

# Triangular Wave Technologies Fluid-Related Terms

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## Fluid-Related Terms:

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### ***Colloid***

Suspended particle in water that has an electrical surface charge.

### ***TDS***

Total Dissolved Solids. Example: salt dissolved in water.

### ***TSS***

Total Suspended Solids. Example: Dirt and other materials that are mixed in water and make it appear cloudy.

### ***Hardness***

Measure of the calcium and magnesium that cause water to be hard and deposit scale in the water system.

### ***Concentration Ratio***

Ratio of minerals in the water system compared to fresh water being added to the system.

### ***Make Up Water***

Source of water to replace water lost to evaporation.

### ***Blow Down***

Water dumped because it has too many minerals in it [concentration ratio is too high].

### ***Bleed***

Another term for Blow Down.

### ***Turbidity***

Small particles suspended in water.

## Condition-Related Terms:

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### ***Corrosion***

Deterioration of metal surfaces caused by water and by chemicals in the water.

### ***Bio-Corrosion***

Deterioration of metal surfaces caused by acid by-products of bacteria.

### ***Scale***

Deposit of calcium carbonate.

### ***Bio-Film***

Slime formed by bacteria.

### ***Vander Waals Attraction/Forces***

Attractive forces that let colloids group together.

### ***Reaction Zone***

Place in the water system where the water goes through a physical or chemical change, and the deposition of scale or biofilm occurs.

## Energy-Related Terms:

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### ***Surface Charge***

Ions attached to the surface of a colloid.

### ***OHMS***

Measure of electrical resistance.

### ***Frequency***

Measure of the number of times per second the electrical wave changes from positive to negative.

### ***Amplitude***

The strength or the height of the electrical wave.

### ***Electromagnetic/ Inductive Field***

Area of influence of solenoid (wire wrap).

### ***Current/Amps***

Measure of the movement of electricity through a conductor.

### ***Voltage/Volts***

Measure of the electromotive force needed to move electrical current through a resistance.

### ***Polarity***

The condition of having opposite poles or charges. A water molecule has polarity because the oxygen side of the molecule is more negatively charged and the hydrogen side is more positively charged.

### ***Ionization***

Electronic water treatment in which an electrical current passes between two copper/silver metal electrodes and through the water between the electrodes. In the process, copper and silver ions enter the water where they attach to algae (copper) and bacteria (silver).

### ***Ultraviolet Light***

Light from the ultraviolet range of the electromagnetic spectrum. Light of UV wave length is not visible to humans, but it disrupts the DNA of microorganisms.

### ***Electrode***

Metal piece connected to electrical current.

## Testing & Measurement-Related Terms:

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### ***pH Level/Percentage Hydrogen***

Measure of acidity or alkalinity of water.

### ***Langlier Scale***

Measure of the corrosivity of water.

Note: Lower pH=Acid=Corrosion

Higher pH=Base=Scale= Less Corrosion

### ***Treatment Zone***

Area in the water system where water is affected by the deposit control equipment.

### ***Paddle Testing***

Used to measure bacteria floating in the water.

### ***ppm***

An abbreviation for parts per million; units which express the concentration of contaminants in water. Commonly used interchangeably with mg/L.

### ***Micron***

one millionth of a meter

### ***psi***

An abbreviation for pounds per square inch; the units in which we express pressure measurements.

### ***psig***

An abbreviation for pounds per square inch gage - unit for expressing pressure. Commonly called gage pressure.

### ***Micron rating***

The term applied to a filter or filter medium to indicate the particle size above which all suspended solids will be removed throughout the rated capacity. As used in industry standards, this is an "absolute," not "nominal" rating.

### ***Nephelometric turbidity unit***

(NTU) An arbitrary unit of measuring the turbidity in water by the light scattering effect of fine suspended particles in a light beam.

### ***Nanometer***

one billionth of a meter

### ***Coupon Rack Testing***

Used to measure corrosivity of the water in a system.

## Product & Equipment Related Terms:

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### ***Cooling Tower***

Unit used to cool water by blowing air through the water and causing evaporation.

### ***Chiller***

Unit that uses cooled refrigerant to cool air or water.

### ***Evaporative Condenser***

Cooling Tower and Condenser in one unit.

### ***Condenser***

Unit that uses cooled water to cool a refrigerant or process cooling fluid.

### ***Heat Exchanger***

Condenser or Chiller.

### ***Boiler***

Unit that heats water to get very hot water or steam.

### ***Sump/Catch Basin***

Tank that collects cooled water from a cooling tower.

### ***KDF***

A filtration medium of high purity copper and zinc filings; used in filters.

### ***Reaction Chamber***

TWT factory-wrapped pipe with solenoid coil to be plumbed into water pipe.

### ***Copper Signal Pipe Enhancer***

This unit is placed between the controller and the copper pipe solenoid to provide a proper impedance match and to ensure maximum energy transfer between the controller and the solenoid, which ensures enhanced treatment of the fluid.

## Chemistry-Related Terms:

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### ***Hydrogen Bond***

An ionic chemical bond between a strongly electronegative atom and a hydrogen atom already bonded to another strongly electronegative atom. In the case of water the electronegative atoms are the oxygen atoms.

### ***Molecules***

A stable configuration of atomic nuclei and electrons bound together by electrostatic and electromagnetic forces to form a compound with unique physical and chemical properties.

### ***Crystals***

A three dimensional atomic, ionic or molecular structure, consisting of periodically repeated, identically constituted congruent unit cells.

### ***Calcium Carbonate [CaCO<sub>3</sub>]***

A molecule of calcium carbon and oxygen. The carbon atom bonds with three oxygen atoms to form the carbonate ion.

**Precipitate**

To cause a solid substance to be separated from a solution.

**Hydrate**

To chemically combine with water.

**Alumina**

One of several forms of aluminum oxide. A compound found naturally in soil and rock.

**Silica**

A crystalline compound of silicon and oxygen. Sand is usually silica.

**Nucleation Sites**

Small particles that serve as starting points for crystals to form.

**Covalent Bonds**

A chemical bond formed by sharing of one or more electrons.

**pH**

The reciprocal of the logarithm of the hydrogen ion concentration. The pH scale is from zero to 14 and 7.0 is the neutral point, indicating the presence of equal concentrations of free hydrogen and hydroxide ions. pH values below 7.0 indicate increasing acidity, and pH values above 7.0 indicate increasing base concentrations.

**Osmotic Pressure**

A property of the solution proportional to the amount of dissolved minerals present.

**Permeate**

The water that has passed through the membrane stage of treatment.

**Product Water**

The water produced by the treatment system.

**Pyrogens**

A group of substances of microbial origin that produce an increase in body temperature when injected into humans.

**% Recovery**

The percentage of feed water that is reclaimed as permeate.

**% Rejection**

The percentage of the feed water TDS that is prevented from passing through the membrane with the permeate.

**Rentenate**

The concentrate stream discharge from an ultrafiltration system.

**Semi-Permeable Membrane**

A very thin sheet of fine fiber specially fabricated material with exceedingly small pore size, which is selective in allowing passage of substances through the pores. It will allow passage of some substances, but not others.

**TDS**

An abbreviation for Total Dissolved Solids, also referred to as dissolved minerals, salts or ionic species, measured in the units of ppm or mg/L.

**TFC**

An abbreviation for Thin Film Composite, a class of membranes fabricated with different materials in the separation and support layers. (Flowmatic uses TLC as TFC is a registered trademark.)

**Turbidity**

A measure of fine suspended matter in water, usually measured in terms of nephelometric turbidity units (NTU).

**Turbulent Flow**

Fluid flow under such conditions that the fluid is being mixed while flowing.

**Ultrafiltration (UF)**

The process of removing colloidal and dispersed particles from a liquid by passing the liquid through a membrane under pressure. Separation or removal of particulates of more than 10A and less than 200 angstroms.

**Valence**

A number indicating the electrical charge of ions. Monovalent ions like sodium (NA+) or chloride (Cl-) have one positive or negative charge. Divalent ions like calcium (Ca++) or sulfate (SO4-) have two positive or negative charges.

**Virus**

The smallest form of life known to be capable of producing disease or infection, usually considered to be of large molecular size. They multiply by assembly of component fragments in living cells, rather than by cell division, as do most bacteria.