WATER SOLUTIONS | CANADA

Evaporator Antifoam Leads to Reduced Dosage and Increased Process Control

BACKGROUND

An MVC falling film evaporator system concentrates water from thermal oil production as it creates pure distillate that is used to generate steam for the process. This concentration greatly increases the foaming tendency of the produced water which can lead to contamination of the evaporated distillate. During the concentration, precipitation of solids occurs further increasing the foaming tendency of the produced water. Foaming can lead to contamination of the distillate and downstream issues including the formation of boiler scale, maintenance costs, equipment damage, and chemical costs.

Antifoam is added to the concentrate to disrupt the formation of foam. This chemical addition prevents carryover of the concentrate into the distillate ensuring quality feed water for downstream applications.

SITUATION

An incumbent antifoam product was being used to treat produced water entering a seeded-slurry evaporator system. During operation, high usage of antifoam would be required to minimize foaming tendency and ensure distillate quality. In situations where foaming did occur, a slug feed of antifoam was used to disperse foam.

Value

$1.8 Million

REDUCTION IN CHEMICAL COSTS

High product usage leading to increased operating cost was evaluated as unsatisfactory, and an alternate chemistry was required.

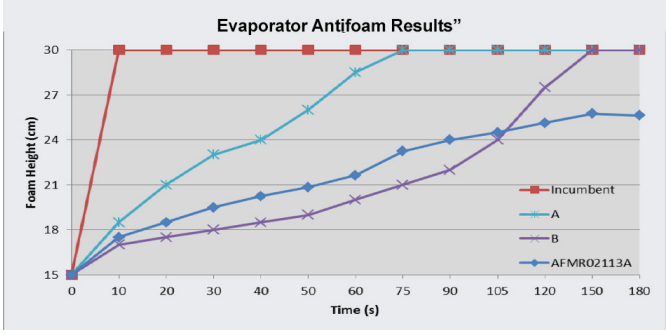
SOLUTION

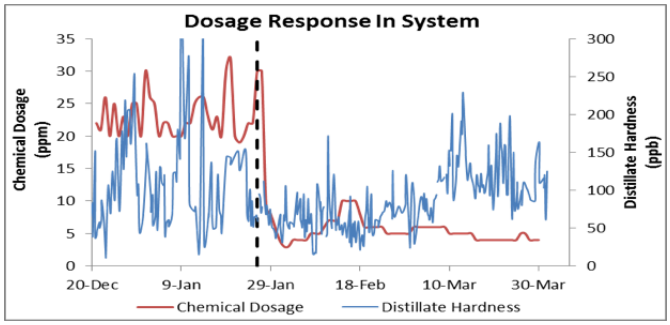
Nalco Champion tested several new antifoams using a proprietary foam cell. The foam test apparatus uses a pump to recirculate water from the evaporator over an aeration cell that creates foam. Antifoam is added at the start of a run and foam height is recorded over time. The best antifoam suppresses the foam formation for the longest period of time.

Nalco Champion was tasked with developing and testing antifoam products with a focus on low cost and high performance.

The foam cell testing identified potential candidates for trial. AFMR02113A was selected as the most likely to produce desired results in the system. AFMR02113A is one of a series of new antifoams formulated specifically for produce water evaporators.

Nalco Champion trialed AFMR02113A on one evaporator and slowly decreased chemical dosage until foaming was observed in the concentrate. The incumbent antifoam had a foaming threshold of 15-20ppm. AFMR02113A had a significantly lower foaming threshold of 5-7ppm. This dosage reduction led to significant cost savings.





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