

Tideflex[®] Mixing System (TMS) Improves Water Quality While Mitigating Ice Formation

Water tanks located in cold climates have to deal with the costly problem of ice formation. When ice develops in water tanks, it can cause damage to tank structures and coatings. Frozen water also creates unwanted disruptions to water distribution systems.

It is generally understood that water tanks need to be fluctuated in order to prevent ice formation. Tideflex[®] Mixing System (TMS) turnover causes circulation patterns to develop within the water. This movement helps to keep water from freezing.

Depending upon the particular distribution system and the environment, fluctuation will also introduce warmer water into the tank. Fluctuation, in combination with mixing, keeps ice from forming.

TMS prevents ice formation and helps save on repair costs from water tank damage attributed to ice build-up. Tideflex[®] Nozzles, used as mixing nozzles within the TMS, have a variable orifice that enables maximized jet velocity at all flow rates. Higher jet velocity yields greater water circulation patterns throughout the tank.

In the winter it is common for tanks to be under utilized due to a drop in demand, which is the number one culprit behind ice formation. Fluctuating the tank in the winter enables the TMS to mix the tank water during fill cycles, preventing ice from forming.

TMS utilizes multiple inlet ports within the tank that improve mixing when compared to single inlets. By having multiple ports, the high velocity jets are not restricted to a small spatial area as in a single inlet. Higher velocity inlet jets will produce circulation patterns with greater velocity that not only help prevent ice formation, but also maintain water quality by mixing the entire tank contents.

The inlet nozzles of TMS are located on the manifold pipe to optimize mixing and to provide mixing in the upper portions of the tank. The location of the nozzles help to mitigate ice formation. In all TMS designs, Red Valve Engineers attempt to keep the highest inlets below the normal winter draw-down level to keep the piping/valves out of a potential ice layer.

For tanks that have very low turnover and are in extremely cold climates, contact Red Valve about the Active TMS which provides continuous 24/7 mixing by utilizing a low head, low energy recirculation pump.

Testimonial from the Field:

Sanford Water District, ME
Littlefield Tank
1.0MG Reservoir
75' Diameter x 32'High

Problem:

The Littlefield Tank had a common inlet/outlet pipe that was prone to water quality degradation and ice formation in winter.

In December 2009, prior to TMS installation, a 6" thick layer of ice was removed from the tank (pictured above).



Solution:

TMS was installed in January 2011 (pictured on right).

Comments:

"To test the water quality, sampling was conducted at the inlet/outlet pipe. Before the TMS installation, we had low and inconsistent residuals, especially in the summer. After the TMS, we had consistent residuals.

Samples were taken once per week. In January and February of 2010, I climbed the tank and inspected it through the roof hatch. There was no ice formation."

Keith Levasseur, Engineer
Sanford Water District

