

# TECHNOLOGICALLY ADVANCED METHOD for INDUSTRIAL WATER & FLUID MANAGEMENT



## OIL & PETROCHEMICAL INDUSTRY

TWT, Inc. offers a full range of products & systems designed to address fluid problems wherever fluid flows. From patented deposit control technology to pre and post filtration needs, ionization, disinfection, and ultraviolet purification treatment and conditioning. Components and subsystems chosen from a cross the range of treatment methods can be combined in different configurations to provide custom solutions specific to any industry, site or application. TWT has the versatile, efficient, cost-effective methods to solve your fluid management problems end to end.



Triangular Wave Patented Deposit Control Technology (TWT®) at Work in China Oil Fields

NO MATTER HOW TOUGH THE JOB... TWT® IS THE SOLUTION



# (TWT®) Versatile Fluid Management Products & Systems. Control Scale Deposits, Bio-film, Corrosion, Algae, Colloids and Other Related Hard Water problems.

**Hard water is the most commonly reported water quality problem, found in over 85 percent of the country. Over 60% of the earth's water is groundwater, which picks up minerals, rocks and soil, including calcium and magnesium contaminants that make water hard. Some telltale signs that water may be hard:**

- Clogged pipes and/or machinery may be due to hard water.
- Energy costs are increased, because the hard water forms an insulated shell between the heating element and the water to be heated.  
Heated hard water causes scale.

The Triangular Wave System represents a significant breakthrough in electromagnetic technology. The triangular wave has made possible the use of electromagnetic technology in applications of all sizes, from residential to large commercial and industrial applications.

An advanced system for controlling scale and bio-fouling, it is applicable with once-through and recirculating HVAC, heating and process cooling systems, as well as agricultural, industrial processing, wastewater, and other fluid-based systems.

## TWT® Patented Deposit Control System:

The basic component in the TWT systems is the deposit controller. It is comprised of a microprocessor, solenoid coil wrap and/or a reaction chamber. The microprocessor is a patented controller that functions like a small computer to relay a continuous electrical power supply to the solenoid coil and/or reaction chamber. The reaction chamber is plumbed into the main water in-take line and/or just before and/or after 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/water.

## TWT Reaction Chamber:

To use in conjunction with the TWT Deposit Control Systems when required, Triangular Wave Technologies, Inc. has developed a line of factory-wrapped wire coil Reaction Chambers to address magnetic pipe environments. Typically, wire coil cannot be installed on any magnetic pipe, such as steel, galvanized steel, ductile iron, or cast iron. If a coil is applied to such a pipe, the pipe becomes a shield and prevents the wave energy from entering the fluid path. The TWT Reaction Chambers solve this problem by providing an easily installed section of non-magnetic pipe to provide the proper pipe material for the Deposit Control System to work as designed. The TWT Reaction Chambers are full sealed, protecting their factory-wrapped coil. The Reaction Chamber systems are designed and manufactured to meet the highest quality specifications.

The pipe material MUST provide a magnetic window for the TWT treatment system to be able to introduce the magnetic energy necessary through the pipe material and into the fluid within. The purpose of the reaction chamber is to provide a means to introduce the magnetic field to colloids/material within the pipe. The solenoid coil configuration MUST match the TWT controller which will drive it. TWT Controllers which are intended to drive larger pipes will be satisfactory to drive smaller pipes, the opposite is not true (refer to tube & pipe application guidelines on TWT web site).

***This state-of-the art electronic deposit controller provides continual scale and bio-film control in fluid systems resulting in reduced maintenance and more efficient operation. The Triangular Wave System utilizes unique and proprietary treatment and design processes.***

- The patented Triangular Wave System assures effective treatment. Without bio-film to house and protect it, biological growth can not feed or reproduce, resulting in greatly reduced biological activity.
- Highest quality parts and engineering design assures long-term performance.
- Chemical-Free Technology.
- Simple installation and application maximize field success.

## Microprocessor Based Technology for all Commercial/Industrial Applications

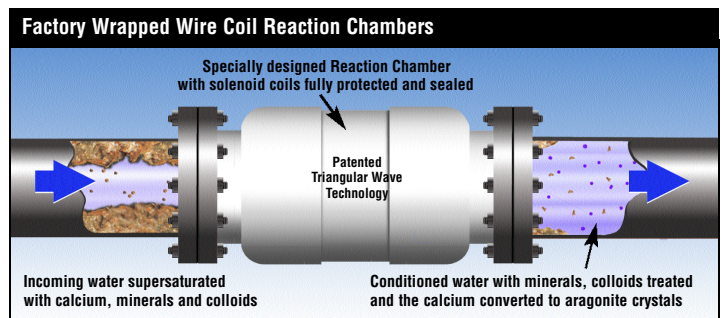
- Waste Water Treatment
- Water-Fed Piping Systems
- Hot/Cold Water Storage Tanks
- Cooling Towers
- Heat Exchangers
- Condensers and Chillers
- Commercial Irrigation
- Well Water Processing
- Boilers
- Water Heaters
- Food Processing Equipment
- All Fluid Based Applications
- Controls Algae and Bacteria
- Reduces Corrosion
- Reduces or Eliminates the use of Dangerous Toxic Chemicals
- Improve Operating efficiency And Life Cycle Of Equipment

### Highly Cost Effective:

- Savings in maintenance include reduced cleaning, monitoring, and chemical costs.
- Savings in maintenance such as cleaning, monitoring and adding chemicals are greatly reduced.
- Savings in electrical expenses, due to cleaner system components and better heat transfer, can also be significant.
- Protects expensive capital equipment; cleaner systems, with less chemicals added, will operate more efficiently, and will have a longer working life.
- Operating costs of Triangular Wave Systems are very small and the systems require no maintenance.
- Non-hazardous blowdown means no treatment and no discharge permits required.
- TWT Deposit Control Systems enhance other treatment technologies as well, including chemicals, ozone, ultraviolet, and other filtration systems, keeping them clean and enhancing their operation. In this way, their full treatment benefits are realized, with reduced maintenance requirements.

**Consider using TWT Deposit Control Systems in conjunction with any fluid treatment systems as a complementary technology. For further details on how you can leverage the TWT Deposit Control benefits, please contact us.**

## When TWT Systems are Properly Installed, The Effects of the Triangular Wave Treatment Last Downstream



Using modern integrated circuitry and signal processing techniques, the patented TWT Deposit Control Technology works by producing a complex frequency-modulated waveform. This creates a deionizing effect, induced by physical means, which increases the solubility of the minerals, and colloids in the liquid and changes the shape, size and texture of the calcium carbonate crystals. By this reaction, the minerals, colloids and crystals lose their adhesive properties and remain in suspension in the liquid. Pre-existing scale is taken back into solution and removed in the same way. The effects are immediate and long lasting down stream.

***In effect, a clean, corrosion-free delivery system is restored and maintained in an environmentally safe and chemical-free manner. The result is clean pipes and tubing with no biofilm and reduced bacterial contamination.***