

Increased Quality, Less Stratification, Ice Prevention ***The Benefits of Water Mixing***

Bethany Thompson, Kasco Municipal Territory Manager – U.S. & Canada

Water tanks provide communities with fresh water for drinking, washing, and more, and ensure a back-up supply is always available. Yet, the story doesn't end with installation. Water towers aren't "set it and forget it" storage. Water needs to be monitored – and moved – to make sure it stays safe and clean, now and into the future.

Underwater Solutions, Inc. (USI), a family-owned, second-generation business based in Massachusetts, knows better than most the importance of maintaining water storage tanks. Specializing in water infrastructure maintenance and asset management, USI conducts water storage tank inspections, cleaning, mixing, repairs, renovations, and maintenance. But in order for USI to maintain and fix tanks, they have to understand the problem.

Thermal and Chemical Stratification, Water Quality Issues, Ice Buildup

Scott Kelley, a USAM Water System Advisor for USI who serves on the board for the New Hampshire Water Works Association and the program committee for the New England Water Works Association, has "been in water" for over 30 years.

"I'm familiar with all the problems that can possibly occur in water tanks," Kelley said. "I also know the best practices for fixing those issues. And one of the most common of those issues is thermal and chemical stratification inside the tank."

Thermal and chemical stratification in water tanks and towers can lead to several problems. Thermal stratification refers to the layering of water with different temperatures. In summer, the top layer of water becomes significantly warmer than the bottom layer. This can result in reduced water quality, as warm water promotes the growth of bacteria, algae, and other microorganisms. It can also lead to inefficient water treatment processes and increased energy consumption.

During cold weather, the opposite occurs, with equally bad results. Thermal stratification in winter can lead to ice buildup and subsequent damage. When the top layer of water becomes colder, it creates temperature differentials that can cause freezing. The ice that forms can



expand and exert pressure on the tank structure, leading to cracks, coating damage, leaks, or even catastrophic failure. Additionally, the weight of accumulated ice can strain the tank's supports, further compromising its integrity and functionality.

Chemical stratification, on the other hand, can lead to loss of residual chlorine in the tank which can potentially cause water quality issues. When water systems try to maintain a residual chlorine in the tank, it may cause the accumulation of disinfection byproducts, such as Trihalomethane Volatile Organic Compounds (THMs), which can exceed maximum contaminant levels set by regulatory authorities, posing health risks to consumers.

The Solution – Kasco® CertiSafe™ Tank Mixers

As an inspection and asset management tank company, USI plays a crucial role in the mixer supply chain. During inspections, divers assess the tank's condition, including temperature readings from top to bottom. If stratification or ice damage is detected, they recommend the installation of a mixer.

USI acts as a consultant, advising their customers on the benefits of mixing for maintaining water quality while in storage and protecting the tank itself. They handle the purchase of the mixer and schedule the installation using their own services.

Kelley said USI partners with Kasco®, a reputable manufacturer of mixers, and recommends their CertiSafe™ Tank Mixers to customers. The decision to partner with Kasco is based on the company's commitment to offering the best solutions to water tank owners and managers. According to Kelley, the CertiSafe Tank Mixer is powerful, energy-efficient, and competitively priced, making it an ideal choice for their customers across the nation.

“Water mixing is a best practice in today’s industry,” said Kelley, “and as part of our turnkey approach to offer the best solutions to water tank owners and tank management, we’re proud to partner with Kasco and offer full installation of all their CertiSafe Tank Mixers.”

Kelley noted the CertiSafe Tank Mixer offered by Kasco addresses common problems faced by USI's customers. It effectively eliminates thermal and chemical stratification in water tanks, preventing water quality issues during the summer and ice buildup that can damage the tanks in the winter.

“Additionally,” he added, “the mixer helps with the off-gassing of Disinfection Byproducts (DBPs), specifically, Trihalomethane Volatile Organic Compounds (THMs), ensuring that water systems stay below the EPA maximum contaminant levels (MCLs) for DBPs.”

Kelley said USI “has found a mixing solution for every tank we encounter,” regardless of size or style. By prescribing the appropriate model, they ensure that the mixer effectively addresses the specific needs of each tank. “We prescribe the right model, and the mixer does the rest,” he said.

Kelley noted the example of the Rye Water District in Rye, New Hampshire, a USI customer that was experiencing issues with thermal stratification and ice buildup in a welded steel tank with a 1.2 MG capacity. USI recommended and installed the **Kasco CertiSafe™ NSF 3400HC61 240v 3/4hp mixer**. The mixer was installed in a single day, and Rye reported an enormous difference in ice formation the following winter.

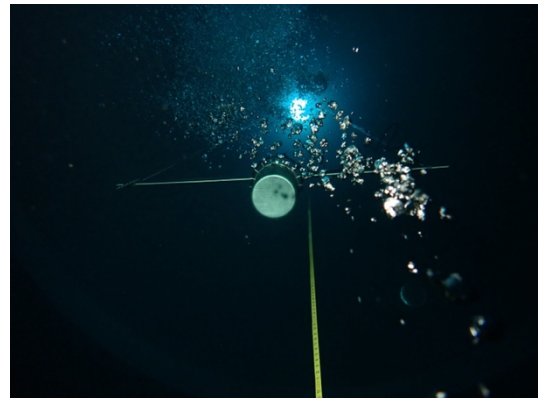
The Results – Satisfied Customers

Installation of the CertiSafe Tank Mixer yields visible results within 24-48 hours. Kelley said, “Customers will see improved water quality, elimination of stratification, and the prevention of ice damage.”

Working with Kasco has been a positive experience for USI. Kelley noted Kasco's service has been exceptional, with their local representative being responsive and helpful. USI considers Kasco a reliable partner that provides the necessary expertise to prescribe the right mixer for their customers.

“Feedback from customers regarding the mixers has been consistently positive,” said Kelley. “We ensure that the mixers are performing as expected, and we find that they effectively eliminate stratification and improve water quality.”

The Kasco CertiSafe™ Tank Mixer is certified and tested to strict NSF/ANSI 61 & NSF/ANSI 372 standards. It’s designed for potable water storage units with a capacity of 20,000 gallons and above. This low-cost active tank mixer is fully submersible up to a depth of 50 feet, easy to install, and can be mounted using a floor, suspension, or pipe mount. Contact the CertiSafe sales team for more information at: [kascomarine.com/contact-us](https://www.kascomarine.com/contact-us).



A CertiSafe Tank Mixer in Rye, New Hampshire, helped eliminate thermal stratification and ice buildup.

