



BRS1 BACTERIAL REDUCTION SYSTEM

Not Just A System, It's The Solution

The Ultimate In Brine Treatment & Conditioning

Central System
for Multiple
Injector
Applications
(Refrigerated)

Technologically Advanced Fluid Treatment Methods for the
Meat, Poultry and Other Related Processing Industries

Filtration • Deposit Control Technology • Ozone & UV Disinfection/Purification
COMBINED FOR MAXIMUM EFFECTIVENESS

“THE COMPETITIVE EDGE”

*The following features
make the BRS/1 system
particularly effective in
treating brine:*

*The BRS/1 bacterial
reduction system com-
bines several technologies
to achieve a very high
bacterial kill rate, at least
3 logs for common
contaminants.*

FILTERING: The BRS/1 provides four-stage filtering. This helps further clarify the brine. The cleaner the brine, the more effective the treatment system will be.

DEPOSIT CONTROL: De-calcifies water, making it “wetter”. Less chance of mineral build-up in system and on UV lamps.

OZONE TREATMENT: The system operates with an ozone generator that provides the ozone to accomplish the primary clarification and disinfection. The brine is mixed with ozone in a long coil, assuring that the ozone is reaching all contaminants in the fluid. This system is less dependent on having clear brine than standard UV treatment only.



QUATTRO 50 UV STATION: This 4 lamp system, equipped with pneumatic wipers, will act as a secondary disinfection agent and will destroy residual ozone. A proprietary UV reaction chamber design allows for maximum exposure of the brine to the UV

light during the treatment process, yielding better bacterial kill.

MULTI PASS SYSTEM: This system will provide at least two passes through the system. Only treated brine is delivered to the injection systems.

REFRIGERATED RESERVOIR TANKS: Accumulation tanks before and after treatment system allow you to create batches of untreated and treated brine in separate vessels. This allows all brine to be treated twice as a batch.

CENTRAL SYSTEM: This system can treat up to 3000 gallons per hour. This can feed up to 4 injection lines for fresh marination applications.

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NU-MEAT TECHNOLOGY, INC.

601 Hadley Road • P.O. Box 897 • South Plainfield, NJ 07080 • 908-754-3400 • FAX 908-754-3401
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**TWT Deposit Control Technology • Ozone/Ultraviolet Disinfection
& Purification 2-Stage Filtration Multi Process-Combined for
Maximum Effectiveness**



- **The system process is guaranteed to achieve a minimum three (3) log reduction for common bacterial contaminants. The recirculating ability of the system will guarantee an enhanced kill rate.**
 - **Multiple technologies, including Filtration, TWT Patented Deposit Control Technology, Ultraviolet and Ozone Disinfection & Purification, are combined for maximum effectiveness.**
 - **High capacity system: able to treat up to 3000 gallons of brine per hour.**
 - **All brine, both incoming and recirculated, is passed through the system, assuring only “treated” brine is injected into the meat/poultry.**
 - **The BRS/1 bacterial reduction system is ruggedly constructed for exceptional performance. The rugged self-contained design of this system ensures that the system will enjoy a long and reliable life cycle when properly cared for.**
 - **Easy to follow care, maintenance & operation manual. Other basic informational labels are affixed to the system (system requires minimal maintenance).**
 - **The BRS/1 system guarantees a reduced bacterial load in the brine solution; this ensures a cleaner, safer product for processing & consumption.**
- **Self Contained Unit**
 - **Enhance Food Safety Efforts by Controlling Pathogens and Spoilage Organisms Which May Enter Brine**
 - **Enhance Shelf Life**
 - **High Quality Final Output**
 - **No Chemicals Used**
 - **Environmentally Friendly**
 - **Insures That Safe Products are Delivered to Consumers**
 - **Cost Effective and Pays for Itself**

**\$2.7 Billion, the cost of
E.Coli 0157:H7**

Recalls:

Meat & Poultry Journal
Feb 2003

Rising Insurance Costs:

Meat & Poultry Journal
March 2003

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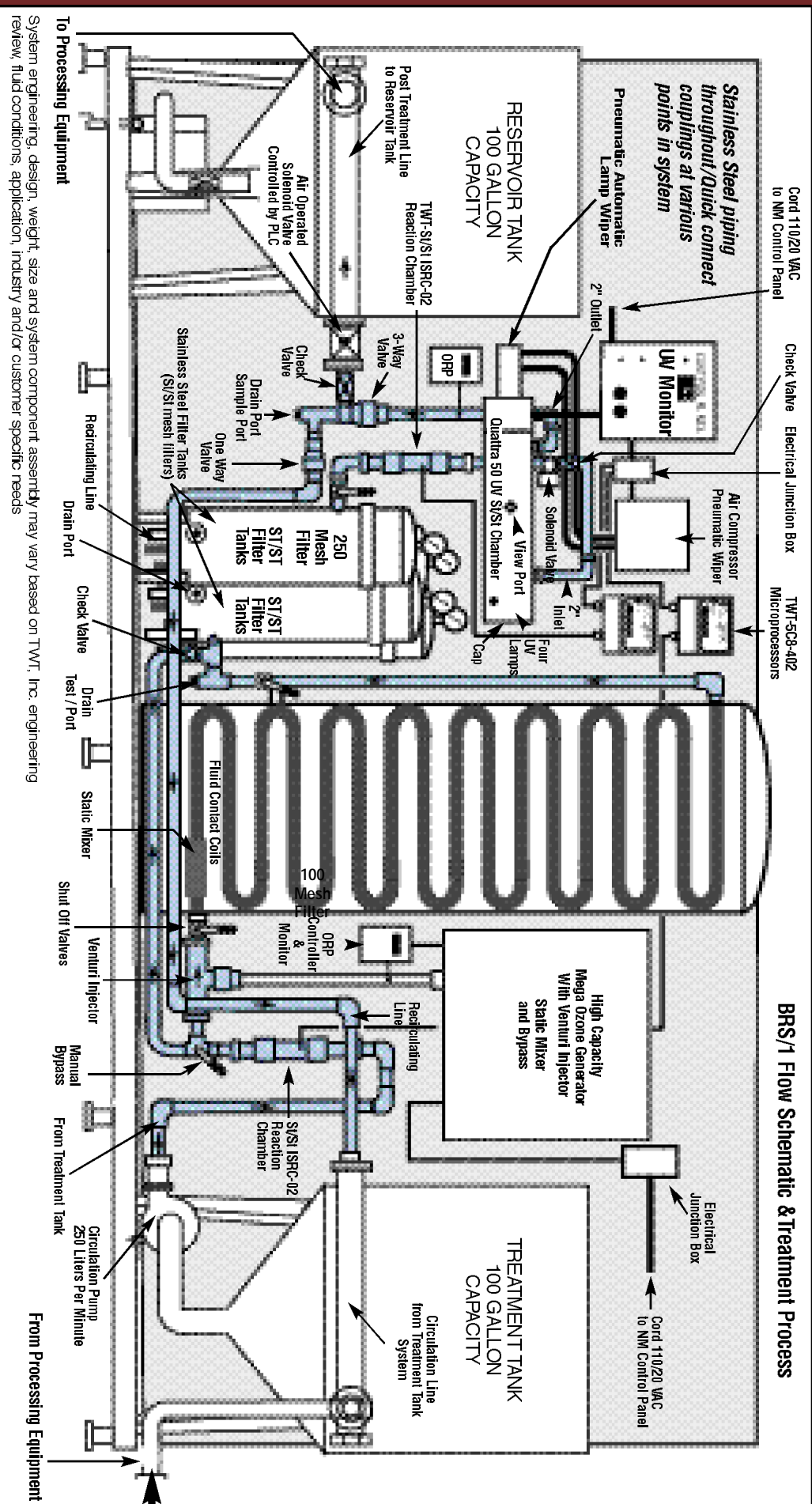
BRS1

**BACTERIAL
 REDUCTION
 SYSTEM**

**Central System for Multiple
 Injector Applications
 (Refrigerated)**

Not Just A System, It's The Solution

High Capacity Able to Treat Up To 3000 Gallons of Brine Per Hour—High Efficiency Fluid Treatment System



Triangular Wave Technologies Inc.
 System Integrated Bacterial Reduction System
 TWT Deposit Control Technology • Ozone/Ultraviolet
 Disinfection & Purification 2-Stage Filtration
 Multi Process-Combined for Maximum Effectiveness

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BRS/1 Factory Assembled & Enclosed Unit Able to Treat Up To 3000 Gallons of Brine Per Hour

This fluid management system is a self-contained unit for the treatment & conditioning of water/brine

Process Overview: Basic Systems Operation / System Detail

The front-end of the system will incorporate TWT® Deposit Control Technology, and a high capacity Ozone Injection and ORP System to provide primary disinfection and primary clarification of the brine solution. The back-end of the system will provide TWT® deposit control along with secondary disinfection and primary ozone destruct via the UV reaction chamber, to stabilize the resulting brine solution. The system is designed to integrate with existing treatment processes and equipment configurations.

Stage 1 Treatment:

Integrated treatment tank: Ammonia or Glycol-Jacketed 100 gallon capacity. ASME certified.

The fluid will first flow through the treatment tank and then through the TWT reaction chamber, enhancing the operation of all downstream treatment processes. The system will employ a high capacity ozone generator with oxygen generator, ORP system and associated valves and piping. The ozone will be injected into the fluid stream with a Venturi injector and fluid will then circulate through a contact coil (which negates the need for an expensive contact tank). The solution will then pass through a 4-stage filtration process to remove the oxidized materials. Cleanable, reusable 250/100 micron stainless steel mesh filters are used to help keep operation costs to a minimum, and providing a simple, efficient and rapid cleanout process. If fluid conditions require additional micron particle trapping for enhanced results, mesh filters for ST/ST tanks are available in various micron sizes (providing flexibility & adaptability to meet the needs of all fluid conditions & applications). Stage 1 will accomplish primary disinfection to the fluid stream and result in a more clear fluid to be processed in stage 2 and 3. Stage 1 flow rates are maintained with a 50 GPM high quality pump to ensure proper ozone injection.

Stage 2 Treatment:

The system will process the stage 1 treated fluid through the TWT 2nd reaction chamber, (within the deposit control system), then through the Quattra 50 UV to provide secondary disinfection to the fluid stream. The UV system will also destruct most of the residual ozone in the fluid stream to pass disinfected brine solution into the 2nd holding tank in the system configuration.

Stage 3 Treatment:

The treated and conditioned fluid will then be recirculated (a minimum of two times) through the system further to achieve and guarantee an enhanced kill rate. Then the disinfected solution will go to the 2nd holding tank (100 gallon Ammonia-Jacketed Distribution Tank) that returns the treated brine to the injectors).

Filtration

Filters are designed to trap various kinds of debris, dirt, and organic particles that will otherwise enter your equipment and/or plumbing system, restrict flow and create a breeding ground for bacteria. Filtration is the first line of defense. **The first step in achieving clean water/brine is to install a filtration device that effectively removes particulate matter and similar debris.** Filters used in staged filter housings are configured as illustrated. If fluid conditions require smaller micron particle trapping for enhanced results, mesh filters for the housings are available in various micron sizes (providing flexibility & adaptability to meet the needs of all fluid conditions & applications).

TWT Patented Deposit Control Technology:

The basic component in the TWT systems is the deposit controller. **The system is comprised of a microprocessor, and solenoid coil wrap reaction chamber.** The microprocessor is a patented controller that functions like a computer to relay a continuous electrical power supply to the solenoid coil reaction chamber. The reaction chamber is plumbed into the fluid line just before each piece of vital processing equipment, and provides a factory-wrapped wire coil forming a solenoid. The solenoid conveys the triangular wave signal at the appropriate power level (as allowed by the model chosen) to the fluid passing through the chamber. This signal constantly changes the polarity, frequency, and amplitude of the current entering the fluid. This triangular wave treatment produces several benefits. **It increases the capability of the fluid to hydrate scale ions and other colloidal particles.** In effect, the surface charge of the hydrogen molecules is enhanced and the fluid is made "wetter". This "hydrated" fluid can dissolve unwanted particles, suspend them in solution, and allow them to be easily filtered out or flushed from the system. Accordingly, the mineral and biological particles that cause scale, deposits, and corrosion are dissolved and washed away.

This means that the breeding environments for bacteria, such as biofilm and corrosion, are eliminated. The agitation created in the reaction chamber also disrupts the conditions essential for the normal reproduction of bacteria and they die. **If left untreated, scale build-up inside the reaction chamber and on the**

quartz sleeve containing the UV lamps may rapidly diminish the UV disinfection effectiveness by reducing the amount of UV light which is absorbed into fluid stream. The TWT Deposit Control System will further condition the treated fluid stream so as to prevent this scale-build-up inside the UV reaction chamber, helping to maintain maximum UV life cycle and penetration into the fluid stream.

Ultraviolet Disinfection

The UV disinfection technology is used in the system to provide safe fluids, free of disease-causing pathogens. As fluids pass through the UV chamber, UV light will attack and render harmless any bacterial, viral or spore contamination present in the treated fluid. High intensity UV light destroys these contaminants. The output fluid is thus disinfected and offers exceptionally high quality fluid for processing. The Quattra 50UV has an integrated pneumatic wiper system to maintain lamp efficiency, and a proprietary UV reaction chamber designed to increase the dwell time inside the chamber. The system is engineered and designed to provide a very high UV dose via extended dwell time at multiple flow rates. The UV chamber also provides exceptional residual ozone destruction in the downstream solution.

Ozone Generator

Ozone is a natural, safe way to purify fluid in many different applications. It eliminates the need for chemicals which is costly to the budget. The Ozone Generator converts oxygen (O₂) into Ozone (O₃) by the action of the corona discharge system. Ozone is then injected into the fluid where it destroys viruses, bacteria and many other microorganisms. The TWT Deposit Control System enhances the Ozone Generator Technology and its operation. In this way, the full treatment benefits are realized, with reduced maintenance requirements.

Ozone System Bypass

A manual bypass is integrated into the treatment system as illustrated. **Ozone bypass will allow for periodic review and adjustment of the ozone injection system, for quality control measures.** When the system is in bypass mode, UV disinfection & recirculation ability will ensure continual (uninterrupted) disinfection and bacterial reduction, during review and adjustment period.

ORP (Oxidation Reduction Potential)

The ORP monitor and adjustable controller continually monitors the ORP (a proxy for ozone content) of the fluid and automatically adjusts the ozone generator accordingly to achieve a stable ORP (and therefore ozone content) via an inline sensor. An ORP monitor will monitor the ORP of the fluid output from the UV system via an inline sensor.

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Product: TWT-BRS/1

Utilities: L: 144" W: 76" H: 85"

Weight: Approx. 2600 lbs.

ELEC: 3 Phase 460 Vac. 30 Amps • 1 Phase 120 Volts 20 Amps

Air: 1/4" 100 PSI 10 CFM

Warranty: 1 year parts and labor for defective parts or workmanship on mechanical components – 90 days for electrical components

Delivery: 12-14 weeks (after clarification of all technical details)

Price \$_____ – Does not include piping to and from injectors nor integration of injectors to piping including pumps, floats, valves etc. Includes installation supervision and training

FOB: South Plainfield, NJ USA or Company Warehouse

Payment Terms: 50% with purchase order, 40% on delivery, 10% thirty (30) days after delivery

Note: We recommend that an initial supply of replacement products e.g., replacement filters, UV lamps etc. be stored at owners facility at all times, that will insure uninterrupted service and treatment.

Installation: Must have enough room on all sides for filter and UV replacement & maintenance

Pumps, piping, fittings, valves, and other material needed to and from system owners responsibility