

ETP Feeds With BactaServe for COD/BOD Removal from Pharma Industry's Wastewater

1. Background:

With a presence in 138 countries on six continents, pharma company is now the world's largest integrated supplier of solid dosage products and services – providing hard-shell capsules, film and foil barrier solutions. Founded in Mumbai in 1961, now serves pharmaceutical companies all over the world, touching almost every aspect of solid dosage manufacturing. Company has built over 60 years long term relationships with renowned customers.

1.2 Table of Inlet Parameters:

Parameters	Days	INLET FEED ppm
COD ppm	Day 1	7120
	Day 5	7150
	Day 10	7009
	Day 15	6955
	Day 20	6991
	Day 25	6989
	Day 30	6800
	Day 35	7005
Avg		7002
BOD ppm	Day 1	2373
	Day 5	2383
	Day 10	1752
	Day 15	1739
	Day 20	2330
	Day 25	2330
	Day 30	2267
	Day 35	1751
Avg		2116

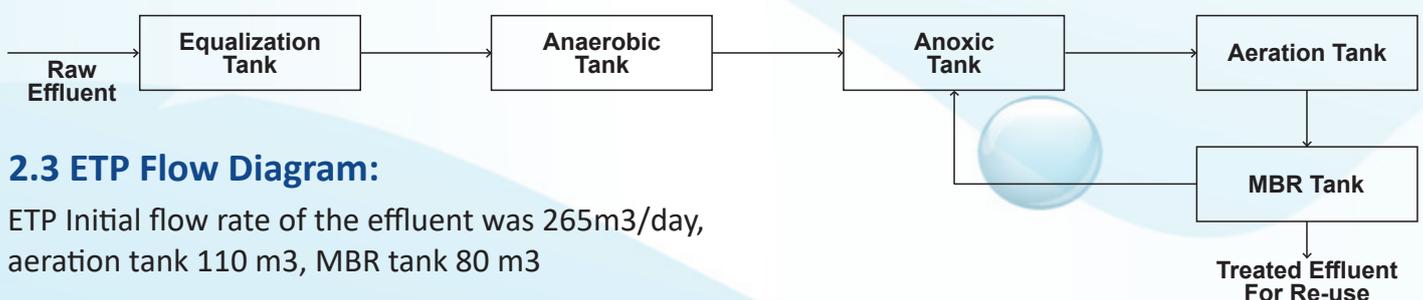
2.1 Photographic view of site:



2.2 Challenges:-

Challenges in ETP operation & the problem:

- COD and BOD were very high in the effluent.
- COD 7000 ppm, BOD is 2000 ppm and it was in the same higher range through out.
- A high level of BOD can reduce dissolved oxygen (DO), thereby harming the local environment if the effluent is discharged
- Excess COD/BOD content contributes to environmental pollution.
- Water with high COD/BOD often has poor aesthetic qualities, such as bad odour, murky appearance, and an unpleasant taste
- Which can impact its usability for drinking, recreational activities, and industrial processes.



2.3 ETP Flow Diagram:

ETP Initial flow rate of the effluent was 265m³/day, aeration tank 110 m³, MBR tank 80 m³

3. Special Technical Solution:

Initial feed of BOD/COD was extremely high. We have suggested a solution -BactaServe Anaerobic and Pharma bioculture.

BactaServe is specially formulated naturally occurring, nonpathogenic, Non genetically altered blend of bacteria which can grow over wide temperature range 5-45°C. BactaServe when added in waste water treatment systems, bacteria starts multiplying immediately to create higher Biomass content. This helps in bio-degradation of BOD content of the waste water.

These microorganisms are not harmful and completely environmentally safe.

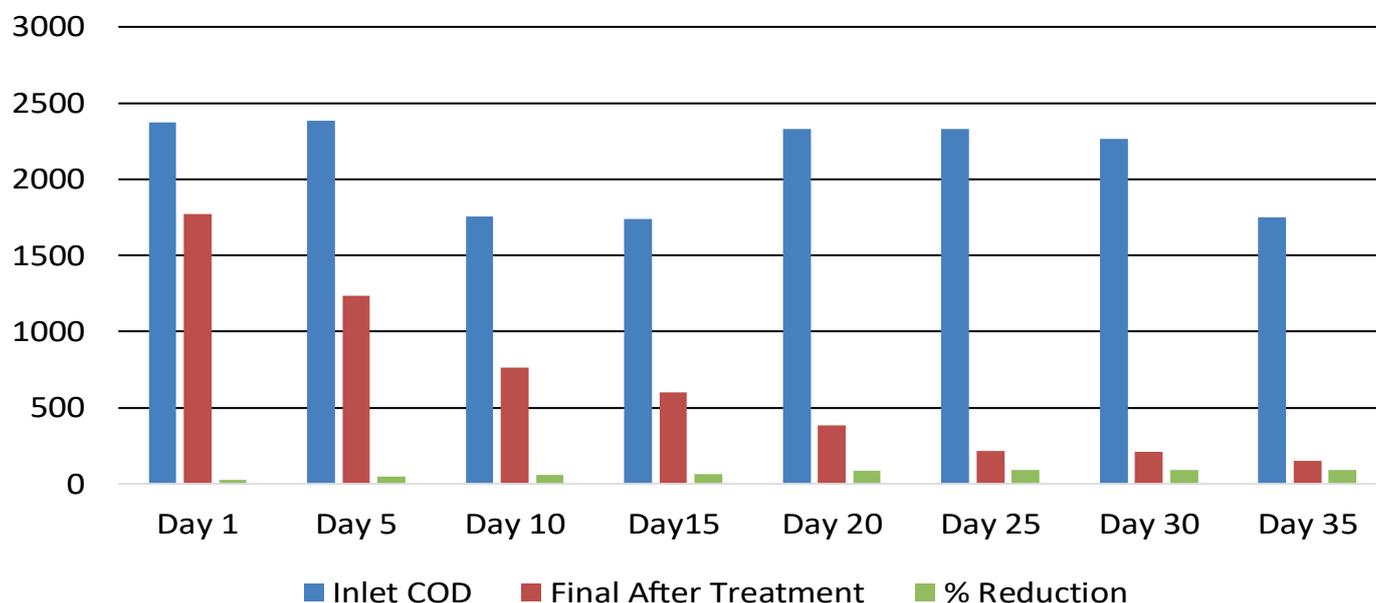


Dosage of BactaServe			
No	Days	Estimated Kg	Actual Kg
1	Day 1 - Day 15	85	80
2	Day 16 - Day 35	70	60
	Total	155	140

3.1 Special features to highlight:

- COD of day 1 at Anaerobic tank outlet was 6408 ppm, at Aeration tank outlet 5895, in MBR tank outlet 5306 ppm
- Day 10, Anaerobic tank outlet COD was 4556 ppm, Aeration tank outlet 3326, MBR tank outlet 2295 ppm
- After 15th days BactaServe dosage 48% reduction achieved in Anaerobic tank for COD
- After a month, 82% reduction found in MBR tank outlet COD
- Total 96% COD reduction achieved
- Sufficient growth of MLSS found in 20 days
- Maintaining flow 2 m3/hr, after 10 days of MLSS development
- Increased flow from 3.5 m3/day to 4.5 m3/day, during this DO-4 ppm, pH-6.5 to 7.5
- BOD of inlet Day 1 was 2373 ppm, Anaerobic tank outlet 2136, MBR tank outlet was 1769 ppm
- BOD of Day 15 - MBR Tank outlet was 598 ppm
- 91% reduction in BOD value achieved

BOD Reduction-Graphical presentation

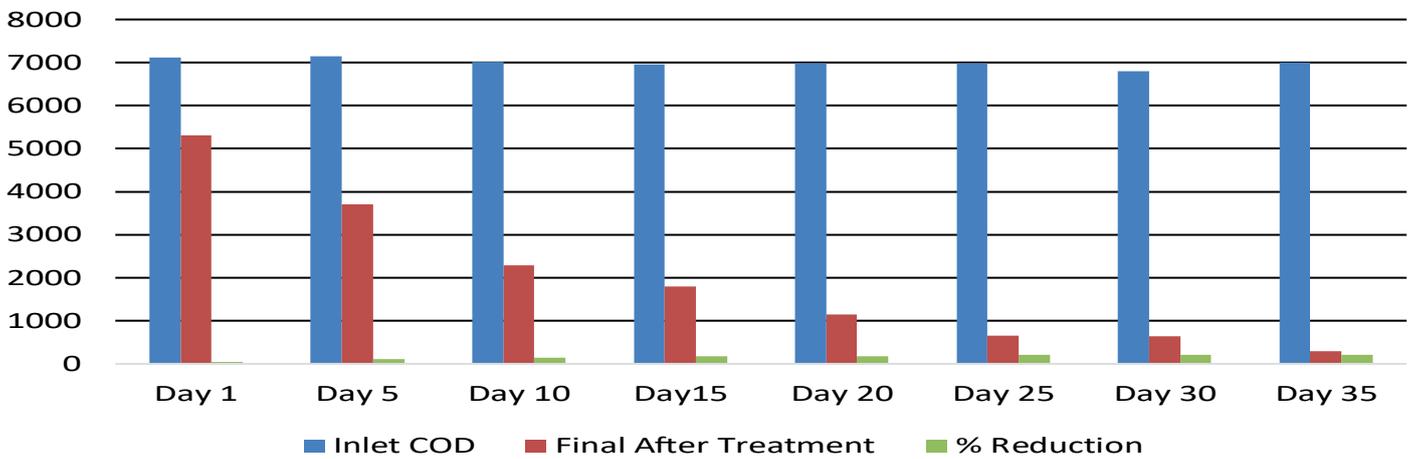


4.0 Tabular statistics of parameters and reduction:



Parameters ppm	Days	INLET FEED ppm	Anaerobic Tank Outlet	Aeration Tank Outlet	MBR Tank Outlet	% Reduction
COD ppm	Day 1	7120	6408	5895	5306	25
	Day 5	7150	5649	4632	3705	48
	Day 10	7009	4556	3326	2295	67
	Day 15	6955	4521	2848	1794	74
	Day 20	6991	3635	1890	1153	84
	Day 25	6989	2865	1089	653	91
	Day 30	6800	2788	1059	636	91
	Day 35	7005	2102	546	301	96
BOD ppm	Day 1	2373	2136	1965	1769	25
	Day 5	2383	1883	1544	1235	48
	Day 10	1752	1519	1109	765	56
	Day 15	1739	1507	949	598	66
	Day 20	2330	1212	630	384	84
	Day 25	2330	955	363	218	91
	Day 30	2267	929	353	212	91
	Day 35	1751	1051	182	150	91

COD Reduction-Graphical Presentation



5.0. Executive Summary:

- This project of pharma ETP was challenging due to high COD/BOD.
- Average MLSS earlier was 2000 ppm and after Bactaserve 4000 ppm
- Earlier average MLVSS– 1400 ppm and after Bactaserve bioculture dosing its 2800 ppm.
- This time increased flow by 20% of 170 m3/day.
- Bactaserve slurry preparation and dosing has clearly shown, a spike in MLSS
- COD of Anaerobic tank has achieved 70% reduction

5.1. Achievements:

- Bactaserve bioculture solved this issue with bacterial strains
- COD day 1 inlet was 7120 ppm and after Bactaserve pharma dosing, at day 35 outlet was 301 ppm
- BOD at day 1 inlet was 2373 ppm & at day 35, outlet was 150 ppm
- We are happy to highlight 91% reduction in BOD and 96% reduction in COD - We have successfully solved the problem of ETP

‘BactaServe found an excellent product for COD - BOD removal’!!