Pontic Technology
Germ-Free, Clean Water from any Source

PONTIC TECHNOLOGY (TDSS) WHITE PAPER

Above: Bacteria & Viruses in Drinking Water[1]

TDSSg (gas) System

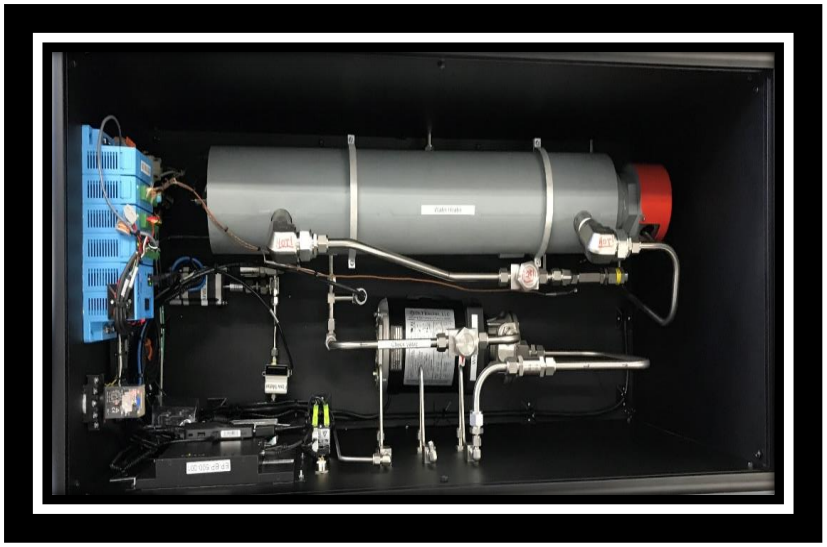
TDSS TECHNOLOGY SYSTEMS TESTED & VALIDATED

Our TDSSe, TDSSg systems performance have passed rigorous, multiple validation and assurance testing by independent laboratories. In all three cases, the findings and conclusions of the tests achieved all goals and validated technology objectives and performance. Test #1 focused on eliminating Geobacillus Stearothermophilus spore suspensions, which are the most heat resistant organisms known. Test #2 focused on eliminating E-Coli bacterial suspensions. Test #3 focused on water bottling test. FDA issued comprehensive bottled water Standards of Identity- 21C.F.R. 165.110 (b)

"We conclude with a high degree of certainty that the Company's systems are effective at achieving spore inactivation at sterility assurance levels greater than 6-log reduction (>>10^{-6} SAL) while operating in continuous flow water purification…"

Note: Effectiveness of sterilization is generally referenced as a sterility assurance level (SAL). For more on the meaning of SAL, go to https://en.wikipedia.org/wiki/Sterility_assurance_level

TDSS TECHNOLOGY OVERVIEW



TDSSe (Top Down View)

All of the innovative high heat/pressure TDSS systems are continuous flow systems requiring no moving parts, no filters/membranes and minimal maintenance. They can operate for years using either electricity (grid power, generators or solar panels) or natural gas/other hydrocarbon fuels, solar concentration and waste heat.

All systems are energy efficient and their operating performance can be operated and monitored remotely using a smart phone app or from a nearby station. If multiple systems are operating in a larger region, they can all be operated and monitored online or by wireless FM using regional radio systems (aircraft monitoring).

Each system purifies and sterilizes water by heating fluids above thresholds utilizing:

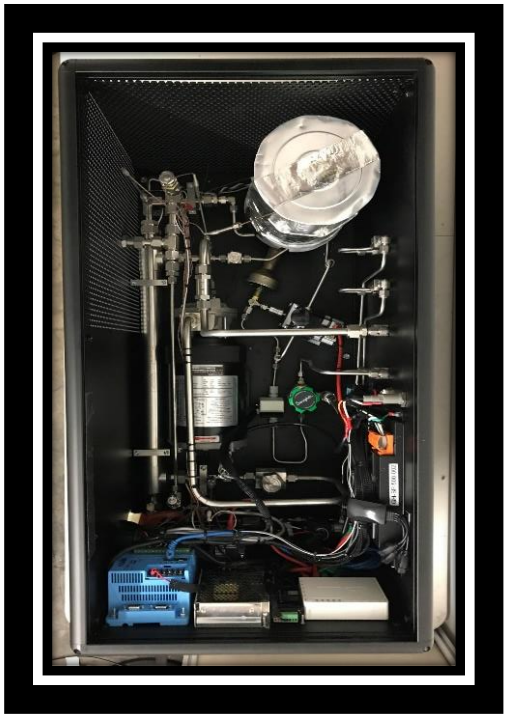
- Temperature – set at high temperature values that are adjustable during operations
- Pressure – more than the saturated water table values for the fixed temperature employed
- Time/Duration or Dwell Time – determined by the flow rate of the water/GPD for the desired Sterilization Assurance Level (SAL)
- Aeration (i.e. aerification) for VOC reduction and elimination

Water and other Fluids sterilization levels are achieved by varying pressure, temperature and dwell time using a proprietary control technology. Under these conditions and adding nothing to the water or other fluids, all microorganism/biological contaminants are eliminated.

In addition, only our technology/systems offer continuous flow with the ability to vary temperature, pressure and dwell time during operations in real time, while achieving the high level of sterilization assurance and validation of a 6 log reduction in bacterial spore population, exceeding established WHO, EPA, and state standards.

Our revolutionary systems significantly outperform current market water treatment systems, including reverse osmosis and UV lighting, because our systems utilize thermal inactivation, a process that is far more effective in eliminating all microorganism/biological contaminants (fungi, bacteria, viruses (including COVID-19), spore forms, parasites).

TDSSg (Top Down View)



Most clean water systems in the market today use methods such as reverse osmosis, membrane (filter) technology, or UV light technology. Our systems have significant and competitive differentiators from these other sterilization processes.

These differentiators include:

- continuous flow capabilities with the ability in real time to vary pressure, temperature and dwell time during operations – no other water treatment system can make this claim
- achieving a sterilization assurance and validation of 10^{-6} which greatly exceeds established WHO, EPA and state standards. A SAL of 10^{-6} is equal to a 6-log reduction in the population in bacterial spores.
- portable, scalable and customizable whether the need is 50 gallons per day (GPD) or 50 million+ GPD
- cost effective, energy efficient water and other fluids recycling and recovery solutions
- small footprint
- leaving minerals in the water
- no waste (unlike reverse osmosis technology that wastes up to 50% of the water treated as brine)
- having no filters and no moving parts
- requiring only minimal maintenance
- operating for years using either electricity, solar electric, solar concentration or natural gas
- operations of systems can be monitored/controlled remotely, via monitoring stations or smart phones.
- ability to operate at a competitive cost
- ability to operate in remote areas

TDSS TECHNOLOGY SPECS & PERFORMANCE OF BASE MODEL

The base model dimensions are: TDSSg 34x18x18 inches, weighs 60 lbs. / TDSSe 40x20x20 inches, weighs 90 lbs.

The energy consumption of each “base model” system is:

- TDSSe system average power draw is less than 1800 Watts continuous and produces 500 GPD
- TDSSg operating system has 15 Watts max electrical power consumption and produces 500 GPD.

- Lithium batteries are charged using (3) Thermal Electric Generators with optional 110/220 VAC Boost Pump for low-pressure inlet operations and heating power - up to 80,000 BTU (Propane/Butane fuel).

Options include solar panel battery charging, two (2) lithium-ion batteries powered by thermal electric generators and the ability to control system operations from a host vehicle (12/24 volts VDC).

TDSSe or TDSSg (Front of either system)

For data connectivity, the “base model” systems operate using:

- Optional TCP/IP Ethernet (wireless) connectivity for monitoring (up to 100 max remote user interface connections)
- Optional Email/SMS text notification built-in to each system allowing for status and operational reports

The operating characteristics of the “base model” systems:

- Require inlet water temp < 40°C
- Output water temperature < 50°C
- Are fully autonomous with a host of pre-programed safety features
- Are easily adaptable for reservoir operations “

The TDSSe requires de-scaling after 720 hours of calcified (hard) water sterilization. Note: All systems require pre-treatment cleaning before initial use.

The internal operating pressure of the “base model” systems:

- Require a minimum of 100psig inlet water pressure which is produced by an optional internal pump or an external source
- Operates up to a maximum 500psig internal pressure using internal pump for reservoir operations

Each “base model” system provides other benefits including, a prominent leadership role in environmental sustainability and risk mitigation, especially in drought stricken areas like California and dry, desert environments like much of Nevada; a strategic humanitarian aid capability, and a joint operating venture/strategic alliance with government. In addition, each system can be utilized in a rapid response/FEMA emergency - i.e. storm damage, etc.

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COMPANY CONTACT INFORMATION

Company headquarters is 905 Blue Heron, Seal Beach, CA. 90740. The Company's Technology Development Center (TDC) is located at 126 E. La Porte St., Suite E, Arcadia, CA. 91006. The Company markets, sells and provides on-site training for its TDSS technology world-wide.

The Company's CEO & Founder Dr. Michael Papadopoulos can be contacted by cell phone or text at 562-547-0200 or via e-mail at m.papadopoulos@pontictech.com.

Pontic Technology has a highly skilled and experienced Leadership Team (see short bios on next page). For additional information on the Company, please go to the Company website at: www.pontictech.com.

LEADERSHIP TEAM BIOS

Dr. Michael Papadopoulos - Founder & CEO, Chief Executive Officer
The driving force behind Pontic Technology and the development of its first technology – an innovative, competitive cost, no waste, patented thermal disinfection water sterilization system.
Has self-funded all technology development and company operations to-date.
A practicing Dentist for more than 27 years, whose business acumen is highly respected, as is his knowledge and expertise in clinical training and advanced oral health care.
Education: DDS, University of Southern California (USC) Herman Ostrow School of Dentistry.

Jim Lewis – CTO, Chief Technology Officer
In charge of overseeing the design, development and implementation of all company technology systems. Senior Test Engineer at NASA's Jet Propulsion Laboratory (JPL) and their lead for chemical propulsion and process automation. Lead integration engineer for Mars In-Situ Resource Utilization (Air & Water) Experiment (MOXIE). Past duties include Space Shuttle Systems Engineer and Test Director for Mechanical Truss systems on the International Space Station.
Veteran: U.S. Special Forces officer (27 years active and reserves), including multiple Middle East combat tours as a Special Forces team, company and battalion commander. Recipient of 30+ military awards including Bronze Star and U.S. State Department Meritorious Honor award for work with Afghan District Governors in Afghanistan.
Education: B.S. in Physics/Computer Applications, University of Alabama; Masters in Aerospace Engineering; Masters in Space Systems Engineering, both from Florida Institute of Technology.

Dr. Gerald Voecks – CSO, Chief Science Officer
In charge of technology advancements and use of maximum science applications. Senior Scientist at NASA's Jet Propulsion Laboratory (JPL) and their lead for development of in situ sensors for NASA's life support systems and in advancing technologies of NASA's space program for In Situ Resource Utilization for future human missions. Past duties include development of heterogeneous catalysts, designed for hydrogen production/hydrocarbon combustion. His work has pioneered catalyst systems designs and reactor designs that have been incorporated into operations on aircraft, vehicles and stationary powerplants and been active in fuel cell systems development.
Currently holds 20 patents, is co-author 20+ publications, and is a Visiting Scientist at Caltech.
Education: BSE, MA, PhD in chemistry, covering areas of inorganic synthesis, photo catalysis and reaction mechanisms. Postdoctoral work was in inorganic/organic surface chemistry.

Dr. Adrian Ponce – TSO, Test and Sterility Officer
In charge of ensuring the development and testing of company technology in meeting highest water sterilization assurance and validation standards. Senior Scientist at NASA's Jet Propulsion Laboratory (JPL) and chemistry faculty at Caltech. Research interest investigating microbial survival and growth have taken him to extreme environments, including the Atacama Desert, Chile, and the Kilimanjaro glaciers.
A list of published articles is available online at **http://ponce.caltech.edu**.
Education: Ph.D. Chemistry, Caltech for research on electron transfer in proteins and water.

Dr. John Solomon: Dr. John Solomon is one of the consultants and scientists that overlook research and development of flow systems and water sterilization experiments. He is a tenured Associate Professor of Mechanical Engineering at Tuskegee University, Alabama. His research interest is experimental fluid mechanics and he holds two US patents for developing actuators for high-speed flow control.

Other technology development team members include engineers and scientists in thermal dynamics, computer science, and fabrication development.