MLSS development and COD/BOD degradation with BactaServe- Pulp and paper in recycling craft paper industry.

1. Background:

The plant facility is situated in the central region of India and stands as one of the largest manufacturers of paper through the recycling craft process. Due to the substantial volume of wastewater produced by paper manufacturing industries, coupled with a high organic load in comparison to other sectors, an Effluent Treatment Plant (ETP) has been designed to manage and treat 2400 m3 of wastewater generated each day during the production process.

2.2. Develop MLSS with high MLVSS ratio: -

As mentioned, this facility manages an extensive volume of wastewater daily, characterized by a notably high organic load in terms of COD/BOD. To break down complex compounds responsible for elevated COD/BOD values, a substantial MLSS with a significant MLVSS content is required for effective degradation.

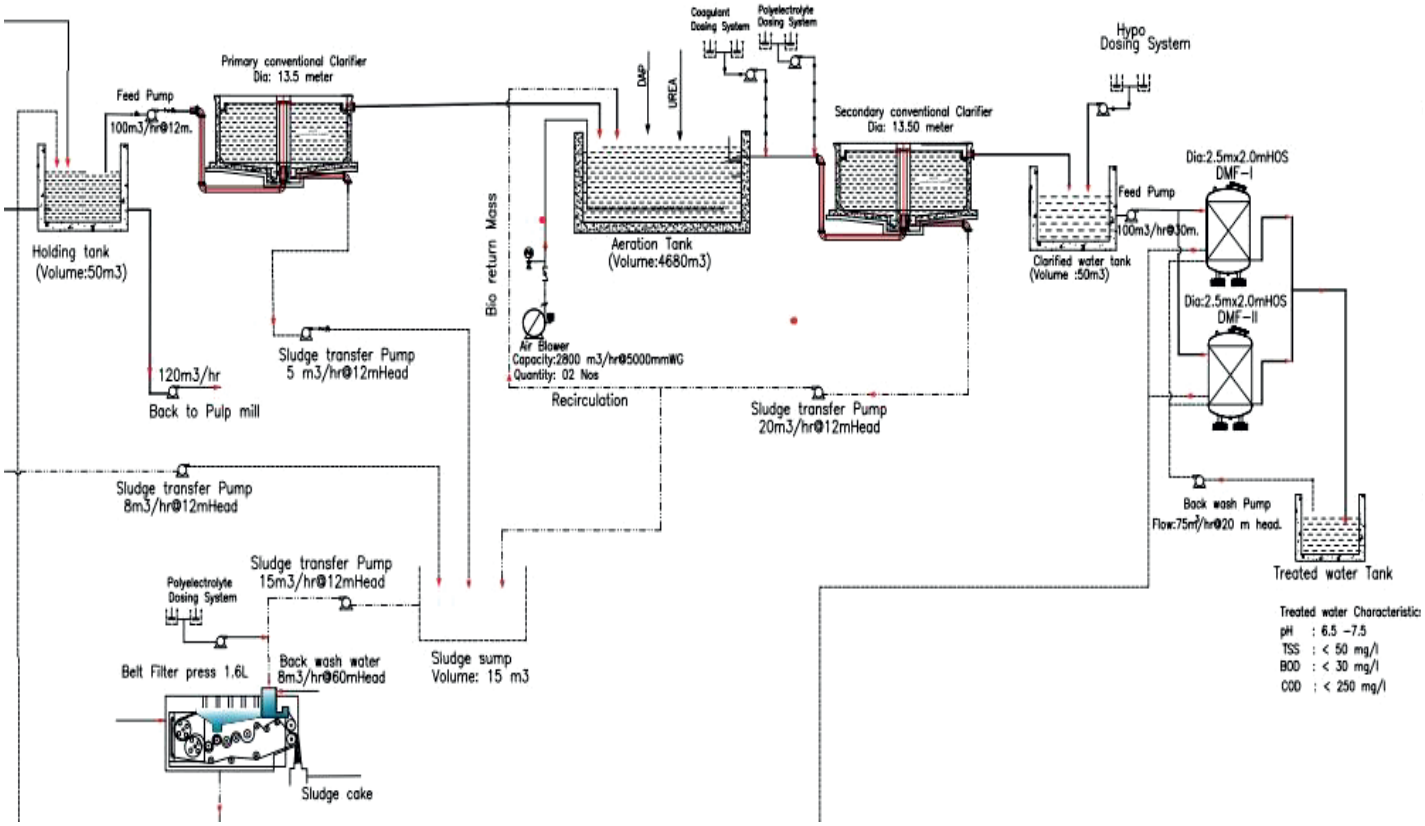
Due to the high inflow of TSS from the primary clarifier to the aeration tank which was in the range of 500-800 mg/liter, there is an increase in MLSS, even though without a proportional rise in MLVSS content. Consequently, it becomes essential to discard biomass from the aeration tank to uphold the desired MLSS/MLVSS ratio. Simultaneously, fostering the development of MLSS in the aeration tank is imperative.

2. Challenges:

2.1. Elevated Temperatures: -

The facility faces a significant challenge due to elevated temperatures that surpass the optimal working range for mesophilic bacteria. The temperature in this facility has reached to 42 degree C which is far greater than the optimum working range of mesophilic bacteria. These high temperatures create an unfavorable environment for bacteria to effectively act and degrade concentrations of COD/BOD (Chemical Oxygen Demand/Biochemical Oxygen Demand). As a result, the degradation process of COD/BOD concentrations is impeded, leading to a diminished capacity for wastewater treatment in the face of these elevated temperature conditions. This issue underscores the need for alternative strategies or interventions to address the decreased efficiency of mesophilic bacteria under such thermal stress.

3. Process flow diagram: -



4. Special Technical Solution: -

As a technical solution, we have supplied "BactaServe- Pulp and Paper" bio culture which will help to produce MLSS with high MLVSS content and degrade complex compounds contributing to high COD/BOD values. Along with the product supplied we also provided a after sales services to ensure a successful commissioning of the aeration tank in terms of MLSS development and COD/BOD reduction.

4.1. Dosage schedule: -

Dosage Schedule - BS- Pulp and Paper			
Sr No	Duration	Dosage (Kg's/Day)	Total (Kg's)
1	Day 1 - 10	25	250
2	Day 11 - 20	15	150
3	Day 21 - 30	10	100
Total BS- Pulp and Paper required			500

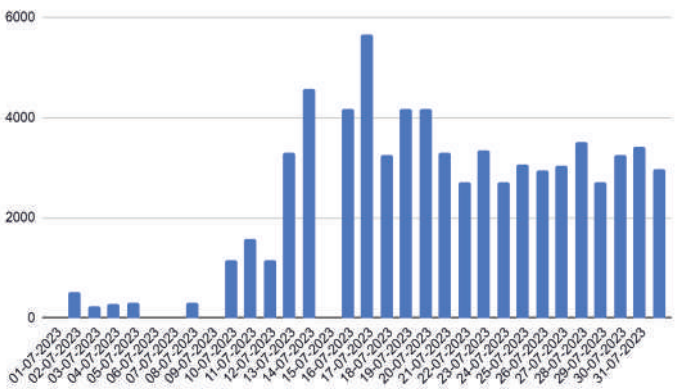
BactaServe- Pulp and Paper

Biological wastewater treatment plants receiving pulp and paper making wastes occasionally encounter difficulties in achieving desired effluent quality. Variable operating conditions may cause continuing system malfunctions. BactaServe-Pulp & Paper combines selected, adapted microbial strains with improved waste degradation capabilities. BactaServe-Pulp & Paper contains a combination of aerobic and facultative anaerobic microorganisms selected from nature for their abilities to break down a broad range of substances encountered in the pulp and paper making waste. These include lignin, cellulose, sizing, surfactants, fibrous solids and other
wastes. When used on a regular maintenance schedule, this combination of microbes can improve overall system performance.

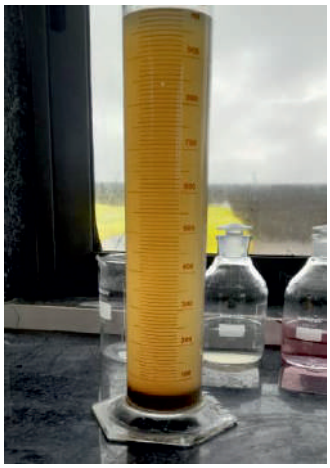
5.Results: -

5.1.Development in MLSS: -

Before the application of BactaServe- Pulp & Paper the MLSS present in the aeration tank was 516 ppm but after the application of our bio culture, within 1 month it has increased to 3000 ppm.



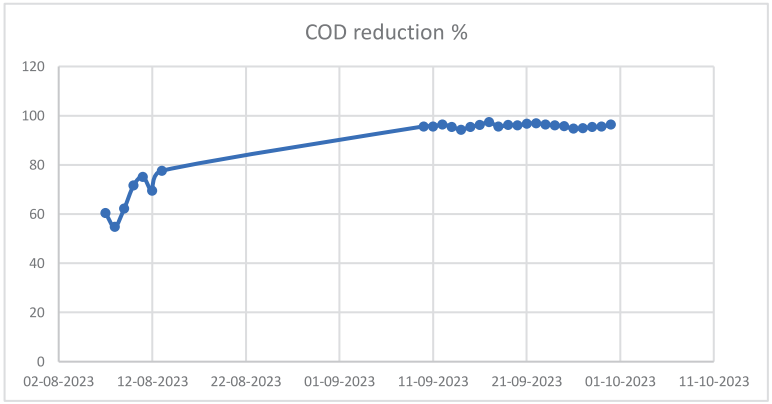
5.1.1. SV30 test: -



5.2. COD reduction %: -

Upon the successful cultivation and integration of the bio culture within the system, it has the potential to yield a consistent and remarkably substantial reduction in Chemical Oxygen Demand (COD) values, thereby demonstrating its efficacy in enhancing wastewater treatment and environmental sustainability.

Acrosss the aeration tank the COD removal efficiency was found to be 95% upon the successful commissioning, with average inlet and outlet COD of 13000 and 700 mg/liter respectively. This 700 mg/liter COD is again treated in ACF/PSF and UF for further removal.



6.Executive summary: -

a) Based on the observations & analysis report, MLSS Settling is good and all outlet parameters are under control.

b) Looking at the previous condition of the ETP, currently there are no issues as such to be tackled.

c) Outlet water is very clear and there is no turbidity present.

d) Presence of healthy biomass as shown by MLSS is resulting in consistent reduction of COD/BOD.