

## Applications:

- Cooling tower systems
- Water treatment systems
- Water evaporation systems
- Potential mining applications (produced water)
- Industry applications for which silica scaling must be prevented

## Benefits:

- Reduces scaling in cooling towers by up to 50%
- Increases the number of cycles of concentration substantially
- Reduces the amount of anti-scaling chemical additives needed
- Decreases the amount of makeup water and subsequent discharged water (blowdown)
- Enables considerable cost savings derived from reductions in facility down time, maintenance, and chemical additives
- Reduces the amount of water needed to operate the system

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## Summary:

The build-up of scaling from dissolved and colloidal silica in cooling towers and evaporation systems is a major problem that costs industry millions of dollars each year in facility down time, maintenance, discharge water treatments (blowdown), and anti-scaling chemical additives. This is particularly true for cooling towers and evaporation system facilities based in silica-rich regions, including the Western United States.

Scientists at Los Alamos National Laboratory have developed a novel technology to remove both dissolved and colloidal silica using small gel particles. These innovative gel particles remove both types of silica from slip streams or sidestreams of cooling tower water by providing a substrate for the deposition and adsorption of silica. The removal of the silica prevents scaling deposition on heat transfer components of cooling towers and other evaporation systems. Experimental results have shown that this technology can reduce scaling by up to fifty percent. In addition, the removal of silica from the cooling tower basin water increases the potential cycles of concentration, thus reducing the need for makeup water and blowdown discharge. Considerable cost savings are realized when even a fraction of the existing silica is removed.

## Development Stage:

Reduced to practice, seeking partners to scale up the technology and develop applications

## Patent Status:

Patent pending

## Licensing Status:

This technology is available for non-exclusive licensing and may be available for exclusive field-of-use licensing.

