Ethanol final filter technology (EFF) improves plant´s final product quality in two days

EFF is designed to remove both existent and potential sulfate

Ethanol quality improvement

4ppm Sulfates spec achieved

No plant shutdown

1. Keywords

Ethanol final filter technology, sulfate

2. Background

After commencing an enzyme trial, an upper Midwest ethanol plant discovered elevated sulfate levels as fermentors were cycled through the plant. Out of spec ethanol cannot be marketed, and plant operations needed to act quickly to fix the product to avoid costly product rejection fees or plant shutdown. The plant was familiar with Kurita's ethanol industry experience and the Ethanol Final Filter (EFF) technology, and the two teamed-up for a solution.

Many variables affect final product specifications, a notable one of which is sulfate. Sulfate impacts to manufacturing plants can cost over 912k€/per occurrence if a unit train is rejected. Kurita's unique EFF is designed to remove both existent and potential sulfate to improve final ethanol quality.

3. Action/Approach

After a site visit, Kurita's Ethanol Process Technology (EPT) team determined the issue that the plant was experiencing was a perfect fit for the EFF technology. Working together with the plant, Kurita's EPT and logistics team were able to expedite an EFF system to the site.

Upon receiving the order on Friday afternoon, the skid arrived on-site Sunday morning. Kurita's EPT team and plant personal were at the site waiting to commission and startup the equipment promptly after delivery, allowing the plant to remain operational.

4. Achievements

Once the EFF was running, the plant was able to immediately begin cleaning up the existing 70 offspec railcars, filled with 4,807,473 liters of ethanol. The average sulfates treated through the EFF were 8.8ppm and exiting effluent was 0.5ppm. After EFF treatment, all sulfates were reduced to meet the spec of 4ppm. Once the plant filtered their offspec rail cars, they entered into a lease agreement to use the EFF as a sulfate risk management tool. The plant has been running at full capacity and is meeting required sulfate COA spec of 4ppm. To maintain the program, plant personnel continue to monitor potential sulfate at the inlet and outlet of the EFF to guarantee they are producing marketable ethanol.

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