

CASE STUDY # 051

**PAPER/PULP PROCESSING PLANT
IMPROVES SETTLING**

SUBJECT:

Improved sludge settling and system stability in a paper processing plant.

PRODUCT APPLIED: MICROCAT-XF Microbial Filamentous Growth Inhibitor



TREATMENT SYSTEM:

7570 m³ per day activated sludge system receiving wastewater generated from used paper and virgin pulp processing. The system consists:

1. 18,3 m Diameter Primary Clarifier
2. 2 x 1135,5 m³ Aeration Basins in Series
3. 2 x 15,25 metre Diameter Secondary Clarifiers

OBJECTIVE:

Improve sludge settling in the secondary clarifiers. Highly variable hydraulic and BOD loadings (due to 10-day production cycle), low dissolved oxygen concentrations in the aeration basins, and the nature of the waste entering the system all contributed to filamentous infestation of the biomass. Due to poor settling, sludge blankets in the 4,3 metre deep secondary clarifiers averaged 3,66 metre. Permit violations for effluent suspended solids were frequent.

PROGRAM:

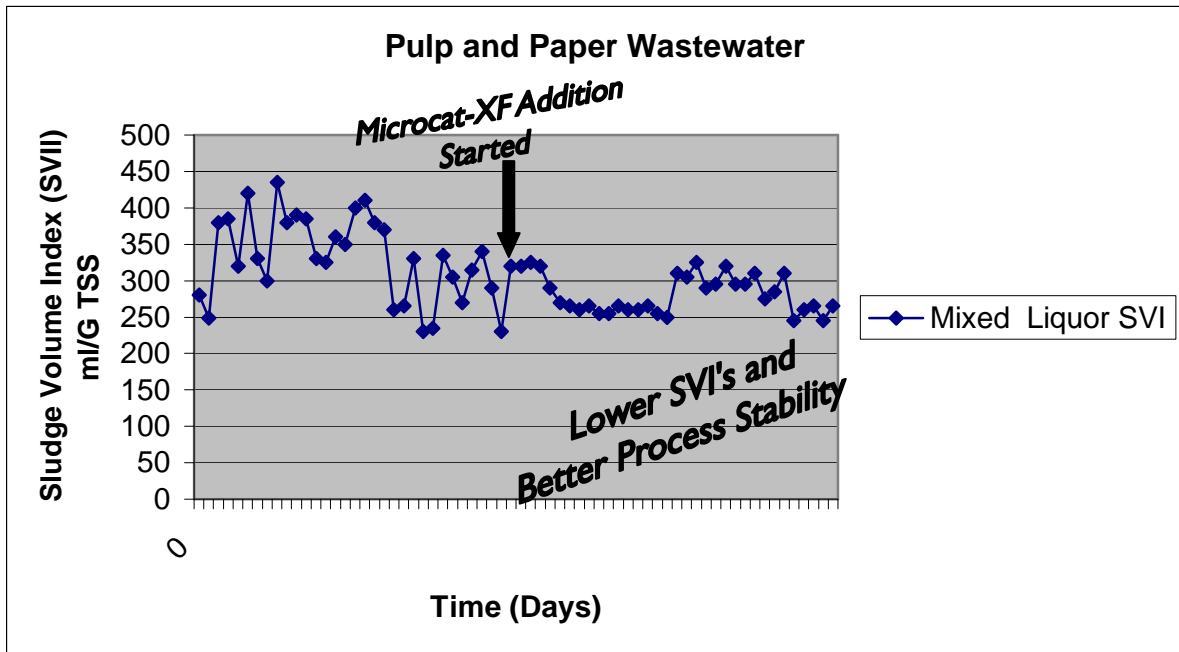
MICROCAT-XF was added daily to the first aeration basin. Gradually the amount of product added was reduced to a preventive maintenance level (see table I.). Plant operation data, including sludge volume indexes (SVI) and sludge blanket depths, were monitored throughout the addition period along with regular microscopic analysis of filament concentrations within the mixed liquor.

Table I. Microcat-XF Normal and maintenance dosage rates

| | |
|------------------------|--------------------|
| Day 1 & 2 | 22,7 kg XF per day |
| Days 3 - 10 | 15,1 kg XF per day |
| Days 11 - 20 | 3,80 kg XF per day |
| Daily maintenance dose | 2,90 kg XF per day |

RESULTS:

Within two weeks of the start of the program sludge blanket levels had fallen from 12 to 6 feet. SVI values improved dramatically (see graph) and stabilized compared to the period prior to the program (see monthly standard deviations). Microscopic analysis of the mixed liquor revealed filament break-up. After four severe system upsets caused by bleach spills in the mill, the system recovered rapidly while maintaining minimal variation in SVI values.



CONCLUSIONS

The **MICROCAT-XF** bioaugmentation program achieved the goal of improved settling. In addition, the program enhanced the overall stability of settling in the treatment system. The plant continues to regularly add **MICROCAT-XF** to the treatment system to maintain settling performance.