



**CENTRAL POLLUTION CONTROL BOARD  
ZONAL OFFICE (SOUTH)  
BENGALURU**

**Monitoring Report of M/s Cochin Special Economic Zone, Common Effluent Treatment Plant, Kakkanad, Cochin, Kerala**

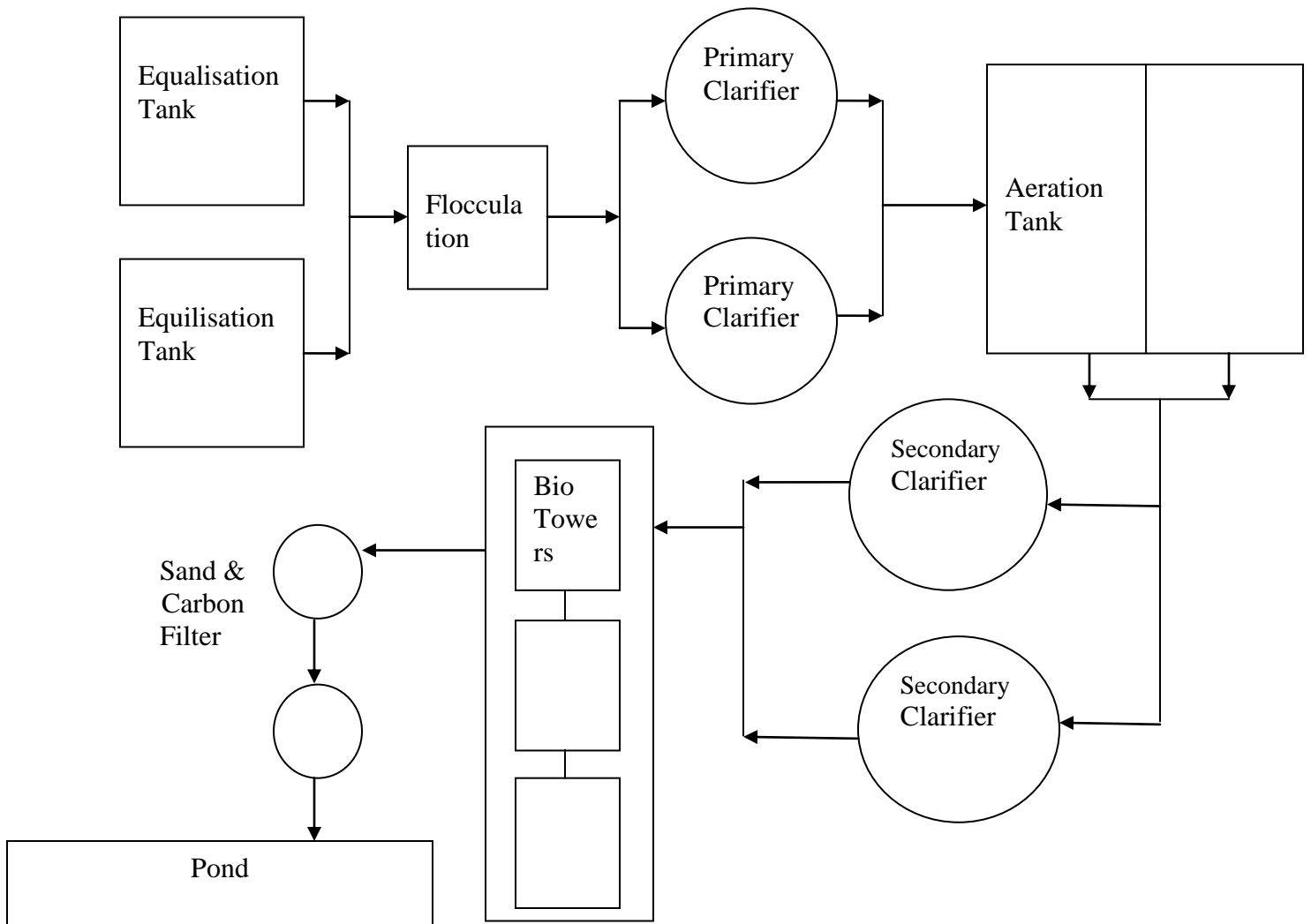
<b>1.</b>	Name/ address of CETP/ company	M/s Cochin Special Economic Zone Common Effluent Treatment Plant Kakkanad Cochin – 682 037 Kerala
<b>2.</b>	Area occupied by CETP (plot area)	3541.72 Sq. mts
<b>3.</b>	Total no. of staff (including operational & skilled persons)	10 nos.
<b>4.</b>	Contact person (Name, Designation, and Contact No, FAX, e mail)	Sh. Krishnavarma K Senior Consultant, KITCO Ltd., 0484 – 2413365 <a href="mailto:kitcocsez@gmail.com">kitcocsez@gmail.com</a>
<b>5.</b>	Operating Agency	KITCO Ltd.,
<b>6.</b>	Status of CETP	operational
<b>7.</b>	Consent & Authorization	Valid up to 30.06.2015
<b>8.</b>	Industrial area/estate (s) connected to CETP	Cochin Special Economic Zone
<b>9.</b>	Type of industries in the connected industrial areas	
	Industrial area/estate	Type of industries
	CSEZ	Number of industries
		Tea
		1
		Marine
		2
		Software
		23
		Trading
		7
		Gloves
		7
		BPO
		4
		Coir
		1
		Mechanical relay
		1
		Electronics
		11
		Medical Equipment
		1
		Electrical
		1
		Frozen
		1
		Packing
		1
		Gold Exports
		5

		Tissue Culture	1
		Music Instruments	1
		Food	2
		Copper Wire	1
		Surgical cloth	1
		Ceramics	1
		Mechanical Tool	1
		Carton	1
		Linen	1
		Seat cover	1
		Light	1
		Glue	1
		Medical Lab	1
		Ait filter	1
		Design & Fabrication	1
		Elastic/rigid	1
		Canteen	2
		Office	22
		<b>Total</b>	<b>107</b>
	Number of member industries of CETP		107 nos.
<b>10.</b>	Method of collection of effluent (pipeline/tanker)		Pipeline
<b>11.</b>	Details of flow meters		Digital Flow Meter at Final Outlet
<b>12.</b>	Treatment capacity		1.6 MLD
	Design flow of CETP		67 m <sup>3</sup> /hr.
<b>13.</b>	Wastewater treated		1.2 MLD
	Average flow reaching CETP		50 m <sup>3</sup> /hr.
<b>14.</b>	Wastewater if bypassed in CETP from treatment:		No
<b>15.</b>	Treatment units and dimensions		
	<b>Name of the unit</b>	<b>Numbers</b>	<b>Dimension in mm</b>
			<b>Capacity, m<sup>3</sup></b>
	Equilisation Tank	2	11600 x 11400 x 3000
	Primary Clarifier	5	6250 dia x 2250 swd
	Aeration Tank	2	7200 x 14400 x 3500
	Secondary Clarifier	2	8000 dia x 2500 h
	Filter Feed Sump	2	3500 x 3500 x 3200
	Treated Water Sump	1	4000 x 4000 x 3500
	Sludge Pump	1	2000 x 2000 x 3000
	Bio Tower	3	8400 x 7200 x 2000
	Bio Tower	3	2000 x 2000 x 2300
	Recirculation Sump		

<b>16.</b>	Details of chemicals used	
	<b>Name of chemical</b>	<b>Quantity</b>
	Hydrated Lime	1470 kg/day
	Ferrous Chloride	900 l/day
	Chlorine	5 l/day
	DAP	0.167 kg/day
	Urea	0.233 kg/day
<b>17.</b>	Primary sludge management system <ul style="list-style-type: none"> <li>• Primary sludge generation rate</li> <li>• Details of any other methods for sludge thickening</li> <li>• Primary sludge disposal</li> </ul>	608 kg/day  Centrifuge  Sent to TSDF M/s Kerala Enviro Infrastructure Limited
<b>18.</b>	Excess Biological Sludge Management System <ul style="list-style-type: none"> <li>• Excess Biological Sludge generation rate:</li> <li>• Details of any other methods for sludge thickening</li> <li>• Excess Biological Sludge Disposal</li> </ul>	192 Kg/day  Centrifuge  Sent to TSDF M/s Kerala Enviro Infrastructure Limited
<b>19.</b>	Method of Treated wastewater disposal	Partly recycled and remaining discharged to ground water recharge pond.
<b>20.</b>	Capital cost with breakup of sources of funds	Rs 88,09,981/- 100% Govt. Funded The CETP was in operation since 2004. The cost shown is as per audit statement as on 31.03.2013
<b>21.</b>	Operational cost	Rs 83,63,032/- (2012-13)
<b>22.</b>	Inspection Team	Sh. R. Rajkumar, Sc C Sh. Deepesh V, SSA Sh. S. Seenivel Raj, JLA
<b>23.</b>	Date of Inspection	19/08/2014

**Observations:**

- The CETP is commissioned in Cochin Special Economic Zone Authority (CSEZ has 107 mixed type industries which are member of CETP).
- The CETP has installed capacity of 1.6 MLD in which about 1.2 MLD of effluent is received from the member units.
- The treatment system in the CETP includes physio-chemical and biological treatments. The CETP consists of equalisation tank, flocculation tank, primary clarifier, aeration tank, secondary clarifier, bio towers, sand & carbon filter and Sludge decanter.



**Flow Chart of CETP**

- The samples were collected at different stages of the treatment unit. The characteristics of the effluent are shown below.

Parameters	Designed inlet norms	After equalization	After Primary Clarifier	After Secondary Clarifier	After Bio filter	Final Outlet	Standards
<b>pH</b>	5-8	7.4	10.7	7.8	7.6	7.6	<b>6.5 – 8.5</b>
<b>TSS</b>		210	34	10	12	14	<b>100</b>
<b>TDS</b>		1340	2946	2052	2400	2122	<b>2100</b>
<b>BOD</b>	1000	98	20	47	18	22	<b>30</b>
<b>COD</b>	2000	391	156	155	125	122	<b>250</b>
<b>O &amp; G</b>						0.5	<b>10</b>
<b>Sulfide</b>		2.9				0.9	<b>2.8</b>
<b>Sulphate</b>		690				440	<b>1000</b>
<b>Phenol</b>						0.16	<b>1</b>
<b>NH<sub>3</sub>-N</b>		46.2				33.6	<b>50</b>
<b>TKN</b>		59.7				33.6	<b>100</b>
<b>Aeration Tank</b>		<b>MLSS</b>	264				

\* All values are in mg/l except pH

- MLSS in the aeration tank is observed to be very less and same is evident from the analysis report. It was informed by the CETP due to maintenance of the plant the aeration tank is cleaned.
- The treated effluent quality is within the stipulated norms expect TDS which is slightly higher.
- The treated effluent is partially being used for gardening and remaining discharged to the pond for ground water recharge.



**Treated Effluent Recharge Pond**

- During inspection one Equilisation tank and two bio towers were not in operation/working.



**Non-operational Bio Towers**



**Equilisation Tank**

**Recommendations:**

- MLSS in the aeration tank should be maintained as per the designed concentration for effective treatment.
- TDS in treated effluent should meet the stipulated norm within the limit before discharge.
- Equilisation tank and Bio towers should be made into operation regularly.
- Flow meters shall be installed at inlet of CETP.
- Treated effluent shall be reused/ recycled to achieve Zero Liquid Discharge.

(R. Rajkumar)  
Scientist C