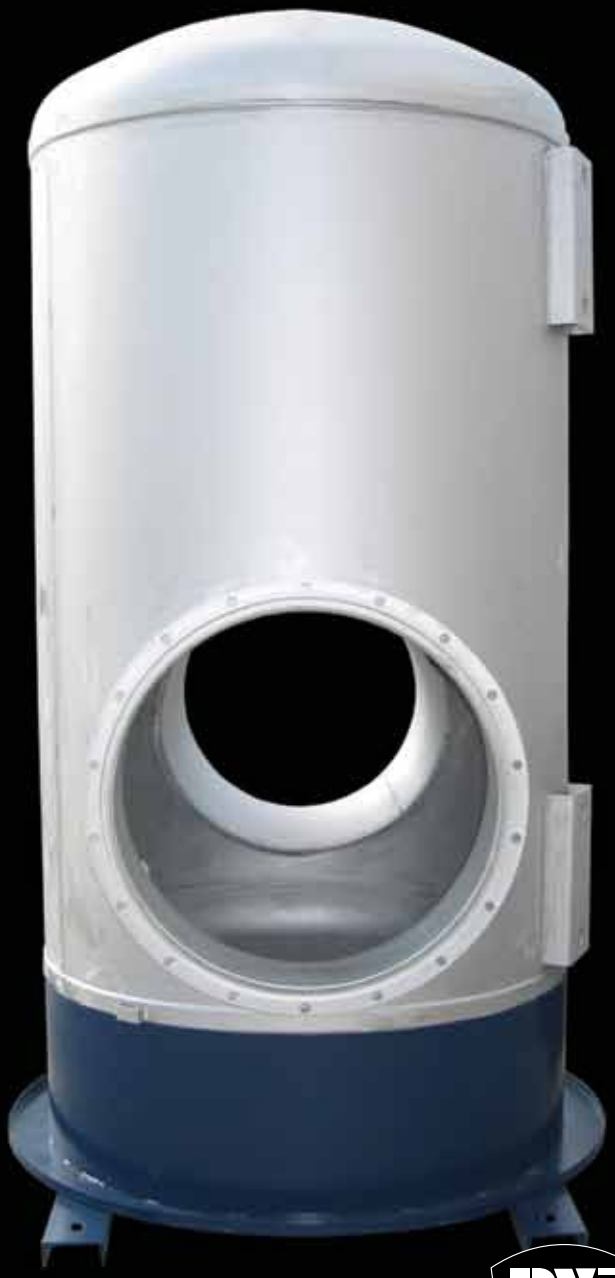
AquaPLEX®
ENGINEERED DUPLEX ALLOY

Eliminate tank corrosion in one easy spec.



Engineered duplex stainless steel combines the advantages of both 300 and 400 series stainless steel

No tank lining

No anodes of any type

Impervious to general aqueous corrosion and chloride stress corrosion cracking

Capable of containing water >200°F year after year with no effect

The ultimate solution to all water heating applications and the only long- term solution for solar thermal storage

PVI

Engineered Water Heating Solutions®

AquaPLEX®
ENGINEERED DUPLEX ALLOY

What is AquaPLEX?

AquaPLEX is an engineered blend of austenitic and ferritic steels that combines the grain structures and physical properties of both 300 and 400 series stainless materials. This synergy makes AquaPLEX highly resistant to aqueous, crevice, and pitting corrosion. It also exhibits excellent resistance to stress corrosion cracking - a degradation phenomena seen in 304, 304L, 316, and 316L materials from exposure to chlorides (salts) dissolved in water.

What is the biggest advantage of AquaPLEX?

AquaPLEX is an inherently corrosion resistant material that PVI fully restores to a passive state after vessel fabrication. AquaPLEX provides a long service life in all potable water conditions at any temperature without the need for tank linings or anode rods, which are both non-permanent methods that require service over time.

What makes AquaPLEX so corrosion resistant?

Immediately after final processing, the AquaPLEX material forms a continuous chromium oxide layer on its surface. The process occurs when the high chromium content of AquaPLEX combines with oxygen in the air to form a "passive" layer of protection. This layer is permanent and prevents AquaPLEX from corroding when exposed to the dissolved oxygen and other aggressive elements found in all potable waters.

Is there a temperature limit to AquaPLEX?

No. Although PVI recommends a maximum stored water temperature of 140°F for general use potable water service, AquaPLEX vessels are suitable for continuous exposure to water temperatures greater than 200°F, as often seen in solar thermal storage applications. Such temperatures would quickly erode tank linings like porcelain enamel (glass) or epoxy polymer. Temperature limits for AquaPLEX water heaters are dictated by ASME code limitations or appropriate safety certifications, and not the vessel material itself.

Are there equivalent materials to AquaPLEX?

There are materials that match the performance and life expectancy of AquaPLEX. Examples include tanks constructed from solid Inconel, copper-nickel and other high-chromium duplex stainless steels such as 2205 and 2304. There is no lined steel storage tank that can match the performance of AquaPLEX.

Is AquaPLEX proprietary?

No. AquaPLEX is listed by ASME as an approved material for pressure vessel construction and any material listed in the ASME code is available for use by any manufacturer. True to all manufacturing, how a material is processed to completion will dictate its ultimate performance. If others choose not to use the material due to the processing requirements, that does not make it proprietary to PVI.

What certifications does AquaPLEX have?

AquaPLEX is approved by ASME for construction of Section IV (H stamp), Section IV, Part HLW and Section VIII vessels. AquaPLEX is also NSF 61 accepted.

Are there other benefits to AquaPLEX?

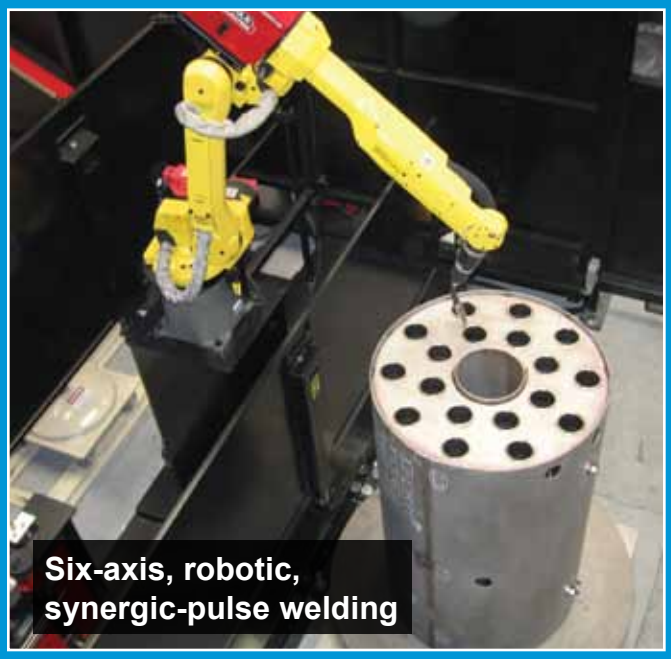
The surfaces of AquaPLEX vessels are non-porous. This helps to reduce the harborage of bacteria inside the water heater. AquaPLEX can also withstand repeated plumbing system sterilization cycles (180°F sanitizing temperature water flushing) without compromising the longevity of the vessel. Finally, because of its resistance to chloride stress corrosion cracking, AquaPLEX is not affected by additional chlorination, which may be used to chemically pre-treat a building's potable water supply or for system wide "shock" sterilization (hyperchlorination).

As much a specialized process as it is a unique material

PVI has manufactured pressure vessels for more than 50 years and has shipped more than 130,000 ASME stamped products. We are excited to introduce the next generation of PVI water heaters, and AquaPLEX has introduced new approaches and processes in our production facility.

Welding Technology

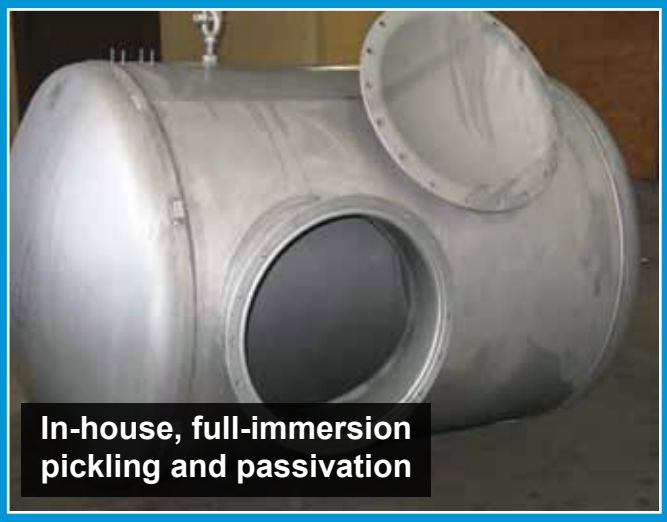
The unique characteristics of AquaPLEX have resulted in the application of several new welding technologies in PVI's manufacturing facility. PVI now employs synergic pulse welding machines that automatically and instantly manage the arc current and voltage based on the welding speed to optimize the size and quality of the welds. PVI also utilizes 6-axis robotic welding to ensure consistent high quality welds across the wide variety of welding operations required for the family of AquaPLEX water heaters.



Six-axis, robotic, synergic-pulse welding

Pickling and Passivation

AquaPLEX material arrives in the fully passive state, but the manufacturing processes can compromise this corrosion resistant condition. To return AquaPLEX to its fully passive condition, PVI utilizes its in-house chemical processing capability. The vessels are completely immersed in a time, temperature and concentration controlled pickling and passivation solution. When rinsed with purified water and exposed to air, the AquaPLEX reacts with oxygen to create the oxide layer responsible for its lifelong corrosion resistance.



In-house, full-immersion pickling and passivation

The Assistance of World Renowned Experts

PVI has developed an AquaPLEX team of world class engineers and scientists to assist in the material selection, product design, material handling, welding technology, vessel fabrication, chemical processing and testing to ensure our customers receive the lifelong value they expect. Join the technology revolution and say goodbye to corrosion – with AquaPLEX.

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The following are some of the PVI water heaters available with AquaPLEX vessels.

Power VT® Plus and TRICON®
condensing water heaters
up to 98% efficiency at full rate

Inputs: 399 to 2000 MBH

Capacity: 125 • 250 • 300 gallons

DURAWATT®
electric water heaters

Inputs: 9 to 500 kW

Capacity: 150 to 4500 gallons

TURBOPOWER® 99
condensing gas
99% thermal efficiency

Inputs: 199 to 2000 MBH

Capacity: 330 to 1200 gallons

QuickDraw®
steam and boiler water heaters
Semi-instantaneous and Storage

Inputs: 4" to 14" diameter u-tube bundles with lengths up to 86 inches depending upon boiler water temperatures and steam pressures

Capacity: 150 to 4500 gallons

TURBOPOWER®
gas, oil or gas/oil water heaters

Inputs: 199 to 2000 MBH

Capacity: 150 to 4500 gallons

Also available in dual-fuel water heaters and solar thermal storage vessels

ASME approvals for AquaPLEX:
Section IV, part HLW
Section IV, part HG
Section VIII

Engineered Water Heating Solutions®

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PV 8085 7/2011