manufacturer's Standard Service Policy shall be furnished, complete and unaltered, with each Unit  
delivered.

**MANUALS AND PARTS BOOKS:** *- Yes*

Supplier shall furnish one (1) Operator's Instruction Manual for each Spreader. In addition, one  
(1) Parts Book and one (1) Illustrated Repair Manual shall be furnished to each Division purchasing one  
or more spreaders.

SUPPLIER SHALL FILL IN ALL SPACES UNDER SUPPLIER'S PROPOSAL.

## Specification for Dultmeier Sales

### BPS3000-SS and BPS5000-SS

#### Brine Production System

(in format of Exhibit 1)

**1.0 Scope:** This specification covers requirements for the BPS3000-SS and BPS5000-SS Salt Brine Production Systems (SBPS) intended as use for a generator of quality salt brine that is used as a pre-wetting, anti-icing, and/or a de-icing agent on pavement and roadways.

**2.0 Dimensions:** Model BPS3000-SS and BPS5000-SS: 10'0" wide by 5'3" (at top rim) x 10'6" long

**3.0 Storage/Holding Capacity (US Gallons):** Model BPS3000-SS and BPS5000-SS: Main Tank Hopper (Top) Total Rock Salt Holding Capacity 6.0 Cu. Yds (and holds up to 1200 Gallons Capacity of Rock Salt/Water combined).

**4.0 Production Rate:** Model BPS3000-SS and BPS5000-SS: 5,000 Gallons per Hour (based on customer's water supply)

**5.0 Materials:** Model BPS3000-SS and BPS5000-SS: The salt brine production systems shall be constructed of 304 Stainless Steel (includes the structural frame, top salt hopper and lower brine tank). Easily moved with a forklift.

**6.0 Plumbing Components:** Model BPS3000-SS and BPS5000-SS: Cast Stainless Brine Pump with Totally Enclosed Fan Cooled (TEFC) Motor (3HP, 1 PH); 140 GPM; 2" Inlet and 1-1/2" Outlet), controlled with float switch in lower brine tank. Water Inlet 24V Polyprop Valve (controlled by float switch in lower brine tank) with two 1-1/4" water supply spray pipes (with wire reinforced EPDM hose, stainless ball valves and stainless water spray pipes inside hopper). The two float switches in the lower brine tank automatically control the water inlet and brine pump discharge for continuous brine production. Salinity adjustment (brine dilution %) is controlled with a stainless solenoid valve and bronze manual gate valve, for precise control. A salinity sampler tube (clear PVC) is also attached to the frame and fed with 1/4" stainless gate valves to make it quick and easy for the operator to check salinity samples while not interrupting brine production. 2" polyprop male adaptor valve near pump discharge for easy hose connection to brine storage tanks.

**7.0 Electrical Service:** Model BPS3000-SS and BPS5000-SS: The System Control Panel with Electrical Supply to the system shall include an IP66 (weathertight) hinged, PVC, gasketed enclosure securely mounted to the skid frame. This Panel shall also include power disconnect switch with lock-out/tag-out, hydraulic pump control, 208-240/24V transformer, waterproof switches (wired 24V for operator safety; IP65) including "auto/shutdown" switch, pump only switch, and hydraulic system switch (switches are illuminated style). Panel also includes an indicating "time to clean screen" light and an indicating "reduce flow" light. Panel shall also be wired to four float switches: one to shut off the brine pump should the brine level drop too low in the Lower Brine Holding Tank (to protect the pump from running dry), two more to shut off the electric water



inlet valve (when water inflow rate is faster than brine pump discharge rate; one in the Lower Brine Holding Tank and one in the Upper Salt Hopper), and one to indicate "time to clean" (in the Upper Salt Hopper). Panel shall be wired with overload protection and ready to receive 220V, 1 Phase power (power supply to panel to be direct wire in proper conduit, by owner's electrician). Electrical System shall also include flexible conduit with liquid-tight connectors from the Control Panel to the brine discharge pump and hydraulic system pump motor. Control Panel shall be UL Listed.

**8.0 Installation:** Model BPS3000-SS and BPS5000-SS: Installation of SBPS is accomplished by simple connection of 2" camlock water supply hose (to 2" polyprop male adaptor water inlet connection on system), 2" camlock brine discharge hose (to 2" polyprop male adaptor brine discharge connection on system). Electrical connection is made electrician simply running proper power supply (230V, 1 Phase, 30 amp power supply) thru bottom side of control panel and connecting his power wire leads to the terminal strip in lower left of panel. Instruction manual will be provided for detailed start-up, operational and maintenance information.

**8.0 (9.0) Warranty:** Model BPS3000-SS and BPS5000-SS: The system shall be warranted for a period of 1 year from the date of purchase. The stainless frame, hopper & brine tank are warranted for a period of 3 years.

**Option I:** We do not currently offer an upgrade to a system with automatic brine salinity adjustment but should be offering this Option sometime in 2023.

**Option II:** Variation to Larger Tank. We do offer an option for a larger salt hopper, as the standard 6 cu. yd. (1200 gallons) is sufficient to produce salt brine at very high rates (up to 5,000 gallons per hour with sufficient incoming water from owner's water supply).

**Summary of Reasons why our BPS3000-SS and BPS5000-SS should be considered as Equivalents to the Brinemaker in the Specifications in Exhibit 1:**

The Dultmeier BPS3000-SS and BPS5000-SS provide equivalent or superior features as follows:

1. Brine Production Rate: Up to 5,000 Gallons per Hour, more than the 3,600 Gallons per Hour in the Exhibit 1 Specs.
2. Salt Hopper: Holds up to 6 Cu. Yds (and 1,200 Gallons of Salt/Water Mixture)-more than the 3.68 Cu. Yds in the Exhibit 1 Specs.
3. Materials: Constructed of 304 Stainless Steel (3/16" thick frame and 10 gauge sides & bottom sheets)-superior to the polyethylene construction in the Exhibit 1 Specs.
4. Brine Pump: 3Hp Cast Stainless Brine Pump, capable of 140 GPM-higher HP and flowrate than the HP and flowrate in the Exhibit 1 Specs.
5. Plumbing: Stainless Water Spray Pipes; Polyprop Valves and Fittings; EPDM Wire Reinforced Hose-all superior to the PVC pipes and plumbing in the Exhibit 1 Specs (PVC is brittle and can crack easily; our products are superior against breaking)
6. Electrical (Control Panel): Watertight Enclosure Control Panel. UL Listed. Includes Main Disconnect on Side of Panel with Lockout/Tagout Feature. All Switches the Operator touches are 24V which is safer than 110V Switches (this is accomplished with a 24V transformer inside the Control Panel). All of these Electrical Control Panel features are equivalent or superior to those outlined in the Exhibit 1 Specs.
7. Self-Contained Hydraulic Cleanout System: Our BPS3000-SS and BPS5000-SS include a built-in (self contained) hydraulic pump (with stainless reservoir), hydraulic cylinders and controls for this system in the Control Panel (on-off and up-down switches). The cleanout system also includes a pivoting stainless main screen. This cleanout system provides the fastest and easiest cleanout on the market by far; the entire system can be cleaned out in approx. 15 minutes by user a standard 8' wide loader bucket, positioning the loader bucket under the lower brine tank, and simply using the system's hydraulic system to lower the pivoting main screen and lower brine tank down, which dumps all residual salt and debris into the loader bucket. The screen can also then be pinned up and the hydraulic system can be turned on again to lower the brine tank only (with screen up) to access the lower brine tank and quickly scrape and wash fine debris into the same loader bucket. There is another smaller stainless screen in the lower brine tank that can be easily removed if the operator desires. Very small quantities of wash water and no entry into the system are required, providing operator safety and much improved environmental impact, versus the system in Exhibit 1 Specs and other systems on the market.
8. Our BPS3000-SS has been used by the Kansas DOT (approx. 80 to 100 in service), Nebraska DOT (over 20 in service), Iowa DOT (approx. 20 in service), Oklahoma DOT (approx. 13 in service) and many cities and counties. The Iowa DOT is also now starting to use our new BPS5000-SS.
9. Our BPS5000-SS includes all the same features as our BPS3000-SS plus the new feature of an "internal overflow weir" which provides for even better production of brine with finer salt grades.

**Some literature sheets and complete specifications for our BPS3000-SS and BPS5000-SS follow.**

# COMPLETE SPEC FOR OUR BPS3000-SS

## BPS3000-SS BRINE PRODUCTION SYSTEM FEATURING

### ULTRA-EASY CLEANOUT

### SPECIFICATION

March 10, 2018

It is the intent of this Specification to describe in detail an Ultra Easy-Clean Out Brine Production System. This system shall be designed and constructed to convert rock salt to finished salt brine. It shall also include a self-contained hydraulic system to rotate the lower brine holding tank and trash screen down when cleaning is desired, allowing all debris in the salt hopper to simply flow into a standard 2 or 3 cu. yd. loader bucket. Total clean-out will only take approximately 10 minutes and requires no personnel entry into the system for shoveling and no "quick attach" loader buckets.

#### I. General:

- A. The BPS3000-SS Brine Production System shall be capable of producing approximately 3,000 to 5,000 Gallons of Brine Per Hour (based on owner's water supply of 50 GPM to 83 GPM at 60 PSI or greater).
- B. System shall be designed and constructed to be easily filled with rock salt using a standard 2 cu. yd. or 3 cu. yd. loader bucket (no conveyors or augers required).
- C. System shall be designed and constructed to be easily cleaned of all debris in the salt hopper with a standard 8' wide 2 cu. yd. or 3 cu. yd. loader bucket (no "quick attach" loader buckets are required). To do this, the loader operator will simply position his loader bucket below the system's lower brine holding tank. He will then switch on the system's self-contained hydraulic control Power Pack. The operator will then rotate the pivoting trash screen and lower brine holding tank down, allowing all debris in the salt hopper to flow into the loader bucket.
- D. System shall also be designed and constructed to provide for easy clean out of the silt and other fines inside the lower brine holding tank as follows: The operator will again rotate the system's lower brine holding tank down, this time with the pivoting trash screen held in the "up" position. He will then clean the inside the lower brine holding tank and wash out the silt and other fines using a standard water spray hose (can also remove lower secondary screen when desired).
- E. Entire system shall be constructed on a single skid frame to allow for easy loading, unloading, and moving using various loaders with forks (system can also be lifted into place).
- F. System shall be a "downward flow" brinemaker where the salt bed acts as a "filter bed" as the water moves down through the bed from the top spray bars. This provides for cleaner brine (less suspended solids in the finished brine) than upward flow brinemakers produce.
- G. Overall system dimensions are: 10'6" wide x 6'1" deep x 8'0" high.

#### II. Upper Salt Hopper:

- A. The Upper Salt Hopper shall have an approximate capacity of 6 cu. yds. of rock salt. It shall be approx. 120" (10'0") wide by 63" (5'3") deep at the top to allow for easy loading with rock salt with 2 or 3 cu. yd. loader buckets. The back side of the hopper shall be angled forward (tapered). There shall also be inward tapers on the left and right sides of the lower portion of the salt hopper.
- B. The Upper Salt Hopper shall be constructed of 10 gauge, 304 stainless steel.

#### III. Pivoting Trash Screen:

A 14 gauge 304 stainless steel trash screen shall be located at the bottom of the hopper. This screen shall have approx. 1/4" dia. circular holes through it. The screen shall be hinged on its back side and have a securing device on its front side so it can rotate down with the Lower Brine Holding Tank, or be secured in the up position for additional cleaning of fines from the Brine Tank.

#### IV. Lower Brine Holding Tank:

- A. The Lower Brine Holding Tank shall be constructed of 10 gauge, 304 stainless steel.
- B. 304 stainless steel support members shall run across the Lower Brine Holding Tank at proper spacing to provide support for the trash screen above.
- C. A 16 gauge 304 stainless steel secondary screen shall be located approximately 6-8" from the bottom of the Lower Brine Holding Tank. This screen shall have approx. 1/8" dia. circular holes through it. The screen shall be removable for cleaning purposes.



- D. A 2" stainless steel female thread bung or coupling shall be welded into the back side of the Lower Brine Holding Tank.
- E. The back side of the Lower Brine Holding Tank shall be hinged and also have locking pins on the left and right front sides so it can rotate down and back up again (for cleaning purposes). The back hinges/sleeves and front locking pins/sleeves shall be 304 stainless steel. The torsion bar on the back side of the Lower Brine Holding Tank shall also be 304 stainless steel.
- F. Lower Brine Holding Tank shall hold approximately 150 gallons and shall have a forward taper on its back side. It shall be approx. 94" (7'10") across its front so a standard 2 cu. yd. or 3 cu. yd. front end loader bucket can be easily positioned underneath it.

#### V. Skid Frame:

- A. Skid Frame shall support all other system components including the Upper Salt Hopper, Lower Brine Holding Tank, hydraulic system, brine discharge pump, plumbing, and electrical control panel.
- B. The entire Skid Frame shall be constructed of structural stainless steel tubing, 3" x 3" x 3/16".
- C. The Skid Frame shall have 3" x 3" x 3/16" structural stainless steel bottom cross beams on each side and two across the rear. These cross beams will be located approx. 6-8" above the floor to enhance floor cleaning. The Skid Frame shall also have a 3" x 3" x 3/16" structural stainless steel front cross beam welded to the frame to support the locking pins for the Lower Brine Holding Tank and trash screen.
- D. Skid Frame shall also have 3" x 3" x 3/16" structural stainless steel cross beams running across the top on the front, back & both sides. It shall also have 3" x 3" x 3/16" structural stainless steel beams running diagonally on both sides.
- E. Each vertical leg of the skid frame shall also have stainless steel base feet (pre-drilled) for securely anchoring the skid frame to the floor. Vertical legs will be telescoping (manual) with bolt holes every 4" for height adjustment in the field.
- F. Stainless steel lifting lugs are provided on all four corners of the skid frame so an overhead or portable crane can be used for lifting and positioning the system.

#### VI. Hydraulic System:

- A. Hydraulic System for rotating the Lower Brine Holding Tank & trash screen down and up shall be completely self-contained (no hydraulic lines or connections required by owner).
- B. Hydraulic System shall include a hydraulic pump with integral reservoir (reservoir shall be Stainless Steel). The hydraulic pump shall be operated by a close-coupled 1 HP, 115/208-230V, 1 Phase, Totally Enclosed (TENV) electric motor. The system shall also include a pressure relief valve. Two 2 1/2" dia. hydraulic cylinders shall also be included, sufficient in size to rotate the Lower Brine Holding Tank. The cylinders shall be securely pinned to the Lower Brine Holding Tank. A hydraulic control valve shall also be included to retract and extend the hydraulic cylinders. Proper hydraulic tubing and fittings shall also be included to provide a complete & fully operational system. Hydraulic tubing shall be steel with zinc plating with a 24 hour salt spray rating. Hydraulic fittings shall be JIC steel fittings with outdoor rating.

#### VII. Brine Discharge Pump:

- A. Pump shall be 2" x 1 1/2" straight centrifugal constructed of 316 stainless steel (housing, impeller & mounting feet) with viton/carbon/ceramic mechanical seal. Pump shall be close-coupled to a 3 HP, 220V, 1 Phase, TEFC motor.
- B. Pump shall be capable of producing a maximum flowrate of 150 GPM and also 80 GPM at 62' total dynamic head (TDH).

#### VIII. Discharge Plumbing:

- A. Discharge plumbing shall make maximum use of polypropylene valves & pipe fittings and wire reinforced hose for corrosion resistance and quick & easy maintenance.
- B. Suction plumbing to the Brine Discharge Pump shall include a 2" EPDM suction hose (wire reinforced) with 2" check valve (on the Lower Brine Holding Tank port). It shall also include a 2" valve and camlock male adaptor for pulling finished brine from a storage tank hose. It shall also include 3/4" fresh water inlet/salinity adjustment plumbing including a solenoid valve

- (controlled by Control Panel to be open only when brine pump is running) and manual adjustment valve (for adjustment of the fresh water for salinity adjustment).
- C. Discharge plumbing from the Brine Discharge Pump shall include a 2" valve & camlock male adaptor for storage tank hose hook-up. It shall also include a 3/4" valve and built-in clear PVC tube for sampling the finished brine concentration. The PVC tube shall also include clear tubing and valves to send the sampled brine back to the pump suction when the pump is running.

IX. Water Inlet & Spray Bar Plumbing:

- A. Water inlet plumbing shall include a 2" polypropylene valve (1 1/2" I.D.) with 2" camlock male adaptor for water inlet hose hook-up. It shall also include two 1-1/4" Sch. 40 stainless water spray pipes running across the Upper Salt Hopper (one spray pipe near top and other approx. 2'6" above bottom of hopper), both with stainless shields over the spray pipes. These spray pipes shall have drill holes at proper spacing and size to concentrate solid streams of water onto the salt pile in the Upper Salt Hopper. Spray pipes can be turned on or off individually with stainless ball valves located outside the hopper.
- D. A 2"-24V electric ball valve (1 1/2" I.D.) shall be included in the water inlet plumbing. This valve will be automatically closed when the float switch in the Upper Salt Hopper or Lower Brine Holding Tank is activated (indicating that the water inflow rate is faster than the brine pump discharge rate, or that it may be "time to clean" the system). This gives the system to self-regulate water inflow rates to better match brine pump discharge rate.

X. System Control Panel:

- A. The System Control Panel shall include an IP66 (weathertight) hinged, PVC, gasketed enclosure securely mounted to the skid frame.
- B. Panel shall also include power disconnect switch with lock-out/tag-out, hydraulic pump control, 208-240/24V transformer, waterproof switches (wired 24V; IP65) including "auto/shutdown" switch, pump only switch, and hydraulic system switch (switches are illuminated style). Panel also includes an indicating "time to clean screen" light and an indicating "reduce flow" light. Panel shall also be wired to four float switches: one to shut off the brine pump should the brine level drop too low in the Lower Brine Holding Tank (to protect the pump from running dry), two more to shut off the electric water inlet valve (when water inflow rate is faster than brine pump discharge rate; one in the Lower Brine Holding Tank and one in the Upper Salt Hopper), and one to indicate "time to clean" (in the Upper Salt Hopper).
- C. Panel shall be wired with overload protection and ready to receive 220V, 1 Phase power (power supply to panel to be direct wire in proper conduit, by owner's electrician).
- D. Electrical System shall also include flexible conduit with liquid-tight connectors from the Control Panel to the brine discharge pump and hydraulic system pump motor.
- E. Control Panel shall be UL Listed.

XI. Other Safety/Operational Features:

- A. System shall include 3 oblong "Sight Windows" in the Upper Salt Hopper. These windows will be constructed of Lexan and are positioned so the operator can see the salt level in the Upper Salt Hopper from the floor, once the salt level lowers.
- B. Both the "Time to Clean" indicator light and the "Sight Windows" provide key safety advantages in addition to operational advantages in that no ladders will be required to check the salt or water level in the Upper Salt Hopper, or to determine when it is "Time to Clean" the system.
- C. System shall include two heavy-duty rubber Safety Shields (one on each end of system).

XII. Manuals:

- A. One Installation & Operation Manual shall be supplied with each system delivered (copies available at no additional cost).
- B. Plumbing & Wiring Schematics shall be included in the manual.

XIII. Warranty:

- A. Warranty shall begin at time system(s) are delivered.
- B. Warranty shall be for one year, including all system components & parts (labor and any incidental costs by owner; not included).
- C. See Owner's Manual for complete safety, operational, and warranty information.

XIV. Training:

- A. A minimum of 4 hours of On-Site Training by a qualified representative of the selling company will be included. In addition, free phone support will be provided for both installation support and operational questions.

XV. Optional Items:

- A. A complete accessories plumbing kit to connect the Brine Production System to a brine storage tank including 150' of 2" EPDM suction/discharge hose (wire reinforced), 6-2" polyprop. ball valves, 6-2" polyprop camlock couplers and 3-2" polyprop male cam adaptors. This is plumbing kit DU 1B020A and can be provided at additional cost.
- B. Other plumbing valves and fittings are available at additional cost, including brine storage tanks and transfer pump units



# COMPLETE SPEC FOR OUR BPS5000-SS

## BPS5000-SS BRINE PRODUCTION SYSTEM FEATURING

### ULTRA-EASY CLEANOUT

### SPECIFICATION

Nov 9, 2020

It is the intent of this Specification to describe in detail an Ultra Easy-Clean Out Brine Production System. This system shall be designed and constructed to convert rock salt to finished salt brine. It shall also include a self-contained hydraulic system to rotate the lower brine holding tank and trash screen down when cleaning is desired, allowing all debris in the salt hopper to simply flow into a standard 2 or 3 cu. yd. loader bucket. Total clean-out will only take approximately 10 minutes and requires no personnel entry into the system for shoveling and no "quick attach" loader buckets.

#### I. General:

- A. The BPS5000-SS Brine Production System shall be capable of producing approximately 3,000 to 5,000 Gallons of Brine Per Hour (based on owner's water supply of 50 GPM to 83 GPM at 60 PSI or greater).
- B. System shall be designed and constructed to be easily filled with rock salt using a standard 2 cu. yd. or 3 cu. yd. loader bucket (no conveyors or augers required).
- C. System shall be designed and constructed to be easily cleaned of all debris in the salt hopper with a standard 8' wide 2 cu. yd. or 3 cu. yd. loader bucket (no "quick attach" loader buckets are required). To do this, the loader operator will simply position his loader bucket below the system's lower brine holding tank. He will then switch on the system's self-contained hydraulic control Power Pack. The operator will then rotate the pivoting trash screen and lower brine holding tank down, allowing all debris in the salt hopper to flow into the loader bucket.
- D. System shall also be designed and constructed to provide for easy clean out of the silt and other fines inside the lower brine holding tank as follows: The operator will again rotate the system's lower brine holding tank down, this time with the pivoting trash screen held in the "up" position. He will then clean the inside the lower brine holding tank and wash out the silt and other fines using a standard water spray hose (can also remove lower secondary screen when desired).
- E. Entire system shall be constructed on a single skid frame to allow for easy loading, unloading, and moving using various loaders with forks (system can also be lifted into place).
- F. System shall be a "downward flow" brinemaker where the salt bed acts as a "filter bed" as the water moves down through the bed from the top spray bars. This provides for cleaner brine (less suspended solids in the finished brine) than upward flow brinemakers produce.
- G. Overall system dimensions are: 10'6" wide x 6'1" deep x 8'0" high.

#### II. Upper Salt Hopper:

- A. The Upper Salt Hopper shall have an approximate capacity of 6 cu. yds. of rock salt. It shall be approx. 120" (10'0") wide by 63" (5'3") deep at the top to allow for easy loading with rock salt with 2 or 3 cu. yd. loader buckets. The back side of the hopper shall be angled forward (tapered). There shall also be inward tapers on the left and right sides of the lower portion of the salt hopper.
- B. The Upper Salt Hopper shall be constructed of 10 gauge, 304 stainless steel.

#### III. Pivoting Trash Screen:

A 14 gauge 304 stainless steel trash screen shall be located at the bottom of the hopper. This screen shall have approx. 1/4" dia. circular holes through it. The screen shall be hinged on its back side and have a securing device on its front side so it can rotate down with the Lower Brine Holding Tank, or be secured in the up position for additional cleaning of fines from the Brine Tank.

#### IV. Lower Brine Holding Tank:

- A. The Lower Brine Holding Tank shall be constructed of 10 gauge, 304 stainless steel.
- B. 304 stainless steel support members shall run across the Lower Brine Holding Tank at proper spacing to provide support for the trash screen above.
- C. A 16 gauge 304 stainless steel secondary screen shall be located approximately 6-8" from the bottom of the Lower Brine Holding Tank. This screen shall have approx. 1/8" dia. circular holes through it. The screen shall be removable for cleaning purposes.

- D. A 2" stainless steel female thread bung or coupling shall be welded into the back side of the Lower Brine Holding Tank.
- E. The back side of the Lower Brine Holding Tank shall be hinged and also have locking pins on the left and right front sides so it can rotate down and back up again (for cleaning purposes). The back hinges/sleeves and front locking pins/sleeves shall be 304 stainless steel. The torsion bar on the back side of the Lower Brine Holding Tank shall also be 304 stainless steel.
- F. Lower Brine Holding Tank shall hold approximately 150 gallons and shall have a forward taper on its back side. It shall be approx. 94" (7'10") across its front so a standard 2 cu. yd. or 3 cu. yd. front end loader bucket can be easily positioned underneath it.

V. Skid Frame:

- A. Skid Frame shall support all other system components including the Upper Salt Hopper, Lower Brine Holding Tank, hydraulic system, brine discharge pump, plumbing, and electrical control panel.
- B. The entire Skid Frame shall be constructed of structural stainless steel tubing, 3" x 3" x 3/16".
- C. The Skid Frame shall have 3" x 3" x 3/16" structural stainless steel bottom cross beams on each side and two across the rear. These cross beams will be located approx. 6-8" above the floor to enhance floor cleaning. The Skid Frame shall also have a 3" x 3" x 3/16" structural stainless steel front cross beam welded to the frame to support the locking pins for the Lower Brine Holding Tank and trash screen.
- D. Skid Frame shall also have 3" x 3" x 3/16" structural stainless steel cross beams running across the top on the front, back & both sides. It shall also have 3" x 3" x 3/16" structural stainless steel beams running diagonally on both sides.
- E. Each vertical leg of the skid frame shall also have stainless steel base feet (pre-drilled) for securely anchoring the skid frame to the floor. Vertical legs will be telescoping (manual) with bolt holes every 4" for height adjustment in the field.
- F. Stainless steel lifting lugs are provided on all four corners of the skid frame so an overhead or portable crane can be used for lifting and positioning the system.

VI. Hydraulic System:

- A. Hydraulic System for rotating the Lower Brine Holding Tank & trash screen down and up shall be completely self-contained (no hydraulic lines or connections required by owner).
- B. Hydraulic System shall include a hydraulic pump with integral reservoir (reservoir shall be Stainless Steel). The hydraulic pump shall be operated by a close-coupled 1 HP, 115/208-230V, 1 Phase, Totally Enclosed (TENV) electric motor. The system shall also include a pressure relief valve. Two 2 1/2" dia. hydraulic cylinders shall also be included, sufficient in size to rotate the Lower Brine Holding Tank. The cylinders shall be securely pinned to the Lower Brine Holding Tank. A hydraulic control valve shall also be included to retract and extend the hydraulic cylinders. Proper hydraulic tubing and fittings shall also be included to provide a complete & fully operational system. Hydraulic tubing shall be steel with zinc plating with a 24 hour salt spray rating. Hydraulic fittings shall be JIC steel fittings with outdoor rating.

VII. Brine Discharge Pump:

- A. Pump shall be 2" x 2" straight centrifugal constructed of cast 316 stainless steel (housing, impeller & shaft) with viton/silicon-carbide mechanical seal. Pump shall be close-coupled to a 3 HP, 220V, 1 Phase, TEFC motor.
- B. Pump shall be capable of producing a maximum flowrate of 140 GPM and also 96 GPM at 60' total dynamic head (TDH).

VIII. Discharge Plumbing:

- A. Discharge plumbing shall make maximum use of polypropylene valves & pipe fittings and wire reinforced hose for corrosion resistance and quick & easy maintenance.
- B. Suction plumbing to the Brine Discharge Pump shall include a 2" EPDM suction hose (wire reinforced) with 2" check valve (on the Lower Brine Holding Tank port). It shall also include a 2" valve and camlock male adaptor for pulling finished brine from a storage tank hose. It shall also include 3/4" fresh water inlet/salinity adjustment plumbing including a solenoid valve



- (controlled by Control Panel to be open only when brine pump is running) and manual adjustment valve (for adjustment of the fresh water for salinity adjustment).
- C. Discharge plumbing from the Brine Discharge Pump shall include a 2" valve & camlock male adaptor for storage tank hose hook-up. It shall also include a 3/4" valve and built-in clear PVC tube for sampling the finished brine concentration. The PVC tube shall also include clear tubing and valves to send the sampled brine back to the pump suction when the pump is running.

IX. Water Inlet & Spray Bar Plumbing:

- A. Water inlet plumbing shall include a 2" polypropylene valve (1 1/2" I.D.) with 2" camlock male adaptor for water inlet hose hook-up. It shall also include two 1-1/4" Sch. 40 stainless water spray pipes running across the Upper Salt Hopper (one spray pipe near top and other approx. 2'6" above bottom of hopper), both with stainless shields over the spray pipes. These spray pipes shall have drill holes at proper spacing and size to concentrate solid streams of water onto the salt pile in the Upper Salt Hopper. Spray pipes can be turned on or off individually with stainless ball valves located outside the hopper.
- D. A 2"-24V electric ball valve (1 1/2" I.D.) shall be included in the water inlet plumbing. This valve will be automatically closed when the float switch in the Upper Salt Hopper or Lower Brine Holding Tank is activated (indicating that the water inflow rate is faster than the brine pump discharge rate, or that it may be "time to clean" the system). This gives the system to self-regulate water inflow rates to better match brine pump discharge rate.

X. System Control Panel:

- A. The System Control Panel shall include an IP66 (weathertight) hinged, PVC, gasketed enclosure securely mounted to the skid frame.
- B. Panel shall also include power disconnect switch with lock-out/tag-out, hydraulic pump control, 208-240/24V transformer, waterproof switches (wired 24V; IP65) including "auto/shutdown" switch, pump only switch, and hydraulic system switch (switches are illuminated style). Panel also includes an indicating "time to clean screen" light and an indicating "reduce flow" light. Panel shall also be wired to four float switches: one to shut off the brine pump should the brine level drop too low in the Lower Brine Holding Tank (to protect the pump from running dry), two more to shut off the electric water inlet valve (when water inflow rate is faster than brine pump discharge rate; one in the Lower Brine Holding Tank and one in the Upper Salt Hopper), and one to indicate "time to clean" (in the Upper Salt Hopper).
- C. Panel shall be wired with overload protection and ready to receive 220V, 1 Phase power (power supply to panel to be direct wire in proper conduit, by owner's electrician).
- D. Electrical System shall also include flexible conduit with liquid-tight connectors from the Control Panel to the brine discharge pump and hydraulic system pump motor.
- E. Control Panel shall be UL Listed.

XI. Other Safety/Operational Features:

- A. System shall include 2 circular "Sight Windows" in the Upper Salt Hopper. These windows will be constructed of Lexan and are positioned so the operator can see the salt level in the Upper Salt Hopper from the floor, once the salt level lowers.
- B. Both the "Time to Clean" indicator light and the "Sight Windows" provide key safety advantages in addition to operational advantages in that no ladders will be required to check the salt or water level in the Upper Salt Hopper, or to determine when it is "Time to Clean" the system.
- C. System shall include two heavy-duty rubber Safety Shields (one on each end of system).

XII. Internal Upward Flow Weir:

The BPS5000-SS also has the ability to make brine in a combined "downward/upward" flow process. The operator does not make any changes to the Control Panel switches or other changes for this process to occur. If the lower trash screen clogs to the point where liquid brine starts to rise upward in the salt



hopper, brine will simply rise up and into the "internal upward weir" located along the front hopper wall. Brine running up and into this overflow weir runs thru its screen, then vertically down and thru the main lower trash screen, and into the lower brine tank. If the screen on the overflow weir were to clog up, the float switches in the upper corner of the salt hopper will turn off the water inlet valve periodically so brine does not overflow the salt hopper rim.

XIII. Manuals:

- A. One Installation & Operation Manual shall be supplied with each system delivered (copies available at no additional cost).
- B. Plumbing & Wiring Schematics shall be included in the manual.

XIV. Warranty:

- A. Warranty shall begin at time system(s) are delivered.
- B. Warranty shall be for one year, including all system components & parts (labor and any incidental costs by owner; not included).
- C. See Owner's Manual for complete safety, operational, and warranty information.

XV. Training:

- A. A minimum of 4 hours of On-Site Training by a qualified representative of the selling company will be included. In addition, free phone support will be provided for both installation support and operational questions.

XVI. Optional Items:

- A. A complete accessories plumbing kit to connect the Brine Production System to a brine storage tank including 150' of 2" EPDM suction/discharge hose (wire reinforced), 6-2" polyprop. ball valves, 6-2" polyprop camlock couplers and 3-2" polyprop male cam adaptors. This is plumbing kit DU 1B020A and can be provided at additional cost.
- B. Other plumbing valves and fittings are available at additional cost, including brine storage tanks and transfer pump units

## **Warranty for this Contract Proposal**

1. Dultmeier Sales will warranty all equipment sold under this Contract for a period of one year from the date of equipment installation. Warranty on BPS3000-SS and BPS5000-SS Brine Production System hopper, lower brine tank and frame will be for 3 years from the date of equipment installation. This warranty will cover the cost of equipment, components and parts (shipped by us at no cost and no freight cost). It will generally not cover the labor to install the new equipment, components & parts at the site (under certain conditions and if time allows, we will send our own technician to install necessary repair parts for equipment that is still under warranty).
2. Dultmeier Sales will also buy back repair parts sold to government Entities under this Contract, so long as those parts are in new (not used) condition and less than 2 years old. We will also correct ordering errors for components and parts without further cost to the ordering entity.