CASE STUDY

CalciTect® Non-Phosphorus Tagged Polymer Helps Power Plant Improve Cooling Tower Scale and Deposition Control

Background

A large power plant in the Midwestern US uses lake water as a makeup water source for their cooling systems. The high hardness of the water causes scale deposition, while high suspended solids can lead to fouling issues in the cooling tower.

Scale deposition can significantly reduce heat transfer efficiency across heat exchangers, resulting in increased maintenance costs, reduced asset life, and unscheduled outages.

Solution

The facility was using a phosphonate-based product to manage scale and suspended solids in their system. On a recommendation from ChemTreat, they decided to trial our proprietary CalciTect technology, a high-performance tagged polymer developed as an alternative to phosphonate-based products to manage calcium carbonate scaling in cooling towers and heat exchangers.

As scale stress increases based on fluctuations in water quality, so does the demand for polymer.

CalciTect's fluorescent tag tracks polymer demand: when the tag reading drops, the pump feeds more product through an automated process to maintain the target polymer dosage.

The automated setup of CalciTect feed effectively estimated polymer demand, allowing for the adjustment of on-line product feed based on variable scaling stress at this facility.

Results

After several months of treating the system with CalciTect, the facility observed no scale deposition while using high-hardness, high-turbidity water as makeup.

Regular measurement of the tag polymer confirmed the presence of the required active polymer residual in cooling water. Unit inspections verified the absence of deposition or fouling.

Based on the enhanced results, CalciTect is now the standard operating program for their cooling system.

Results are examples only. They are not guaranteed. Actual results may vary.

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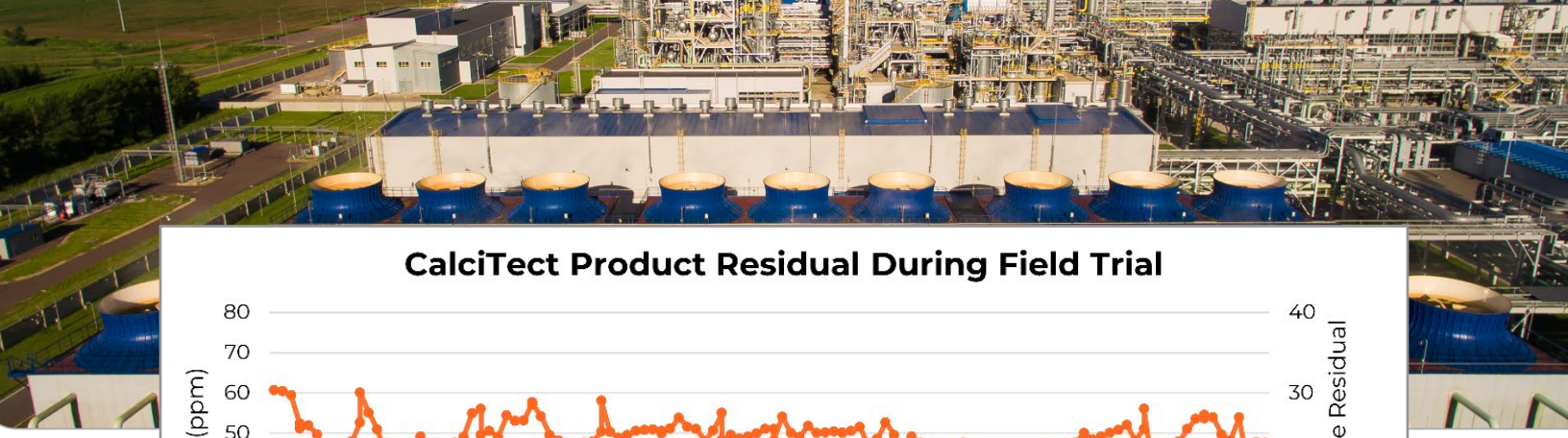
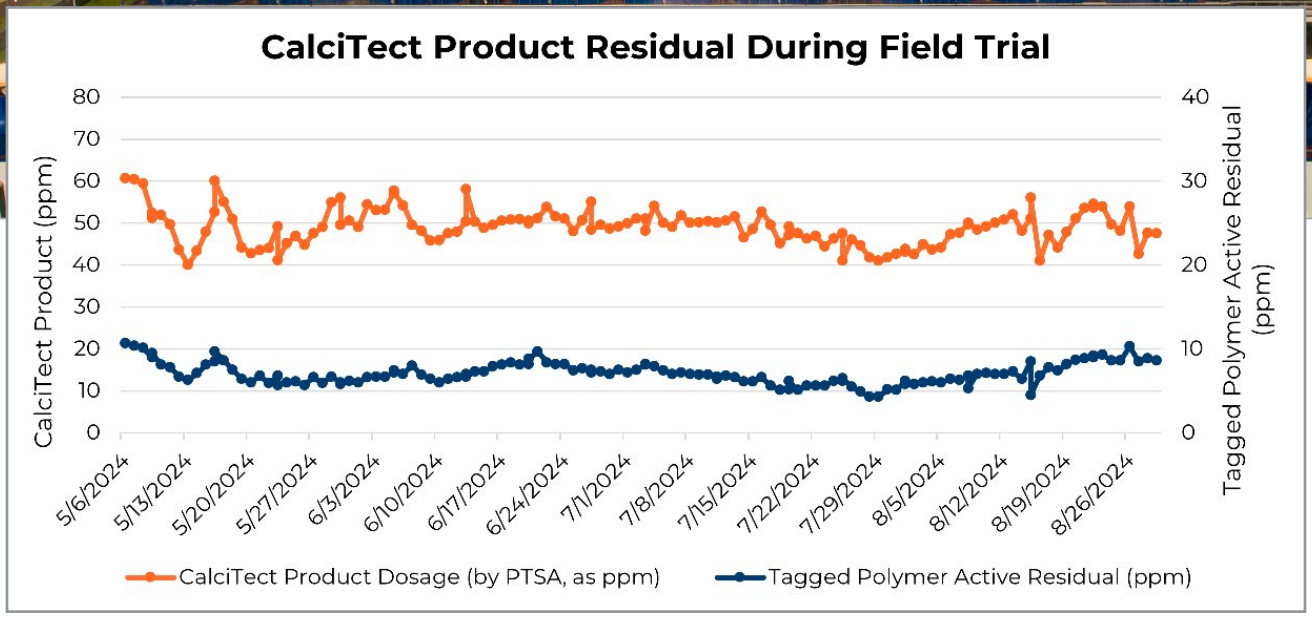
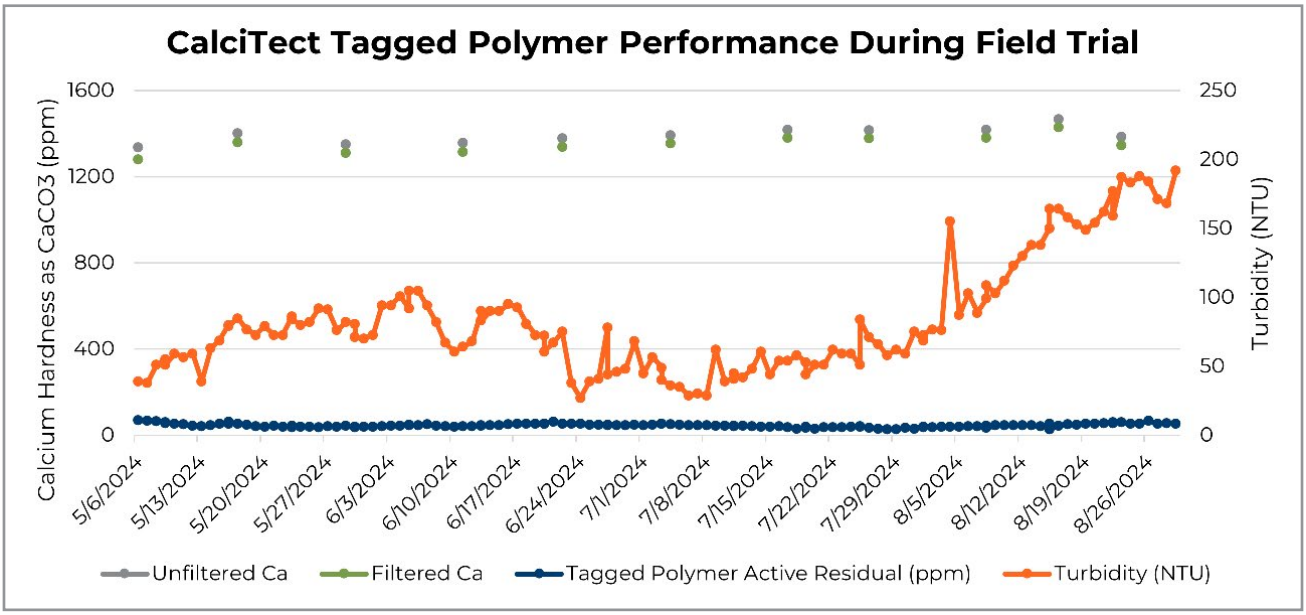




Monitoring of CalciTect product (by PTSA) and active polymer residual (by tag) shows consistent dosing throughout several months of the field trial.



Performance of the non-phosphorous, tagged polymer in CalciTect with high-turbidity makeup water application. The minimal difference between filtered and unfiltered calcium hardness indicates the product's ability to manage scale deposition during the entire field trial.

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