TRIANGULAR WAVE
Fact Sheet

Triangular Wave System Current Source Generators Out Perform the Voltage Source Generators of other Deposit Control Systems.

The Triangular Wave Deposit Control System uses a current source as the drive circuit to the pipe solenoid. A **current source** will provide the design current to any load connected so long as the internal power supply has the required capacity. A **voltage source** will maintain the same voltage so long as the power supply has the capacity.

The solenoid (a coil of wire with many turns) is applied to the pipe so that a conditioning signal may be generated within the pipe. Inductance is the property of an electric circuit by which a varying current in it produces a varying magnetic field that induces voltages. The solenoid will have an inductance, the value of which depends upon the coil diameter, number of turns, wire spacing, and pipe material. Impedance is the resistance to the flow of electricity in an alternating current circuit.The impedance of the solenoid is dependent upon the inductance and the frequency of the current in the coil. As the frequency increases the impedance of the coil increases.

The ***Triangular Wave System*** causes inductance (induces voltage) in the pipe by continuously changing the polarity, frequency, and amplitude of the current in the pipe solenoid, thereby forming and varying the magnetic field formed by the pipe solenoid.To provide a continuous conditioning signal requires a continuously changing current within the coil. A **square wave** signal applied to the pipe solenoid will cause a current change only upon the rise and fall of the applied voltage. A **triangular wave** form applied to the pipe solenoid will provide a change in current over the entire wave form.

In the Triangular Wave Deposit Control System the frequency changes from 2,000 cycles per second to 7,000 cycles per second and back again. As the frequency of the applied wave form is increased, the impedance of the coil will increase. If a voltage source is used, the current in the coil will decrease as the frequency is increased. This decrease in current will cause a decrease in conditioning signal. The voltage source cannot provide the required energy as the frequency increases.

The **current source** in the Triangular Wave System will automatically compensate for the change in impedance as the frequency is increased. The conditioning signal, inside the pipe, is thus provided the designed power at all frequencies.

Only a **current source** generator is able to supply the design current regardless of the inductive load and impedance on the circuit.The premium design of the current source in the Triangular Wave System automatically compensates for the changes in the load as the frequency sweeps from 2,000 cps to 7,000 cps.The energy level is the same at 2,000 cps, and 5,000 cps, and 7,000 cps.

The magic of a current source is to automatically provide the design current to the solenoid even though the load impedance of the pipe solenoid is constantly changing. A voltage source has a “fixed“ output voltage.If the load impedance changes, and it will as the frequency changes, the fixed output voltage will provide less current as the frequency increases.

Very High TDS *Levels*

Triangular Wave Systems can handle very high levels of TDS.Triangular Wave System power supplies can be interchanged on different pipe solenoids to address different water conditions.For example, a power supply designed for a 6-inch pipe solenoid may be attached to a 4-inch pipe solenoid to treat very high levels of TDS.If the TDS is very large, there is a limit for each standard power supply. At higher TDS levels, higher volumes of conditioning signals will be required to adequately treat the water. The answer is to attach a larger power supply to the pipe solenoid to treat the extra TDS.

Most other deposit control systems are “voltage source generators”.They are not able to respond to changes in the water conditions.

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