

CASE STUDY # 052

PULP MILL WASTEWATER EXHIBITS IMPROVES SETTLING

SUBJECT:

Improved sludge settling in a pulp mill wastewater treatment plant.

PRODUCT APPLIED: MICROCAT-XF Microbial Filamentous Growth Inhibitor



TREATMENT SYSTEM:

A Unox[®] pure oxygen pilot treatment plant simulating a 60 million gallon per day Unox treatment system receiving bleached kraft process wastewater. The pilot plant consists of two identical Unox trains, each with separate oxidation and clarification components.

OBJECTIVE:

Evaluate sludge settling enhancement-using **MICROCAT-XF**.

PROGRAM:

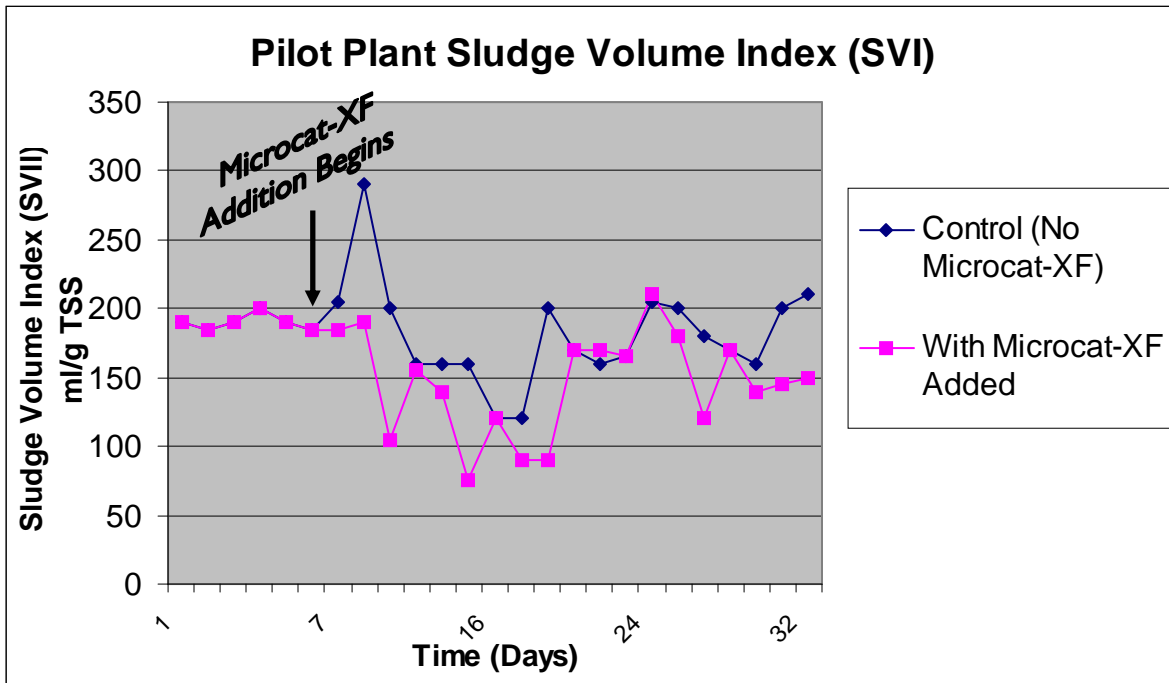
MICROCAT-XF was added daily in powder form to one of the two trains over a five-week period. The other train served as a control and received no product. During the first week of the study **MICROCAT-XF** was added in significant quantities. Thereafter, minimal dosages were used to maintain the product in the system.

MONITORING:

Sludge volume indexes (SVI) were monitored for both pilot plant trains during the five-week program. SVI values from the full-scale Unox treatment system were also measured (see graph on reverse) to ensure that the pilot plant control train accurately simulated the full-scale system. Additionally, weekly mixed liquor samples from the experimental train were submitted to microscopic analysis. Filament concentrations, types and lengths were evaluated.

RESULTS:

The pilot plant train to which **MICROCAT-XF** was added exhibited SVI values that were consistently lower than those in the control and those in the full-scale Unox system (see graph). Only once, immediately following a black liquor spill did SVI values in the experimental train move above those in the control. During this three-day period microscopic analysis of the mixed liquor revealed not only continuing low filament concentrations, but also the presence of a dispersed, "young" sludge. The brief period of poor settling in the experimental train was therefore attributed to a young sludge resulting from a black liquor spill and not to filamentous resurgence. Following another smaller black liquor spill on day 28, SVI values again increased in both trains but without any evident increase in filament concentrations in the train using **MICROCAT-XF**.



CONCLUSIONS

MICROCAT-XF evidenced not only the ability to consistently improve settling hut also to prevent filament resurgence during system upsets relative to both the pilot plant control and to the full-scale system.