



**Jamestown Technologies** brings you the first energy saving technology breakthrough for boilers in 50 years.

**TanninTech**® is an organic, water-soluble, purified tannin product provided by TGWT Clean Technologies Inc. It is specially formulated to provide comprehensive corrosion and deposit control in steam boilers and steam, and condensate return lines.

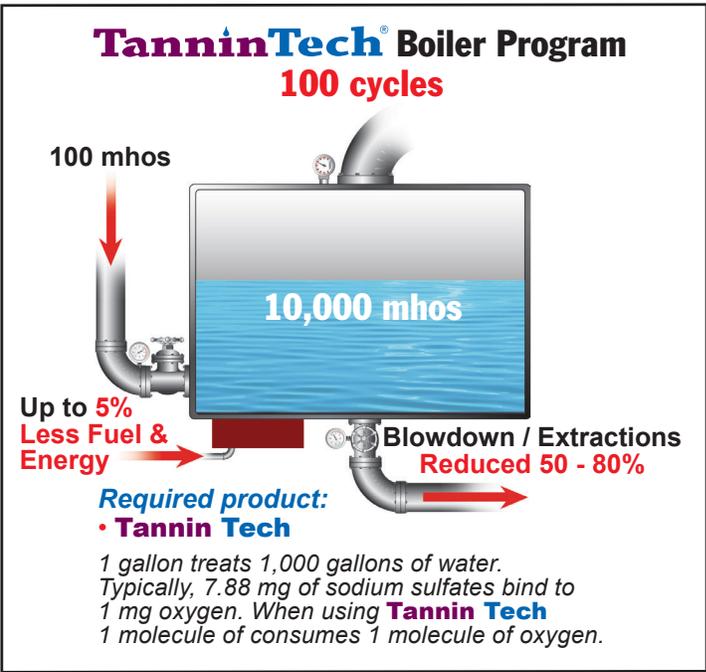
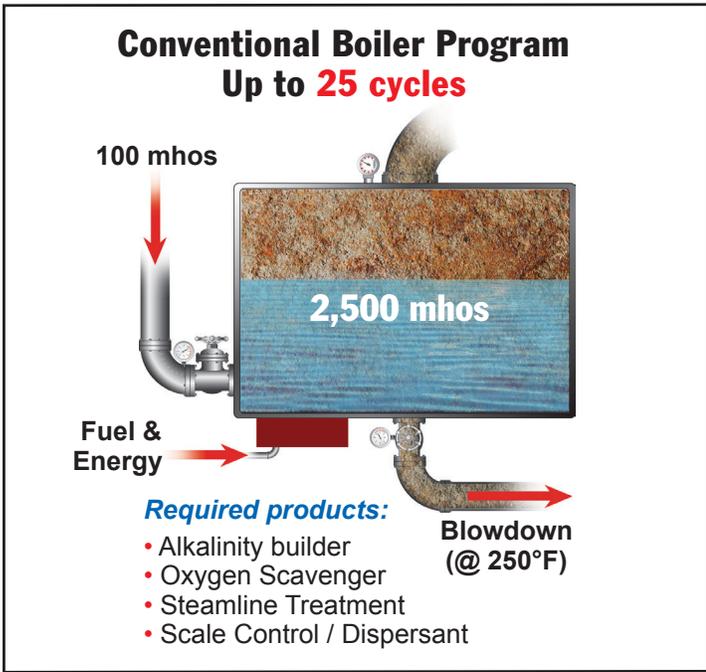


- Lower energy use**
- Lower makeup water**
- Lower sewage discharge**
- Lower testing times**
- Lower greenhouse gasses**
- Lower softener salt use**

Up to **5%** Less Boiler Fuel Usage

**Conventional Technology vs. Advanced TanninTech**

**Tannin Tech** from **Jamestown Technologies** significantly reduces blowdowns and replenishment of heated water, conserving energy and water, effectively reducing operating costs. The program is uniquely formulated for closed-loop water systems as well as high efficiency aluminum steam and heating boilers.



**TanninTech** provides comprehensive savings in costs and time

Energy Cost Reduction ↓ <b>1 to 5%</b>	Make-up Usage Reduction ↓ <b>10 to 20%</b>	Blowdown Reduction ↓ <b>50 to 80%</b>
Greenhouse Gas Reduction ↓ <b>1 to 5%</b>	Test Time Reduction ↓ <b>30%</b>	

# TanninTech®

Jamestown Technologies Green Boiler Water Treatments

Typical Average Thermal Efficiency = **80 to 85%**  
Tannin Tech Average Thermal Efficiency = **85 to 92%**

- **Natural**
- **Biodegradable**
- **Non-Toxic**

## Cost Effective

- Less extensive, less expensive testing
- Less maintenance
- Reduced labor
- Reduction in extraneous chemical expenses
- "Down" time significantly reduced
- Improved quality of steam
- Less storage requirements

## Safer to Use

- Natural, environmentally friendly
- Non-toxic
- Non-flammable
- No amines
- Requires less protective equipment
- No flash point
- Non-volatile
- FDA Compliance with CFR#21
- Treats boilers where the steam comes in direct contact with food products.

## GREEN TECHNOLOGY for LEED Qualifications

- Biodegradable
- Renewable
- Reduction of fossil fuels
- Reduction in CO<sub>2</sub> discharges
- DOT non-hazardous
- Water savings

## Packaging Options

- 275 gallon totes
- 55 and 30 gallon drums
- 15 gallon containers
- 5 gallon pails and bulk

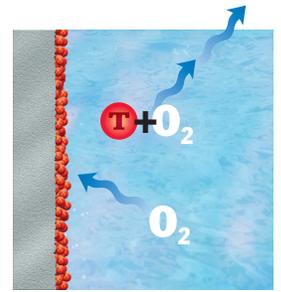
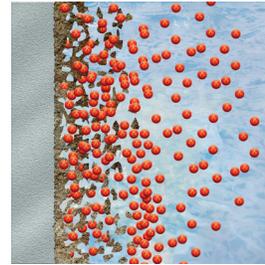
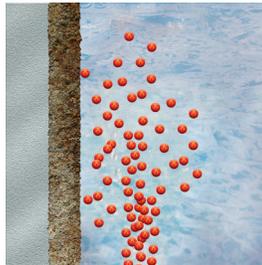
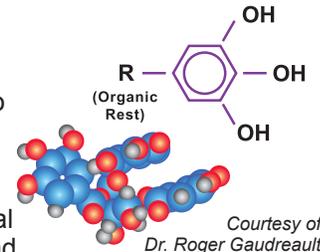


Purified tannin product provided by TGWT Clean Technologies Inc.

## TanninTech® ...the science behind how it works

Tannins are organic, water-soluble polyphenols found in many plant foods. Searching through thousands of different natural tannin molecules, one was found to have high stability, excellent oxygen scavenging capabilities, and exceptional corrosion inhibition properties.

**Tannin Tech** is formulated to be a natural product that incorporates only thermally and hydrolytically stable components.



**Tannin Tech** is injected below the water line to stabilize the water hardness and to release the oxygen scavengers. Silica remains suspended in the water. It is not temperature dependent and does not add to the dissolved solids. Blowdown is greatly reduced relative to a sulphite treated boiler.

Within 6-months **Tannin Tech** was able to clean up to 1/4-inch of accumulated scale. Ca and Mg ions are also removed. In comparison, conventional sulfites, phosphates, phosphonates and amines fail to prevent or remove scale and corrosion.

A "dynamic" barrier film forms on the surfaces. Resistant to high conductivity, **Tannin Tech** "neutralizes" the oxygen-related corrosion rates of mild steel, copper and aluminum (at 7 to 9 pH with 80% corrosion inhibition efficiency). And, there is no impact on the thermal exchange.

## Installed by a variety of institutions and facilities

Tannin programs have been installed in hospitals, universities, municipal buildings, industrial, chemicals, and pharmaceuticals manufacturers.

## Comparison of annual energy savings data from field installations

- **Educational Facility:** • Steam production: 150,000 PPD @ 95 psi  
• Energy savings: \$ 16,000
- **Hospital Facility:** • Steam production: 425,000 PPD @ 115 psi  
• Energy savings: \$ 42,000
- **Manufacturing Facility:** • Steam production: 5,000,000 PPD @ 220 psi  
• Energy savings: \$ 120,000

Selected data from facilities operating during 2011



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