

BEST ENVIRONMENTAL PRACTICES IN INDUSTRIES

COMPANY FROM IRUNGATTUKKOTTAI

- ❖ Introduction of FICCO (Fluidized Immobilized Carbon Catalytic Oxidation) Reactor in sewage treatment plant as per guidance from CLRI – Adyar (Dr. G. Sekaran, Head & Chief Scientist, Environmental Technology Division) & IWMA, Chennai.
- ❖ Improving the treated water quality and meeting the TNPCB norms and creating odour free atmosphere inside the premises.
- ❖ FICCO Reactor - No chemicals; involves only the supply of air to the conventional aerobic biological system along with carbon catalyst.
- ❖ Company STP Capacity – 120 KL / Day, Recommended FICCO tank Volume – 36m³, Carbon catalyst – 750 Kg, Carbon Catalyst produced from Coconut shell. Life time of Catalyst is 15 Years.

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Consolidated Report from TNPCB

- STP samples showed inconsistency and odour was found

Sl. NO	Date of Collection	Place of Collection	Report date and No	pH	TSS mg/L	BOD mg/L
1	21.12.2011	Sewage Treatment Plant ACF out let	ROA NO.2674, 2675/2011-2012	6.15	36	33
2	24.01.2012	Sewage Treatment Plant ACF out let	ROA NO. 3046, 3047/2011-2012	6.00	30	3
3	14.02.2012	Sewage Treatment Plant ACF out let	ROA NO. 3248, 3249/2011-2012	6.62	44	25
4	25.04.2012	Sewage Treatment Plant ACF out let	ROA NO. 232, 233/2012-2013	6.42	28	4
5	21.05.2012	Sewage Treatment Plant ACF out let	ROA NO. 417, 418/2012-2013	6.39	22	34
6	17.07.2012	Sewage Treatment Plant ACF out let	ROA NO. 778, 777/2012-2013	6.22	26	13
7	23.08.2012	Sewage Treatment Plant ACF out let	ROA NO.1087, 1088/2012-2013	6.7	31	25
8	17.09.2012	Sewage Treatment Plant ACF out let	ROA NO.1344,1345/2012-2013	6.42	68	35

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- ❑ Discussed with IWMA and they suggested to consult CLRI Adyar, Environmental Lab.
- ❑ Various samples analyzed and found that certain parameters such as COD, BOD, Suspended Solids, Ammoniacal Nitrogen, Total Kjeldahl Nitrogen were above the prescribed limits
- ❑ Impacts of the discharge of such partially treated waste water onto the soil:
 - ❑ The retardation of water permeability of the soil
 - ❑ Stagnation of water on the soil as ponding leading to mosquito menace
 - ❑ Odour emission
 - ❑ Microbial film formation onto the ornamental grass grown on the open land
 - ❑ Deterioration in the quality of the ground water sources, etc.
- ❑ This may be managed by incorporating an unit operation developed by CLRI, known as Fluidized Immobilized Carbon Catalytic Oxidation Reactor (FICCO).

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Characteristics of wastewater discharged at STP, analyzed on 14.10.2012 at CLRI Lab

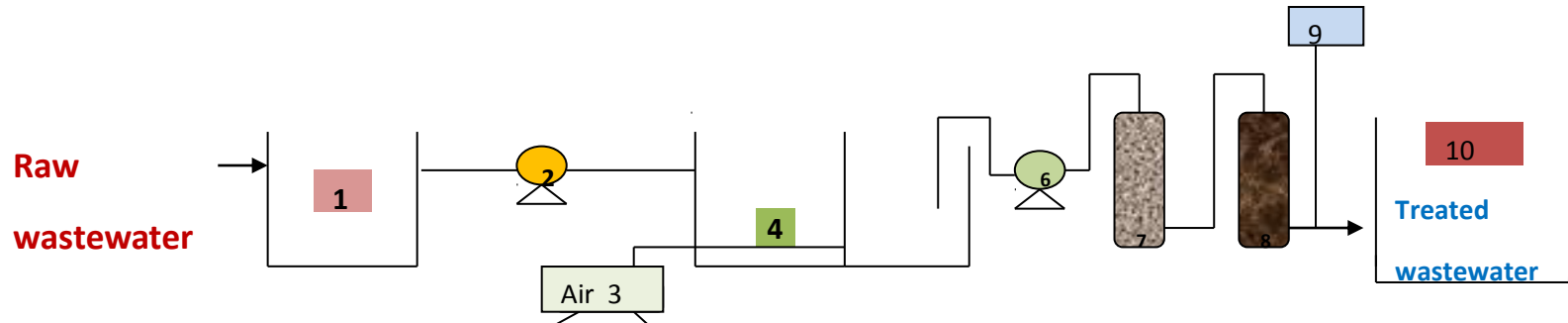
PARAMETERS	AT the company	AFTER CORRECTION	AFTER SAND FILTER	AFTER CARBON FILTER
pH	7.68	8.00	8.14	8.4
COD	184	88	72	50
BOD	70	27	27	12
NH ₃	46	0	0	0
TKN	59	8	4	0
Total Count, CFU/ML	1 X 10 ⁹	2 X 10 ⁴	-	1 X 10 ³

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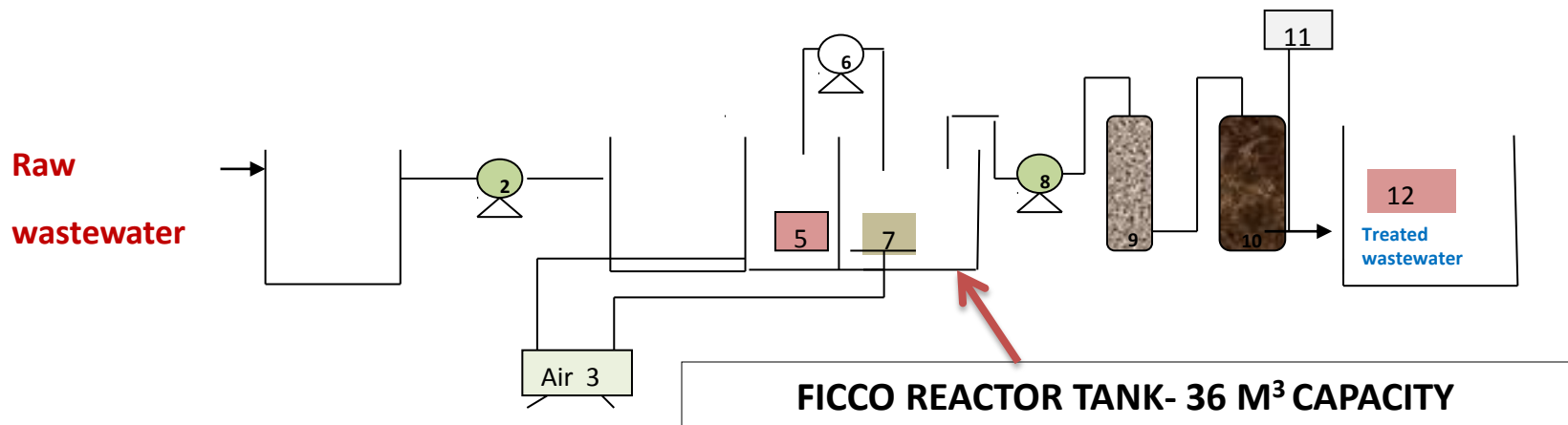
Earlier scheme at the company	Scheme modified at the company as per CLRI recommendation
1. Raw water collection tank	1. Raw water collection tank
2. Transfer pump	2. Transfer pump
3. Air Blower	3. Air blower
4. Aerobic biological reactor	4. Aerobic biological reactor
5. Secondary clarifier	5. Secondary clarifier
6. Transfer pump	6. Transfer pump
	7. Fluidized Immobilized Carbon Catalytic Oxidation Reactor (FICCO – CLRI patented process)
	8. Transfer pump
7. Sand filter	9. Sand filter
8. Activated carbon filter	10. Activated carbon filter
9. Hypochlorite dosing	11. Hypochlorite dosing
10. Treated water collection tank	12. Treated water collection tank

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Sewage Treatment Plant - Preceding Schematic Diagram



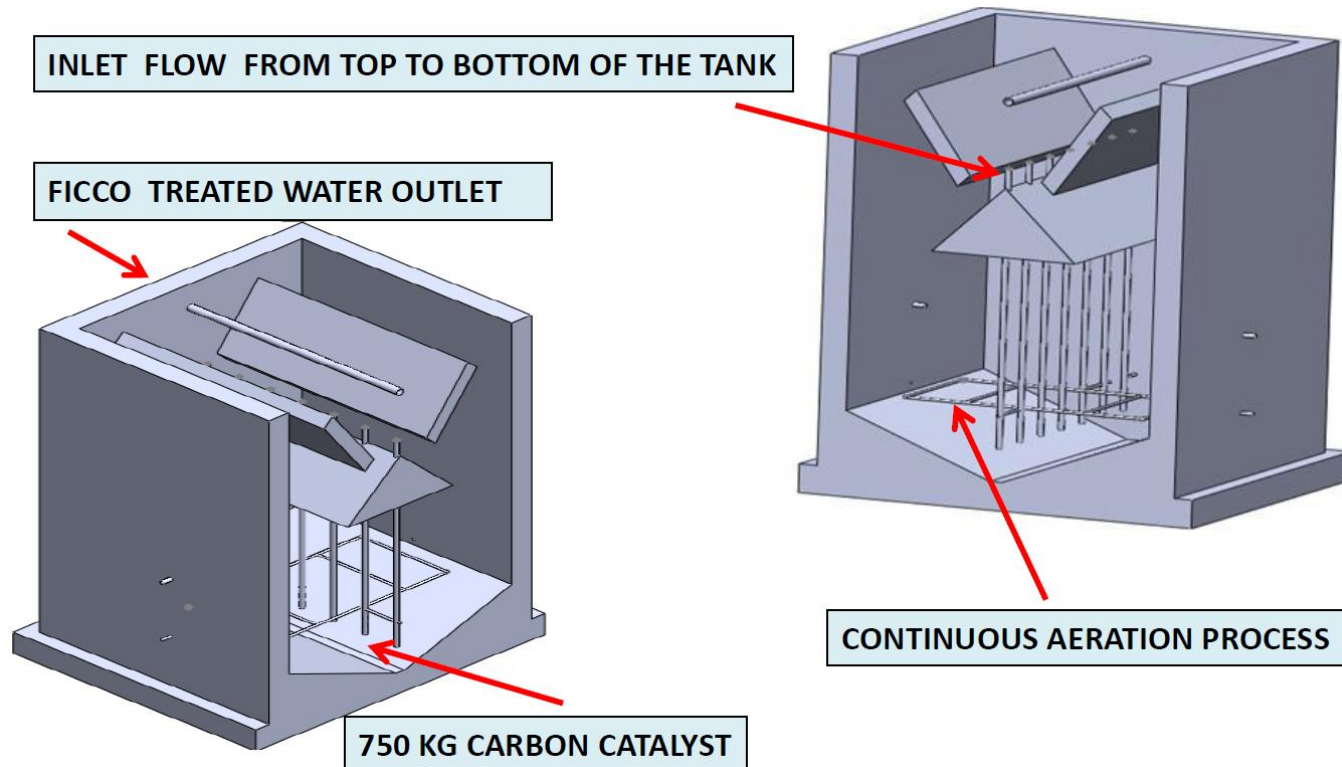
Sewage Treatment Plant - FICCO Schematic Diagram



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Benefits of modified Sewage Treatment Plant - FICCO- Reactor Method

- ✓ Improvement in the performance of the STP treated water quality
- ✓ Treated water parameters (pH, BOD, COD, TSS, etc.) well within the TNPCB norms
- ✓ Suspended solid content less than 30 mg/l
- ✓ Treated water free from odour and color
- ✓ Treated water can be used for gardening and greenery yield improved without affecting the ecology of the premises



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FICCO REACTOR TANK commissioned on 26.03.2013

STP treated waste water clarity



STP treated waste water analysis results

Sl. NO	Date of Collection	Place of Collection	Report No.	pH	TSS mg/L	BOD mg/L
1	12.08.2013	Sewage Treatment Plant ACF out let	CTL/CH/1938/13-14	7.1	8	14
2	19.07.2013	Sewage Treatment Plant ACF out let	CTL/CH/1655/13-14	6.9	16	16
3	19.06.2013	Sewage Treatment Plant ACF out let	CTL/CH/1346/13-14	7.0	20	12
4	02.05.2013	Sewage Treatment Plant ACF out let	CTL/CH/0945/13-14	7.2	18	15

THANK YOU !