

EVALUATING GUIDE FOR  
**SELECTION & INSTALLATION OF ENERGY EFFICIENT,  
RESULT ORIENTED MACHINERIES FOR EFFLUENT / SEWERAGE TREATMENT PLANTS**



**ENVIRON  
ENGINEERING  
COMPANY**

*A Company with a tradition of Innovation (since 1979)*



FEDERATION OF  
GUJARAT INDUSTRIES

Member

**CIJ**

CONFEDERATION OF  
INDUSTRIES



Conserve | Restore | Relive  
A Greener **Earth**





*Late Shri C. B. Thakore*

Founder : Enviro Engineering Company

### *Vision*

To serve the Industries by Innovating New Concepts in the machineries offering the required Results in the field of ETP/STP (with minimum Energy Consumption), creating clean Environment & to be a part in DEVELOPMENT of the Nation by reducing Energy Consumption & preventing GLOBAL WARMING.

### *Mission*

To solve the problems of the Industries by Designing & Manufacturing Machineries of High Quality, Long Lasting, Trouble Free, Result Oriented & Energy Efficient Equipments in the field of ETP/STP and to save the large amount of Energy & Monetary Saving in existing plants.



*Environment is a gift of Nature ..... Let us preserve it*



## INNOVATIVE NATURE OF INDUSTRIAL ACTIVITY

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ENVIRON ENGINEERING COMPANY is a company with a Tradition of Innovation having the manufacturing facility of 40000 sq. ft. area at GIDC Makarpura & GIDC POR - Ramangamdi. At Environ, we manufacture the equipments which are used in Chemical & Biological Treatment in Effluent & Sewage Treatment Plant like : ENERGY EFFICIENT AERATORS, CLARIFIERS, HRSCC, CLARIFLOCCULATORS, THICKENERS, FLASH MIXERS, STIRRERS, AGITATORS, FLOCCULATORS, API OIL SEPARATORS, etc.

First of all, we have got our own R&D facility wherein we have innovated Aerator which has got more Influence Zone & Oxygen Transfer Efficiency along with maximum Mixing Efficiency. As the Oxygen Transfer Efficiency & Influence Zone is more, the Energy required for Aeration System is less & so saving in Energy.

These Aerators are provided with Special Features like : Machined Base, Solid Shaft, Machining the Impeller at Centre, etc.

Apart from the special features, these Aerators are provided with Dual Impeller. The Top Impeller work for Oxygen Transfer & the Bottom Impeller work as Mixer. Due to which the mixing of the D.O. increases & hence more Oxygen along with mixing is achieved.

The Influence Zone is also more due to High Mixing, hence Energy Saving. Secondly these Aerator works upto 6Mtrs. SWD. We are the only manufacturer in India who are providing the Aerators with Dual Impeller.

These Aerators are practically working in many Industries & they are enjoying the experience of Energy Saving with Guaranteed Results.

### LIST OF EQUIPMENTS MANUFACTURED BY ENVIRON

ENVIRON ENGINEERING COMPANY is the manufacturers of all the equipments which are required for Chemical & Biological Treatment of the effluent like :

Name of Equipments	Range of Products
1 Fixed & Floating type Slow Speed Energy Efficient Aerators	From 2HP to 150HP Rating
2 Centre, Clarifiers, Clariflocculators, Thickeners, High Rated Solid Contact Clarifier (HRSCC) Mechanisms.	From 2 Mtr Dia to 25 Mtr Dia
3 Agitators, Stirrers, Flocculators, Mixers, Mechanism in Rubber, Lead, Teflon, Glass, FRP Linings & SS Construction.	From 1/2 HP to 40 HP Rating
4 API Oil Separator, Top Oil Skimmers (Fully Automatic)	Various for Tank widths upto 5M

*Save Energy by installing Environ Energy Efficient Aerator*

## WHY, NOT GETTING OUTLET RESULTS IN BIOLOGICAL AERATION SYSTEM IN EFFLUENT / SEWERAGE TREATMENT PLANTS?



always try to purchase the equipments at a low cost to increase their profits, but they are not aware that after finishing Civil, Piping, Electrical work THE FINAL RESULTS IS TO BE ACHIEVED ONLY BY MECHANICAL SYSTEMS. They should Provide the

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Aeration System is the HEART of any Biological ETP / STP & MAXIMUM ENERGY is consumed in Aeration System to reduce the BOD/COD & as this is a NON PRODUCTIVE PLANT the ENERGY used in such SYSTEMS is also a MONETARY WASTE for any INDUSTRY / CETP / STP. So to SAVE such Expenses the INDUSTRY - ETP / CETP / MUNICIPAL CORPORATIONS should enquire whether the Invested Capital will work efficiently for a long period of time WITH LOW MAINTENANCE.

There are many Aeration Systems available in the market like Mechanical Aerators i.e. Slow Speed / High Speed / Aspirator / Aerators with Draft Tube Arrangements / Energy Efficient Aerators etc. Diffused Aeration System having many types of Diffusers etc. Jet Aerators, ELO2 Aerators etc. & all the manufacturers claims their systems are very efficient. Then why the INDUSTRY - ETP / CETP / STP are facing problems in getting the required results as per the Norms of PCB in these Aeration Systems even after burning the large amount of ENERGY? The reasons are :

The subject is NEW to the end users so they are totally dependent on the Consultants / Experts. The Consultants / Experts design the plants perfectly & they recommend 2 - 3 manufacturers of such Systems. The INDUSTRY / CETP / STP never take the references from the manufacturers of the Systems working efficiently in other plants. They take the project very lightly, but they always forget that this is our MORAL RESPONSIBILITY FIRST & STATUTORY requirement & if the system fails then they will be facing lot of troubles / problems in future, so the INDUSTRIES - ETP / CETP / STP - MUNICIPAL CORPORATIONS / CONSULTANTS / EXPERTS should be very serious before taking any decisions of installing such systems. Generally, such projects are offered on TURNKEY BASIS, in such cases the TURNKEY EXECUTORS

characteristics of the Effluent, design details like dimension ns of Aeration tank etc. & should ask questions to the manufacturers of such systems like : Calculations of HP of Aeration System i.e. How the HP of the Aeration System arrived? How the manufacturer is giving Guarantee. Does the manufacturer gives the Guarantee of achieving the final out put results OR he is giving the Guarantee only of Oxygen Transfer efficiency at Standard Conditions? He had considered the depth of the Aeration Tank? What steps he will be taking for Aeration tank having more depths than 2.5mtrs? Does the manufacturer had TESTED the manufactured Aeration System like OXYGEN TRANSFER & MIXING efficiency which is a MUST in any AERATION SYSTEM? If yes then WHERE? is the manufacturer is capable to SHOW the OXYGEN TRANSFER TEST if required by the INDUSTRY / STP - MUNICIPAL CORPORATION / CETP / EXPERT / CONSULTANT? At the initial Commissioning stage the manufacturer of Aeration System / Turnkey Executors show the handsome results but, after they hand over the plant to the End User say after a period of time of 6 - 10 months the efficiency of the OUT LET Parameters of the effluent getting disturbed (THIS IS DUE TO IN EFFICIENT AERATION SYSTEM) & the End User starts facing the problems of NOT GETTING RESULTS, & mean time the Guarantee of the equipments is over. None of the END USER who is facing problems in achieving the results WILL DISAGREE with this. What, if the results are not achieved after a period of time & investing a large amount of capital?

We are in this field since 1979 & we always try first to explain the facts (educate) to the clients & then ask them to take their own decision, in such cases after understanding the Technical Features & their requirement the end users are always in a position to take RIGHT DECISIONS.

IN ANY MECHANICAL AERATION SYSTEM APART FROM OXYGEN TRANSFER, MIXING EFFICIENCY IS EQUALLY IMPORTANT the Oxygen Transfer / Mixing Efficiency depends on the Design of the Aerator Impeller. Each & every Aerator Impeller has its own INFLUENCE ZONE & limitations to cater particular depth of say 2.5mtrs. but

as per our experience, if the tank depth is more than 2.5mtrs; then there will be settlement at the floor level, which will create septic conditions & the D.O. level reduces & sometimes goes down to ZERO, which all the Aerator Manufacturers, ETP / STP Designers, Consultants, Environmental Engineers, Experts, Turnkey Executors etc. will agree.

Now a days, as due to the space constraint, most of the Aeration Tanks are designed with higher depths. As the depths of the Aeration Tank is more than 2.5mtrs. Environ believes that it is the MORAL DUTY of the Aerator Manufacturer to design the Aerator Impeller accordingly considering the depth of the Aeration Tank, but it is not possible without doing the experiments OR R&D. (NONE OF THE MANUFACTURER IN INDIA EXCEPT ENVIRON IS CONSIDERING THE AERATION TANK DEPTH BEFORE MANUFACTURING.)

As the INDUSTRIES - ETP / CETP / STP - MUNICIPAL CORPORATION might not be aware that mostly every manufacturer of the Mechanical Aerators have their standard Design of the Impellers for standard HP e.g. The design of 25 HP Impeller is standard i.e. The Aerator Impeller of 25 HP installed in the Aeration tank depth of 2.5mtrs, the same Standard Design Impeller is Supplied & Installed in 3mtrs/3.5mtrs/4mtrs/4.5mtrs/5mtrs. It is very simple to understand that every Impeller has its own limitations to offer the results up to particular depth (SIMPLE THEORY OF PUMP-SUCTION & DISCHARGE) How the same design of the Impeller will be efficient in 2.5mtrs. - 5mtrs? The Impeller which works in 2.5mtrs, will never work in 3mtrs - 4.5mtrs. OR 5mtrs. Depth & due to which SLUDGE IS SETTLED at the FLOOR LEVEL of Aeration Tank. THE INDUSTRY - ETP / MUNICIPAL CORPORATION - STP / CETP WHO ARE NOT ACHIEVING THE RESULTS CAN CHECK IN THEIR AERATION TANK THERE WILL BE MINIMUM (GUARANTEE OF ENVIRON) 1mtr. / 1.5mtrs. SLUDGE IS SETTLED. If the SLUDGE is settled in Aeration Tank it creates the septic conditions due to which the OXYGEN TRANSFER EFFICIENCY REDUCES & THE D.O. LEVEL WILL BE NEAR TO ZERO, SO RUNNING THE AERATORS IN SUCH CASES IS A WASTE OF ENERGY & MONEY. So in particular cases NOBODY can blame to Consultants / Experts / Designers as the design is properly done. The failure is only due to the Performance / Design of the Aerator, as the MIXING EFFICIENCY of the Aerator Impeller is missing (DUE TO MORE THAN 2.5MTRS. DEPTH). This is one of the main & basic reason for not achieving the results in AERATION SYSTEMS & it also proves the efficiency of the Aerators.

## WHY DIFFUSED AERATION FAILS IN AERATION SYSTEM ?



**Point to be Consider:** Diffused Aeration System have gained popularity based on only one aspect of their performance - they provide high oxygen transfer efficiencies in CLEAN WATER. But, the waste water is not clean. A fine bubble diffused system which

Maintenance is very low (almost nil) & less time consuming. Only Gearbox is to be maintained which can be maintained by maintenance department.

Noise level of the blowers is more.

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When, Evaluating Aeration System, a total performance & cost of operation analysis is critical. The components of this analysis should include an evaluation of the initial capital cost of system installation, all operating and energy costs, & projected maintenance costs. Also included should be an analysis of how well the systems perform the four basic functions required of all Aerators:

- Provide sufficient Oxygen Transfer to promote biological treatment.
- Provide sufficient mixing to ensure homogeneity of mixed liquor suspended solids & to prevent solids settling.
- Respond to varying process conditions to maximize energy efficiency.
- Provide reliable service, without costly maintenance & downtime, and without reduction in oxygen transfer capability.

A detailed evaluation will quickly reveal that diffused aeration systems (IN INDIA) are able to perform only one basic function reasonably well. On the other hand, the NEW GENERATION of ENVIRON ENERGY EFFICIENT AERATORS accomplishes all four goals exceptionally well - Efficient Aeration.



Installation in India

Excellent Mixing, Operational Flexibility & a Life Expectancy of 12 - 15 years with Minimal Maintenance.



Installation in India

performs efficiently in clean water instantly becomes less efficient in waste water. Secondly, Mixing Efficiency is missing in Diffused Aeration System. Over a few months or so, the degrading of Oxygen Transfer Efficiency becomes more pronounced until, eventually, the Diffusers Porous Membranes will need to be cleaned manually. This is an undesirable & time consuming maintenance operation (THE INDUSTRIES - ETP / MUNICIPAL CORPN. - STP / CETP / EXPERTS / PLANT OPERATORS / ENVIRONMENTAL ENGINEERS / TURNKEY EXECUTORS WHO HAVE FACED SUCH PROBLEMS WILL AGREE WITH THIS).

Surface Aerators, unlike diffusers, never foul, & will provide the same High Oxygen Transfer Rate along with Efficient Mixing, with minimum & economical running & also saving in Energy over the life of the equipment.

As the water preserve is more on the Diffusers the Energy consumed to blow air will increase. Hence more energy consumed compared to Mechanical Aeration System.

Secondly, in Diffused Aeration System, as the Blower blows hot air, the temperature of the effluent rises by 5°C to 8°C due to which the Oxygen Transfer Efficiency reduces. While in ENVIRON ENERGY EFFICIENT AERATORS, due to efficient mixing the temperature of the effluent reduces by 10°C to 20°C (DEPENDING ON AMBIENT TEMP.) & hence Oxygen Transfer Efficiency increases.



Installation in Foreign Countries

The distribution of AIR is also not equal in Diffused Aeration System. While, the air is equally distributed in all the 4 corners of the Aeration Tank without settlement of sludge by ENVIRON ENERGY EFFICIENT AERATORS.

Spares, like Diffusers, Maintenance of Blowers is costly & Time consuming & specialized mechanic is required. In Environ Energy Efficient Aerators the additional features are provided, due to which

Secondly, stand by Blowers is required. Noise level is low in our Aerators.



Installation in Foreign Countries

In Foreign countries Aeration System having more depth of Aeration Tank, they use this system but they place the Diffusers at a very short distance (about 220mm, while in India the Diffusers are placed at about 1mtr - 1.5mtrs OR even more distance due to which sludge is settled between two diffusers & the results are not achieved), but if the Diffusers are placed at a short distance as placed in foreign countries, the POWER REQUIRED WILL BE MORE THAN 3 - 3.5 TIMES THAN THE POWER REQUIRED IN MECHANICAL AERATION SYSTEM. Secondly, If the system is installed as per the recommendation of the manufacturers of foreign countries then the installation, Operational & Maintenance cost will also increase.

Secondly, the main reason of using Diffused Aeration System in foreign countries, the ambient temperature is TOO LOW due to which the Oxygen Transfer Efficiency increases, but the whole thing is reverse for INDIA.

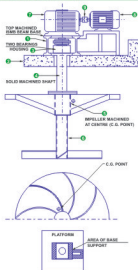
Being Environmentalist and basically a Design & Development Oriented Organisation, ENVIRON has accepted the challenges of achieving optimal performances of Specially Designed Equipments such as 40HP AGITATOR MECHANISM with 5Mtr. Long unsupported length of Shaft for 18 Mtr. Dia 8 Mtr. high Neutralisation Tank for one GERMAN COMPANY & 4Mtr. Wide Mechanised Bar Screen at KRIBHCO.

## ENVIRON ACCEPT CHALLENGE TO REDUCE 20% to 70% ENERGY IN EXISTING AERATION SYSTEM

In our R&D, we have designed & developed an Aerator with Dual Impeller, which can offer the results up to 6mtrs. Aeration Tank Depth. In this Aerator Impeller, we have provided one impeller at Top, which transfers the Oxygen & the second Impeller is provided at the bottom (Mixer), which works as a mixer, by providing the Impeller at the Bottom, there will be no settlement at the floor level of the Aeration Tank. Secondly, as the mixer is provided at the bottom, the mixing efficiency is increased due to which the Oxygen Transfer Rate increases & the required HP is reduced, hence Energy Saving. We are first, in India to introduce ENERGY EFFICIENT AERATORS, which works up to 6Mtrs. SWD, it is purely an INDIAN TECHNOLOGY having very simple & low maintenance assembly. These Aerators offers an excellent opportunity to reduce the operating energy cost. This is possible in ENVIRON Aerators, as we are providing additional features in our Aerators:

### Special Features :

1. Fabricated & machined Base Frame for 5HP to 15HP ratings & for 20HP & above Heavy ISMB Beam Base is provided. So, vibrations are diminished & again the Base is machined on the Top Surface on Heavy Duty Lathe, so the life of the Gearbox is increased. (we are the only mfg. in India to provide this feature).
2. Cantilevered load reaction is passed through additional bearings & housing to Bottom of the Beam Base & to RCC platform. So, gear is not at all affected by overhung load. So life of the gearbox is increased.
3. Additional Bearing Support is provided to the Aerator Shaft, so the unbalanced cantilevered loads are NOT passed to the output shaft of the Gearbox, but those loads are taken by TWD EXTRA bearings & housing. So, life of the Gearbox is increased. (no other mfg. in India are providing this feature).
4. Amply designed MS FULLY MACHINED Solid Shaft to take care of heavy cantilevered, unbalanced & torsional loads, supported on Two numbers heavy duty antifriction bearings housed in heavy duty cast iron bearing housing. Since, Shaft is fully machined. No possibility of DOUBLING of Shaft concentric running of Impeller is ensured. (no other mfg. in India are providing this feature) N.B.: Tubular Shaft in Aerators with Helical Gears are provided.
5. Impeller is designed as single shrouded pump impeller to achieve maximum Oxygen Transfer & Mixing efficiency. Being a Semi open type Impeller, it has got a very valuable features of self cleaning. Hence practically zero maintenance is



required for the impeller. Secondly, the impeller is machined at centre for its concentric running, (we are the only mfg. in India to offer this feature).

Due to conical impeller & solid MS Shaft, CG lies nearer to centre, so less impact loading.

6. NEW GENERATION of EEEA having the special unique feature of Additional Impeller at the Bottom for better mixing at the floor level of Aeration Tank having total tank Water Depth up to 5.5m. Due to which the Oxygen Transfer Efficiency of the Impeller is increased & hence with lesser HP more Oxygen Transfer is achieved. Secondly, less area is required due to water depth of 5.5m. civil construction cost & the space required will be less hence economical.
7. (Premium) Greaves Worm reduction Gears (or helical gears only if asked for) having suitable service factor are offered. Secondly, maintenance of the gearbox is minimal & handling is easier, as the extra Bearings are provided to the Impeller Shaft. Spares of the worm gearbox are also easily available at comparatively lower cost.
8. Motors of Crompton / ABB / Siemens are offered.
9. Jaw type coupling of standard make are provided.

## WHY ENVIRON DO NOT RECOMMEND HIGH SPEED AERATORS?

- Their influence zone is less, compared to Slow Speed ones
- They cater SHALLOW DEPTHS compared to Slow Speed ones
- They need Rigorous preventive maintenance because of:
  - a) Shaft and Bush pattern, remaining in effluent.
  - b) Possibility of clinging, adhering of bunch of threads, bunch of hair, plastic bags, cotton rags etc. between the impeller blade tips and pipe housing. Also influence Zone is too less compared to that of Slow Speed Aerators.

High Speed Aerators are not suitable for the Aeration Tank above 1.5 Mtrs. Side Water Depth. There must be VERY HEAVY SETTLEMENT of Dead Bacterial Mass at floor level.



So process point of view and maintenance point of view, ENVIRON has an alternative of Slow Speed Floating Aerators. Photograph of High Speed Aerator is given.



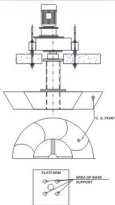
## WHY THE AERATORS WITH DRAFT TUBE ARRANGEMENTS ARE NOT RECOMMENDED BY ENVIRON?



In the year 1982 ENVIRON had developed the Aerators with Draft Tube Arrangement to be installed in the Aeration Tank of more than 2.75mtrs. Aeration Tank Depth. On testing in the Testing Facility, it was observed that the mixing efficiency is reduced & due to which the Oxygen Transfer Efficiency is also reduced. On studying the reason it was found that the Draft Tube is a static part i.e. it is installed below the Aerator Impeller and it has no functioning. The main functioning is only of the Aerator Impeller. In such Aerators the main principle is to form the vortex & to suck the settled sludge from the Bottom of the Aeration Tank, but on studying it was found that the Draft Tube itself is restricting the flow pattern of the Aerator Impeller, due to which mixing & Oxygen Transfer Efficiency reduces. Secondly, due to pressure of effluent, the Draft Tube also collapses after some period of time. There are many more reasons of failure of the Aerators with Draft Tube Arrangement.

ENVIRON has stopped the manufacturing & recommending the Aerators with Draft Tube Arrangements in Aeration System & developed the DUAL IMPELLER DESIGN suitable for the Aeration Tank Depth of 5.5mtrs. to 6Mtrs. The Aerators with Dual Impeller Design are ENERGY EFFICIENT AERATORS & by installing these Aerators 20% to 70% GUARANTEED Energy can be saved in existing Aeration System, achieving the Guaranteed required results as per the norms of P.C.B.

## SPECIFICATIONS & FEATURES OF OTHER MAKE AERATORS



- Since there is NO BASE, heavy vibrations are expected, which will reduce the life of the Gearbox.
- Cantilevered load reaction is passed through gearbox Output shaft to bearing, to gears, to body, to studs support to platform. Hence more vibration and more Maintenance of the gearbox.
- Unknown heavy cantilevered, unbalanced loads are directly taken by the gearbox output shaft, bearings & gearbox itself. So life of the Gear box is reduced.
- Floor support area is too less so more possibility of vibrations.
- Center of Gravity (CG) of the system (cantilevered impeller) lies in the periphery, hence more impact loading.
- Only fabricated impeller, so possibility of vauling & acentric running.
- Since Tubular shaft is used, there is a possibility of VOULING of shaft.
- Since the motor is Flange mounted, it becomes Special (non standard) & probability of another Motor in STOCK is very less. So in case of flange mounted If motor got burned, the Aerator remains STOPPED till the motor is re-winded.
- Spares of the helical gearbox are not easily available & their cost are comparatively higher.
- Wetted Parts are Epoxy Painted.
- Only one design without the consideration of higher water depths.
- No testing activity is carried out.
- For maintaining the gearbox Chain Pulley Block is required to lift the Gearbox so down time is more.

## PLANTED & DISTRIBUTED 3250 PLANTS IN GIDC, MAKARPURA AREA



**AGITATOR, STIRRER, MIXER, FLOCCULATOR IN FRP, RUBBER LEAD, GLASSLINED & SS CONSTRUCTION. RANGING FROM 1/2 HP TO 40 HP RATINGS. INSTALLATIONS 2000+.**



<b>100HP Aerator</b> 2.98kg of O <sub>2</sub> /kw/hr	<b>75HP Aerator</b> 3.27kg of O <sub>2</sub> /kw/hr
<b>50HP Aerator</b> 2.56kg of O <sub>2</sub> /kw/hr	<b>40HP Aerator</b> 2.64kg of O <sub>2</sub> /kw/hr
<b>60HP Aerator</b> 3.14kg of O <sub>2</sub> /kw/hr	<b>30HP Aerator</b> 3.84kg of O <sub>2</sub> /kw/hr
<b>25HP Aerator</b> 2.97kg of O <sub>2</sub> /kw/hr	<b>20HP Aerator</b> 2.29kg of O <sub>2</sub> /kw/hr
<b>15HP Aerator</b> 2.53kg of O <sub>2</sub> /kw/hr	<b>12.5HP Aerator</b> 2.41kg of O <sub>2</sub> /kw/hr
<b>10HP Aerator</b> 2.26kg of O <sub>2</sub> /kw/hr	<b>7.5HP Aerator</b> 2.44kg of O <sub>2</sub> /kw/hr
<b>5HP Aerator</b> - 2.45kg of O <sub>2</sub> /kw/hr	

*Save Energy by installing Environ Energy Efficient Aerator*



## CASE STUDY

### COMPARISON BETWEEN DIFFUSED AERATION SYSTEM V/S. ENVIRON ENERGY EFFICIENT AERATORS

At Oneiro Chemicals Ltd; S. No. 475/P, At & Post: Ekalabara, Tal: Padra, Dist: Vadodara 391440, the flow is of 60KL / Day & COD : 8000ppm in their Effluent. In their Effluent Treatment Plant, they have two Aeration Tanks of size: 6M x 6M x 4.6M SWD + 0.6M FB. Previously in the Aeration Tanks, they were using Diffused Aeration System having the Blower capacity of 15HP in each Tank. They have lot of maintenance problems like - Chocking of Diffusers, Uneven distribution of Air, Maintenance of Blowers, Blower making noise, etc. They have decided to replace this Diffusers with ENVIRON Energy Efficient Aerators.

On studying the characteristics of the Effluent & Tank size, ENVIRON recommended 7.5HP Aerator in each Tank. Oneiro decided to replace the Diffused Aeration System of Tank No. - 1 & replaced the same.

At present they are using one Diffused Aeration System of 15HP in Tank No. - 2 & 1 No. 7.5HP ENVIRON Energy Efficient Aerator in Tank No. - 1.

Now while comparing the results are :-

- In Tank No. - 2 of 15HP Diffused Aeration System the current drawn is 22 Amps & the Outlet COD is 2500ppm having the maintenance problems.
- In Tank No. - 2 of 7.5HP Environ Aerator, the current drawn is 7.3 Amps & the Outlet COD is 2100ppm. Secondly, the Maintenance cost is also ZERO. By replacing M/s. Oneiro has saved ENRGY. By replacing 7.5 KW x 24 hrs x 365 days = 65,700 units per year x 7 Rs. / unit = Rs. 4,59,900/- Monetary Saving per year, getting the best result than Diffused Aeration System.

The Aerator is running since 06.06.2013 & now, Oneiro has installed another 1 No. 7.5HP ENVIRON Energy Efficient Aerator by replacing the 15HP Diffused Aeration System in Tank No. - 2 & saved Total ENRGY of 15 KW with Monetary Saving of Rs. 9,19,800/- per year.

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## IN HOUSE OXYGEN TRANSFER TESTING FACILITY

Environ, are the only manufacturer in India, who have got R&D Division, wherein we are carrying out the Oxygen Transfer Test as per American Standard and Wrinklers Procedure, before placing the Prototype Aerator in the market. No other manufacturer have such IN HOUSE OXYGEN TRANSFER FACILITY, the reason for this is, Environ firmly believes that the Aerator manufacturer should know (before offering the Guarantees) the Oxygen Transfer efficiency of the Aerator which is designed & manufactured by them. This is not possible without conducting Oxygen Transfer Test.

Secondly, in our TESTING FACILITY, we run all the Aerators and Agitators for 2 hours, as per our Quality Assurance Plan.

OFFERED THE OXYGEN TRANSFER TEST AS PER AMERICAN STANDARDS & WRINKLERS PROCEDURE TO OUR VALUABLE CLIENTS :

- M/s. AUROBINDO PHARMA LTD. - VIZAG for 100HP on 20.09.2002 & achieved 2.24 kg of O<sub>2</sub>/HP/HR.
- M/s. RELIANCE - HAZIRA for 50HP on 09.09.2004 & achieved 1.6 kg of O<sub>2</sub>/HP/HR.
- M/s. CHEMINOR DRUGS LTD. - HYDRABAD for 30HP on 20.07.2000 & achieved 2.82 kg of O<sub>2</sub>/HP/HR.
- M/s. KODINAR SUGAR FACTORY - KODINAR FOR THEIR ORDER OF 4 NOS. 30HP AERATORS.
- M/s. TAMILNADU PETRO PRODUCTS - CHENNAI for 25HP AERATOR on 16.02.1999 & achieved 2.20 kg of O<sub>2</sub>/HP/HR.
- M/s. SOUTH INDIA VISCOSE (SIV INDS.) - COIMBATORE for THEIR ORDER OF 10 NOS. 20HP AERATOR on 18.08.1994 & achieved 1.72 kg of O<sub>2</sub>/HP/HR.
- M/s. TAMILNADU PETRO PRODUCTS - CHENNAI for THEIR ORDER OF 20 NOS. 10HP AERATORS on 15.11.1997 & achieved 1.70 kg of O<sub>2</sub>/HP/HR Oxygen Transfer.

- M/s. TAMILNADU PETRO PRODUCTS - CHENNAI for 10HP Aerator with 3% salinity Water used in Testing Tank & achieved 1.03 kg of O<sub>2</sub>/HP/HR.
- M/s. GUJARAT INSECTICIDES LTD. - ANKLESHWAR for Order of 5 Nos. 5HP Aerators on 0.08.1999 & achieved 1.82 kg of O<sub>2</sub>/HP/HR.
- M/s. PATTANCHERU ENVIRO TECH LTD. - PATTANCHERU CETP for 30HP AERATOR on 27.12.2004 & achieved 1.91 kg of O<sub>2</sub>/HP/HR.
- DEONAR SLAUGHTER HOUSE - DEONAR for 10HP Aerator on 01.07.2003.
- DEONAR SLAUGHTER HOUSE - DEONAR for 30HP Aerator on 28.08.2003
- M/s. DOMBIVILI BETTER ENVIRONMENT - DOMBIVILI (CETP), MIDC for 40HP Aerator on 07.02.2005 & achieved 1.98 kg of O<sub>2</sub>/HP/HR.
- M/s. VAPI CETP - VAPI For 40HP Aerator on 20.05.2009.
- M/s. TORRENT PHARMACEUTICALS LTD. - INDRAD (AHMEDABAD) for 30HP AERATOR on 13.12.2006 & achieved 1.96 kg of O<sub>2</sub>/HP/HR.
- M/s. HINDUSTAN NEWS PRINT LTD. - KOTTAYAM DIST. for 25HP AERATOR on 09.12.2004 & achieved 2.40 kg of O<sub>2</sub>/HP/HR.
- M/s. ARVIND LTD. - AHMEDABAD for 15HP Aerator on 19.08.2011 & achieved 1.843 kg of O<sub>2</sub>/HP/HR.
- M/s. GNFC - BHARUCH for 25HP Aerator on 5.1.2013 & achieved 1.965 kg of O<sub>2</sub>/HP/HR.

ENVIRON firmly believes that before placing the AERATORS in the market, the manufacturers should test the Prototype Aerator for its OXYGEN TRANSFER EFFICIENCY to get the required results in AERATION SYSTEM.



## A CASE STUDY OF S. T. P.

### COMPARISON BETWEEN ENVIRON ENERGY EFFICIENT AERATORS V/S. OTHER MAKE AERATORS

How to calculate HP of the Aerators required in the Aeration System?

In one of the Sewage Treatment Plant of 66MLD at Gajarawadi - Vadodra Mahanagar Seva Sadan, having the characteristics as below :

- 1) Flow : 66 MLD = 66000 M<sup>3</sup>/day.
- 2) Inlet BOD : 240ppm.
- 3) Inlet COD : 525ppm.
- 4) TDS : 785
- 5) Aeration Tank Size : 36.4 M x 72.8 M x 3.92 M SWD.
- 6) 16 Nos. of 50HP Aerators installed (Total 800HP Aerators).

Now, here if we calculate the required HP of the Aerators. The required HP will be :

Flow 66000 M<sup>3</sup>/day x 240ppm BOD + 1000 = 15840kg. of BOD. Now, if we consider 1kg. of O<sub>2</sub> required to reduce 1kg. of BOD, then kg. of O<sub>2</sub> required will be 15840 kg. + 24hrs. = 660kg. of O<sub>2</sub> is required per hour. Now, considering the Oxygen Transfer Efficiency of the Aerator in field condition is 1.4kg. of O<sub>2</sub>/HP/HR, then the HP of the Aerator required will be 660kg. of O<sub>2</sub> required + 1.4kg. of O<sub>2</sub>/HP/HR Transfer Rate of Aerator = 471HP of Aerators + 16 Nos. = 29.4HP i.e. 16 Nos. 30HP ENVIRON ENERGY EFFICIENT AERATORS.

In this case even though 16 Nos. of 50HP i.e. 800HP Aerators are installed, the Oxygen level is NIL in Aeration Tank & also settlement of sludge upto 2mtrs. was observed. It proves the efficiency of the Aerators.

So, here, we have recommended to install 16 Nos. of 30HP ENVIRON make Energy Efficient Aerators offering Guaranteed results & nearly ZERO settlement of the Sludge at the floor level of Aeration Tank.

By installing ENVIRON make Aerators, the VMC will be saving the power of 320HP i.e. 240KW & if we consider the Electrical charges of Rs. 7/- per unit then the Monetary Saving will be 240KW x Rs. 7 electrical charges per unit = Rs. 1680/- Saving per hour x 24hrs. = Rs. 40,320/- Saving per Day x 365 days (per year) = Rs. 1,47,16,800/- Saving Per Year.

Now, the prevailing price of 30HP Fixed Type ENVIRON make Energy Efficient Aerator is Rs. 6,50,000/- x 16 Nos. = Rs. 1,04,00,000/-. So, the Payback period will be 8 months - 15 days. After that the VMC will start earning i.e. Saving in Electrical charges.

For Details Contact :

- 09879788102 - Mr. Jayraj
- M/s. Environ Engineering Company.

## ACHIEVEMENTS OF ENVIRON IN ENERGY SAVING - CONTRIBUTING IN PREVENTING GLOBAL WARMING & DEVELOPMENT OF NATION

We have supplied our equipments to 13 CETP's of India, where the equipments are working satisfactory.

ENVIRON specializes in the R&D of New Technology Aeration for Industrial and Municipal Waste Water Treatment. Environ had developed an Aerator which saves the Energy from 20% to 70% in the existing Aeration Systems. This Energy Efficient Aerators works in the Aeration Tanks having 6Mtrs. Water Depth, having the unique features with minimal maintenance offering the Guaranteed Results as per the norms of PCB & are continuously upgrading the Aerator Impellers for Higher Oxygen Transfer and Maximum Mixing Efficiency WITH MINIMUM ENERGY CONSUMPTION.

ENVIRON is the only manufacturer in India, who have got in house OXYGEN TRANSFER TESTING FACILITY for the Aerators up to 150HP Ratings. We had offered Oxygen Transfer Test to many Industries / Consultants / Experts / Turnkey Executors. Secondly, In our testing facility each & every Aerator and Agitator is run for TWO hours before dispatch as per our QUALITY ASSURANCE PLAN.

Due to continuous increase in Energy Cost, acceptance of Energy Efficient Technologies is becoming valuable and is adopted in almost all the industries.

As the Effluent & Sewage Treatment Plants are Non-productive Plants & also in which the maximum Energy i.e. 50% to 70% Energy is used in Aeration System. Such Plants should be studied to find out the scope of saving in Energy.

Environ had saved Total about 1150KW energy monetary saving of Rs. 6.5crore, in different industries / STP.

Environ offers such services for finding out the scope of saving in energy, as Energy Saving is feasible option to save money & also to prevent Global warming. We invite to take the advantage of such services FREE OF COST.

We are also proud to save large amount of Energy in Existing Aeration Systems for many industries like :



- + At M/s. Pattancheru Enviro-Tech Ltd. - Pattancheru, one of the BIGGEST CETP'S of Andhra Pradesh, where previously the Liquid Oxygen was additionally injected in

their AERATION SYSTEM already having the Surface Aerators, but after installing our 16 Nos. of 30HP ENERGY EFFICIENT AERATORS, their expenditures in Liquid Oxygen was stopped & also in POWER has been reduced drastically.

- + At M/s. Hindustan Newsprint Ltd. - Kottayam Dist. (Kerala), replaced their existing 6nos. of 75HP by our 25HP Energy Efficient Aerators, SAVED 300HP.
- + At M/s. Ballarpur Industries Ltd. - Yamunanagar (BILT), where Total ENERGY of 550HP was saved in their existing AERATION SYSTEM, by installing our 10Nos. of 20HP ENERGY EFFICIENT AERATORS in place of their existing 10Nos. of 75HP AERATORS, & achieving the required results also in their AERATION SYSTEM with Aeration Tank depth of 4.5mtrs.



- + At M/S DOMBIVILI BETTER ENVIRONMENT SYSTEM - Dombivili (one of the Biggest CETP's of Maharashtra, having the Aeration Tank DEPTH of 4.5mtrs.) EI02 AERATORS were running & had zero D.O. level, these AERATORS were replaced by our 8Nos. of 40HP ENERGY EFFICIENT AERATORS. They got the results as per the MPCB Norms & now it is considered as the BEST CETP of Maharashtra.



- + At VAPI CETP - Vapi, one of the Biggest CETP of Gujarat in 2 Sections of Aeration Tank of 4.5mtrs. SWD, they were using Diffused Aeration System. The same was replaced by our 20Nos. 40HP Energy Efficient Aerators offering the results in the Aeration Tank Depth of 4.5mtrs. This is one of the successful & satisfying installation of ENVIRON.
- + At M/s. Gujarat Insecticides Ltd. - Ankleshwar, 1No. 20HP Aerator of other make + 10HP Diffused Aeration were running in their Aeration System without getting the D.O. Level. We have replaced

the Aerator & the Diffused Aeration by our 1No. 12.5HP ENERGY EFFICIENT AERATOR, the required D.O. Level & BOD reduction were achieved & saved ENERGY of 17.5HP.



- At M/s. Tamil Nadu Newsprint & Papers Ltd. - Tamil Nadu, replaced 8Nos. of existing 75HP Aerators by our 8Nos. of 40HP Energy Efficient Aerators & saved energy of 280HP.



- In Feb; 2011, ENVIRON had replaced the Diffused Aeration System at MMA CETP - Mahad, Maharashtra, wherein they have installed 9Nos. of 30HP Floating Type Slow Speed Energy Efficient Aerators in their Aeration System having 4.5Mtrs. Side Water Depth.



- M/S. Aurobindo Pharma Ltd., are satisfied with the performance of our all ETP Equipments and hence they have given us the repeated orders 30 TIMES for ALL THEIR PLANTS throughout Andhra Pradesh.

- Environ had replaced the existing Total 17 Nos. 40 HP Aerators of other make with "ENVIRON" make 17 Nos. 25HP Energy Efficient Aerators at M/s. Grasim (Aditya Birla Group) - Kumarapatnam, Harihar (Karnataka). Now Grasim is enjoying saving Total Energy of 255HP (190.23KW) in the Aeration System in their ETP.

- At Shidimo Interax Pvt. Ltd. - Lajpore, Dist: Surat, saved 2.5HP by installing 10HP Energy Efficient Fixed Type Aerator against 12.5HP Aerator.

- ENVIRON has already supplied Specially Designed Energy efficient Aerators at M/s. Meghmani Organics - Ankleshwar,

where they are having Aeration Tank Depth of 6Mtrs. Side Water Depth. (unique in India).

- ENVIRON had designed an Impeller for Mixer for M/s. Cadila Healthcare Ltd. - Ankleshwar, having the Tank Depth of Total 8.7Mtrs. (A Design challenge to ENVIRON).



- At Sterling Biotech (Div. Sterling Gelatin) - Karakhad, Baroda. We have installed 40HP - 3Nos; 15HP - 7Nos. & 10HP - 4Nos. Energy Efficient Aerators having the Aeration tank depth of 5.5Mtrs. & also reduced the Ammonical Nitrogen in their effluent. (an achievement in ETP).



- At M/s. Oneiro Chemicals Ltd. - Ekaibara, Tal: Padra, Dist: Vadodara, they were using Diffused Aeration System using the blowers of 2 Nos. of 15HP & not getting results, having the tank depth of 4.5mtrs. They have replaced the Diffused Aeration System by our 2 Nos. 7.5HP Energy Efficient Aerator & saved 11KW Energy i.e. 50% saving. They are satisfied with the performance of the aerator offering the required results.



- At GNFC - Bharuch, Installed 50HP Floating type Energy Efficient Aerator in their Guard Pond of size: 66mtr. X 134mtr. X 3.3mtr. Water depth & prevented the ALGAE formation in the pond. In 2012 they have placed additional orders for 3nos. 25HP Floating Type Energy Efficient Aerators (for Prevention of ALGAE formation).

- At M/s. Arvind Ltd. (Div. Ankur Textiles) - Ahmedabad, we have replaced existing 2 Nos. 30HP Fixed Type Aerators by 2 Nos. 25HP ENVIRON make ENERGY EFFICIENT AERATORS & so, they saved Total Energy of 10HP, in their Aeration System.

- We have replaced existing Diffused



Aeration System of 25HP & Mechanical Aerator of 25HP (as they were not getting results) by our 20HP Energy Efficient Aerators at M/s. Enviro Infrastructure Co. Ltd. - Vill: Umaraya, Tal: Padra, Dist: Vadodara (CETP). (Trials & results are under observation).

- ENVIRON ENERGY EFFICIENT AERATORS, will SAVE ENERGY of 35 HP at M/s. Sirpur Paper Mills - Sirpur Kaghaznagar, A.P., replacing 1 No. 75HP Aerator by 40HP Energy Efficient Aerator. This Aerator will be offered on Trial Basis, after getting success they will be replacing 5 Nos. 75HP Aerators with 40HP Environ Aerators & will be Saving Total 210HP.

- In First Phase, M/s Arvind Mills Ltd. - Santej are also replacing their existing 4 Nos. 40HP Aerators with 4 Nos. 25HP Environ Energy Efficient Aerators & will be Saving Energy of 60HP. In second phase they will replace another 4 Nos. of Aerators, so they will be saving Total 120HP.

There are many more such cases of replacement of the existing AERATION SYSTEMS by our ENERGY EFFICIENT AERATORS for the Aeration Tanks with Higher Depths upto 6 Mtrs.



- Replaced 2 Nos. of existing 60HP Aerators of other make by our 2 Nos. of 30HP ENERGY EFFICIENT AERATORS at STP at Vadodara Municipal Corporation (VMSS) - Tarsali, where 50% Energy is saved after installing our Aerators offering the Guaranteed Results.

ENVIRON also believes that, if proper attention is given on Aeration Systems in Sewage Treatment Plants also of Municipal Corporations a huge amount of Energy can be saved offering GUARANTEED RESULTS as per the norms of PCB.



## SHARING THE EXPERIENCE



**Dr. V. R. Akella**  
 Hyderabad.

Various equipments used in water / sewage / effluent treatment plants are being offered by various suppliers are from local markets & OR standard equipment suppliers with international back up and are real designers associated with such experience.

But, with high local competition to be competitive for working some of the suppliers / or manufacturers of equipments are fabricating with lesser thickness plates either for the clarifier structural's, less width of walkways, thickness of the FRP / MS weir plate (less than 6 mm) height of the weir plate of less than 250 mm Or 300 mm.

**1. SCREENS:** There should be minimum TWO channels (1 Working +1 Standby) Both channels should be inclined to Horizontal & mechanically cleaned for sizes of 5 MLD & above with 70° to 75° to the horizontal.

- Use only tapered bars in the direction of flow of size : 10 mm x 8 mm x 75 mm depth

- Maximum velocity through screens at peak flow : 1.2 m/Sec.

- Velocity in the approach channel during average flow : minimum of 0.4 m / Sec.

- Clear opening in Coarse channel between two Flats : 20 mm

Free board above top water level : 50 mm.

- Use minimum two channels : One working and one stand by.
- Each designed for peak flow with isolation Gates.

NOTE : Both the screens should have common collection Belt conveyor on Down stream side for disposal of screenings.

**2. GRIT SEPERATORS:** This unit also should be in duplicate with a central By-pass channel preferably.

Units above 5 MLD capacity should be with mechanical scrapper & grit washing arrangement.

**3. FLOW MEASURING CHANNEL:** (Preferably) a Parshall Flume with 15 times throat width on up-stream side

& 10 times on down-stream side width for correct measurement.

### 4. PRIMARY AND SECONDARY CLARIFIER MECHANISMS & CLARIFLOCCULATOR MECHANISMS

**/ UNITS:** The approach bridges for unit capacity above 5 MLD should be 1.2 wide covered with 6 mm thick checkered plate, toe guard of 250 mm height, both sides hand railing of 1.2 M height.

- (i) The scrapper mechanism should be coated with a primer and a two coats of epoxy paint.
- (ii) The torque rating of the mechanism should be minimum two times the actual requirement at peak load for continuous 24 hrs. period.

- The service factor of the gear box should be two.
- As the diameter increases the overflow weir should be FRP weir.
- Weir plate should be preferably with 6 mm thick plate and of minimum 250 mm height of

with V-Notch weirs of 90°.

- There should be a baffle in primary clarifier before the over flow weir.

**5. AERATION SYSTEMS:** There are two types of Aerators + Fixed Type and + Floating Type.

The fixed type are preplanned where as the Floating type are used where there is deficiency either in supply of oxygen OR mixing requirement is not sufficient & for ease of installation. Also, the location of the additional unit can be shifted as required very easily by pulling.

Also, this floating type aerators can be introduced in an existing Aeration Tank for increased supply of Oxygen. Further, by introducing this type of Floating type aerators for supply of Oxygen / for supplementing Oxygen will reduce use of Liquid Oxygen injection which requires Capital cost, cost of Oxygen and Power cost for the pumps etc. Where as for installing in an existing Aeration Tank time required is minimum. A CETP in the suburb of Hyderabad for a Pharmaceutical industries used this type of system and helped cost of operations.

M/s. Environ Engineering company, at Vadodara, supplied and reduced operating cost after recovering the capital expenditure. The installation of Floating aerators is very easy as well as maintenance.

**5-a. SURFACE AERATORS:**

- The service factor of the gear box should be minimum two.
- The gearbox should be preferably HELICAL and should be located on a stool for providing the

connector above platform level for ease of erection and maintenance.

- For economy Worm reduction gear boxes can also be provided taking in to account first two points.
- The supplier should ensure / confirm the mixing depth as well as Zone of influence of the aerator. The designer should ensure while sizing of the aeration tank about these parameters (a) range of depth of mixing & zone of influence and
- A Minimum of 22 Watts per Cubic Meter volume of the Aeration tank.
- For 50HP Aerator Max. Liquid depth of 4.5 m. should be used.

**5-b. DIFFUSED AERATION SYSTEM:**

- The designer should be careful in selection of Blowers & / or Turbo Blowers with lesser power requirement though capital cost high but Running cost less as the power requirement is less.
- Designer is cautioned to check the discharge line size for velocity less than 15 to 16 m/sec, in the air lines with all including NRV, accessories and the header.
- The M.O.C of discharge pipe should be preferably in S.S.
- When the discharge pressure is more than 5.0 MWC, it is always advisable to provide for cooling of the temperature of discharged air to less than 20°C plus atmospheric so that there is no impact on Biological Treatment.

NOTE : The above four parameters besides Power consumption for Blowers have to be carefully designed against the depth of Aeration Tank where Environ uses Second Impeller for liquid depths up to 6 m. Minimum maintenance requirements with Long life is the advantage with aerators.

**6. SLUDGE THICKENER MECHANISM:**

- The bottom Slope should be 1 in 8 and not 12.
- The sludge withdrawal pipe-line should be minimum 150 mm diameter.
- It is advisable to provide the sludge with draw line in an square type RCC trench & with sand filling with SS Nuts & bolts.
- The torque rating should be minimum 2.5 times the actual at max load & supplier should be asked to furnish the details including calculations.
- The supplier should be requested for inclusion of "LIFTING MECHANISM AFTER THE TORQUE RATING REACHES 75% OF MAX. RATING".

For safety of equipment as well as break down of the unit. Then, remove max sludge and then only start the mechanism.

## RESULTS OF CASE STUDY



**Mr. Tejas Pathak** - Manager EHS  
 Onero Chemicals Ltd.  
 09687032951

First of all I am thankful to Environ for offering me an opportunity to share my personal experience after installing Environ Energy Efficient Aerators at M/s. Onero Chemicals Ltd. This will be utilizing for the noble cause of Environment & to reduce Energy Consumption, Preventing Global Warming.

We at M/s. Onero Chemicals Ltd installed 2 Nos. of 7.5HP Environ make Energy Efficient Surface Aerator in our Aeration System of Our ETP in June 2013. Initially we had Diffused Aeration System with Two nos. of 15HP blowers. In spite of Enormous Energy Consumption of Total 30HP & also Maintenance Problems like removing & cleaning of Diffusers, replacement of Diffusers, Maintenance of blowers, Removal of Settled Sludge etc. & even after such exercise we were not achieving desired results and were forced to run plant below design capacity. It was hampering our production targets also. Then we opted for Surface Aerator with Dual Impeller

Design supplied by M/s. Environ - Vadodara.

Our main concern was the depth of aeration tank which is 4.6mtrs. (As per my knowledge &

experience the conventional Aerators are effective only up to 2.5mtrs. depth of Aeration Tank) which will Create Anaerobic Condition at the bottom floor level of Aeration Tank. Then we contacted Environ who recommend us to install Environ Energy Efficient Aerator with Dual Impeller Surface Aerator indigenously design & developed by Environ.

After studying our Aeration System Environ recommended to install two nos. Surface Aerators of 7.5HP capacity each against replacement of 2 nos. 15HP Diffused Aeration System, for which Environ had offered the Guarantee of the Results. After, installing 2 Nos. of 7.5HP Environ Energy Efficient Aerators 50% Energy was Saved & also monetary Saving of Rs. 40,000/- per month & are able to run our aeration system with 40%

more load. We are also able to get more production with existing facility after installing surface aerators. Unlike diffused aeration system in this system we have no maintenance problem ever since it is installed. Apart from performance of aerator After Sales Service is just fantastic. We regularly receive call

from Environ to ensure about the performance of aerator. We are really thankful to M/s Environ Engineering Company for their support and appreciate the efforts made by them for the noble cause of energy consumption. We wish him all the best for all the innovations and future ventures.

## VIEWS FOR ENVIRON



**Mr. Darshan Parekh** - Proprietor  
Akshar Consultants,  
Ahmedabad.

Environ Engineering Co. Vadodara is a leading & pioneering company in the field of effluent & S. T. P. equipment manufacturing. Its' product range includes practically all important equipments required for Effluent / Sewerage Treatment Plants.

Established by late Mr. C. B. Thakore & now run by his two highly experienced and knowledgeable sons - Mr. Jayraj & Mr. Kumar Thakore, "Environ" has created a niche for itself in the field of pollution control with an impressive list of clients many of whom have been with them now for years repeating jobs over and over again.

I was particularly impressed with the vision of late Mr. C. B. Thakore who was an excellent designer with a thrust for R&D in his field to make available Energy Efficient products to clients. Apart from this, educating clients about correct methods of Effluent Treatment and selection of right kind of equipments for Effluent / Sewerage Treatment was his

passion & he relentlessly worked in this area till his passing away. Now his two able sons are carrying forward his legacy with equal zeal and enthusiasm.

In my association of last almost two decades with "Environ", I have observed that their products like Aerators, Clariflocculators, Clarifiers, HRSCC, Stirrers, Flocculators, API Oil Separators, Thickeners etc. are not only sturdy but very user friendly also being almost maintenance free. This is a very important aspect as most of the ETPs / STPs run 24 X 7 leaving little room for maintenance work. And whenever some After Sales Services are required, they are just a phone call away. They also maintain a well-trained team of mechanics who attend maintenance job quickly anywhere in India. This takes a lot of burden off the clients' head.

Over the years, they have introduced no. of innovative features to their products through intensive R & D like Energy Efficient Dual Impeller

Aerators, Sludge Arm Lifting Device in Clarifiers, Clariflocculators etc. However, according to me, what differentiates them from other manufacturers is their manufacturing facility at GIDC, Makarpura, Vadodara which houses testing facility for Aerators up to 100 HP which perhaps is not available anywhere else. They can, and actually have on many occasions, given live tests to their clients about Oxygen Transfer Efficiency of their Aerators before dispatch. For a client, nothing is more satisfactory than a live test of their equipments performing in front of them before installation.

I am sure, with their strong R&D back-up, state-of-the-art manufacturing facility, a long list of satisfied clients & a solid knowledge base, Environ Engineering Company will scale greater heights in its' field in future and I wish them all the good luck.

■

## VIEWS FOR ENVIRON ENGINEERING COMPANY



**Mr. A. V. Contractor**  
 Manager (ETP Mechanical)  
 G. N. F. C.

You have supplied the above slow speed energy efficient surface aerator for our effluent guard pond of central ETP. The pond size of 66mtr. X 134 mtr. X 3.3 mtr. Liquid depth, in 2010. We are totally satisfied with the workmanship, Design & results of the Aerator. We are also satisfied with your Excellent After Sales Service.

Secondly, the FORMATION OF THE ALGAE is completely reduced, after installation of the Aerator. Moreover Gujarat Pollution Control Board (GPCB), Outsiders visitors / Third party Agencies visited quarterly, ISO Audit team, Process Deptt. Persons & Top Management is totally satisfied.

We have already placed the order for another 03 nos., of 25HP Slow Speed Floating type energy efficient surface aerator to ENVIRON and will



**Mr. I. Bhattacharya**  
 Director  
 Unitech Water Technologies  
 Pvt. Ltd., Kolkata.

be installing more Aerators in future for preventing ALGAE & maintaining the Chemical Oxygen Demand (COD) result which comes less than 100 PPM in our Guard Pond. We fully appreciate and congratulate the party to convince & suggest the same for use.

We are confident that in future party will provide after sales services carry out annual rate contract for maintenance jobs with the same spirit.

We hereby confirm that M/s. Environ Engineering Company, Vadodara, is associated with our company since last 7 years. We have been procuring Surface Aerators, Clarifiers, Clariflocculators from them for our different projects and the performance of each equipment is very satisfactory to us as well as to the end customers.

We wish them all success in their future business.



## EQUIPMENTS PERFORMANCE REPORT FROM CLIENTS

M/s. Environ Engineering Company Vadodara, have supplied, erected and commissioned 06Nos. 30HP Floating Surface Aerators.

The power drawn is about 35Amps each. The workmanship & design of the aerators are found satisfactory & each Floating Aerator generates about 1.5kg of oxygen per HP. After sales service of the company is excellent. After using the Floating Aerator our liquid oxygen bill has come down considerably. Even, we are planning to buy 06 more floating Aerators to reduce the liquid oxygen bill further, I strongly recommend to use Floating Aerator in effluent treatment plant.

### **PATTANCHERU ENVIRO-TECH, LIMITED**

Col. T. M. Paul - Plant Manager  
17.11.2006

We had ITALIAN MAKE ELO2 Aerators in 4 Nos. of Aeration tanks in our Effluent Treatment Plant. We had MLSS Settlement and D.O. problems. Hence BOD reduction of effluent was our serious problem.

Afterwards we had replace the existing unsatisfactory working Aerators by ENVIRON Baroda make 8Nos. 40HP Aerators with Special DUAL Impeller, specially designed for higher depth in our all the four Aeration Tanks.

Now our Aeration System is running satisfactory. We are getting good BOD reduction in effluent. We are satisfied with performance of 40HP ENVIRON make Aeration with specially designed dual Impeller and are satisfied with their AFTER SALES SERVICES also.

### **DOMBIVLI BETTER ENVIRONMENT SYSTEM ASSO.**

Mr. S. A. Kulkarni - Secretary  
21.08.2006

M/s. ENVIRON ENGG. CO. Baroda has been approved with us likely supply for ETP machinery like Aerators, Clarifiers, Mixers,

Flocculators, Screens, Filters etc. We have already used these items in Badii and Wazipur Project and performance wise finding their equipments quite satisfactory.

### **DELHI STATE IND. DEVELOPMENT CORP. LTD.**

Mr. Sharat Kumar - Executive Engg. (e&m)  
16.01.2013

20HP Voltas make aerator was installed in Aeration tank for biological treatment of effluent. As there was D.O. & MLSS settlement problem, diffused aeration system Was added in aeration tank. We were running both the system but problem was not solved.

Afterwards, we had replaced 20HP Voltas aerator & diffused aeration system by installing 12.5HP ENVIRON make aerator with special dual impeller design. The system is running satisfactorily. We are getting good BOD reduction in effluent with saving in electrical energy. We are satisfied with the performance of 12.5HP ENVIRON make aerator specially designed dual impeller.

### **GUJARAT INSECTICIDES LIMITED**

Mr. A. R. Joshi - S. M. (ENV)  
17.08.2005

We have purchased the following effluent treatment plant (ETP) equipments from m/s. Environ Engineering - Vadodara, Gujarat, India.

- 1) 10HP floating type slow speed surface aerators 2 Nos.
- 2) 12 mtr. diameter clariflocculator mechanism 1 No.
- 3) Flash mixing tank stirrer 1 No.
- 4) Chemical preparation tanks stirrers 4 No.
- 5) 2.5 mtr dia. x 2 mtr. height pressure sand filter 1 No.
- 6) 2.5 mtr dia. x 2 mtr. height activated carbon filter 1 No.

We are satisfied with the design and workmanship of the above-mentioned equipments. The equipments have been installed in ETP and are working

satisfactorily.

### **SUNFLAG (TANZANIA) LTD.**

Mr. N. R. RAGHAWAN - SITE MANAGER  
15.04.2004

With reference to the above, we have received 20 no. Surface aerators at our site and erected. They are running well without any problem. The performance of the aerators shall be studied and intimated to you in due course. We shall contact you for assistance in case of any problem.

### **TAMILNADU PETROPRODUCTS LIMITED**

Mr. J. Suresh Prabhu - Hod (Prod.ECH Plant)  
26.03.1998

This is to certify that M/s. Environ Engineers, Baroda have supplied, erected & commissioned ten numbers of floating surface aerators of 20HP each. Their workmanship and design of the aerators are found to be sound and these aerators are functioning satisfactorily as per specifications in our Effluent Treatment plant. Their delivery was on schedule and cost competitive.

### **SIV INDUSTRIES LIMITED**

Dr. V. Prabhakar - Manager (Environment Control)  
03.02.1995

We hereby confirm Aerator 10HP (2 Nos.) has been received at our end, it has been installed and tested. The test results are OK on testing basis.

### **INNOTECH PHARMA LTD.**

Mr. N. R. Gaikwad  
28.11.2003

You supplied for 15HP Floating Aerator's Erection completed as your erection Supervisor Mr. Abraham John. He visited in our plant on 17.07.2003 to 21.07.2003. Aerator's on load trail taken and running



condition successfully.

**AUROBINDO PHARMA LTD., UNIT-II**

Mr. I. V. Krishna Reddy  
 21.07.2003

Nadiad underground Drainage Project which is assisted by World Bank is undertaken by Public Health World Bank Division Nadiad. Aerators manufactured by Environ Engineering Company Baroda are installed at Sewage Treatment Plant. The details are : 20 HP - 12 nos., 7.5 HP 12 nos.

**P.H.W.B. Div. (GWSSB) - NADIAD**

Executive Engineer  
 27.04.1994

M/s. Environ Engineering Company - Vadodara have supplied, erected and commissioned 4 nos. 30HP fixed type slow surface aerators with draft tube arrangement for 4.5m. depth, 2nos., 10m. dia. thicker mechanisms and 1no. 10m dia. centre drive clarifier mechanism.

Their workmanship and design of the Aerators, Thickeners and Clarifier are found to be sound and these equipments are functioning satisfactory and excellent as per specifications in our effluent treatment plant at MIDC - Patalganga. Their delivery was on schedule and cost competitive. We satisfied with their AFTER SALES SERVICES.

**JAYSYNTH DYE CHEM LIMITED - UNIT II**

Mr. R. P. Deshmukh - Chief Manager Engg.  
 23.01.1998

The "CLARIFLOCULATOR" system supplied in 1993 by M/s Environ Engineering, Baroda is working continuously without stoppage and without any major problem. The service provided by them is highly appreciated.

**PRESTOLITE TECHNOLOGIES**

Mr. E. A. V. Rathnam Setty - Sr. Mgr. Maint.  
 10.10.2006

M/s. Environ Engineering Company - Vadodara have supplied, erected and commissioned 3nos. 25HP slow speed floating aerators, 3nos. 15HP slow speed floating aerators, 1no. 12M. Dia. centre drive clarifier mechanism.

Their workmanship and design of the Aerators, Clarifloculator and Clarifier are found to be sound and these equipments are functioning satisfactory and excellent as per specifications in our effluent treatment plant at Kathwada, Ahmedabad. Their delivery was on schedule and cost competitive. We satisfied with their AFTER SALES SERVICES.

**MAIZE PRODUCTS**

Mr. B. M. Thakkar - Adm. Manager  
 16.01.1998

The aerator what you have supplied vide your

quotation Ref. E.E.C./0702/2000/02 dt. 07.02.2000 7.5HP. slow speed aerator is of good oxygen transfer capability and is of as per design.

**BLACK DIAMOND BEVERAGES LTD. - DANKUNI**

Mr. S. K. Jana - Q. A. Manager  
 21.03.2000

Your make 2 nos. Aerator of above capacity is running at our Asansol, west Bengal factory since 1992. We are now looking for replacement of the Aeration. These Aeration are directly Motor mounted with Lovejoy coupling. Motor is of Crompton make, 5HP, 1430 RPM, 3PH.

We would request you to send your offer for the same excluding Motor. The base of the Aerator should exactly be the same as the existing Aerators running at this plant.

**Rockitt Beckniser (I) Ltd.**

Mr. Pabitra Kamal Roy - Factory Manager  
 24.05.2006

You are requested to send us all corrected and latest drawings dedicated to our Plant commissioned at Perfetti India Ltd., Manesar in quadruplicate in A3, A4 & if possible in floppy too, so as to incorporate the same in the Detailed Users Manual by return courier.

The drawings should be pertaining to all Agitators, Flash Mixers, Clarifloculators and Aerators supplied and commissioned by you. Plant is running fine and so are the equipments. An early action at your end shall be highly appreciated.

**SIMA LABS PVT. LTD.**

Mr. Sandeep Gupta - Managing Director  
 22.05.1999

M/s. Environ Engineering Company has supplied us on turnkey base various equipment in February, 1996 as follows : 1) 1No. 5HP AERATOR. 2) 1No. End Drive Clarifier - Primary. 3) 1No. End Drive Clarifier - Secondary. 4) 1No. Flocculator.

These equipment have been working satisfactorily since the time of commissioning without any problems.

**ASIAN PAINTS (INDIA) LIMITED**

Mr. M. N. Patel - Manager Plant Engineering  
 16.12.1988

As you are aware, we have completed the work of modifications to Effluent Treatment Plant at M/s. Tata Engineering & Locomotive Co. LTD., Pimpri, Pune 18.

As one of our valuable associates, without whose help we could not have completed this unique project, we invite you for inauguration of the same on Wednesday, 13th April, 1994, at 10:30 a.m.

We also request you to join us for Dinner on

this occasion at 7:30 P.M. at Hotel Surya on Klean Road, Pune.

**KLEAN ENVIRONMENTAL CONSULTANTS PVT. LTD.**

Mr. V. W. Kale  
 08.04.1994

Representative of EFFORTS ENGINEERING CORPORATION, BARODA has visited our Distillery and supervised the installation of Fixed Type Slow Speed Surface Aerators and Clarifiers on relevant Tanks. The Installation was completed at our Effluent Treatment Plant in accordance with an Agreement dt. 28.01.1992 executed between us and EFFORTS ENGINEERING CORPORATION.

The Commencement of Functioning is not yet started.

**SRI INDRA DISTILLERY PRIVATE LIMITED**

Mr. K. Nageshwara Rao - Chief Executive  
 01.01.1993

M/s. Environ Engineering Co. of Baroda have supplied clarifloculation equipment and neutralisation stirrers to M/s. Chokshi Tube Ltd; Rajpur, Dist : Mehsana for their effluent treatment plant which was constructed under our guidance & consultation. We have found the equipment supplied by them to be as per our requirements. The said equipment has been working satisfactorily.

**ANAND CONSULTANTS**

15.06.1991

M/s. ENVIRON ENGINEERING COMPANY, VADODARA have supplied erected & commissioned 1no. of 5HP fixed type slow speed surface aerator & 1no. of 3mtr. dia; 1.8m. depth central drive clarifier mechanism & 1no. of 3mtr. dia; 1.8m. depth central drive clarifier mechanism at our unit.

Their workmanship and design of the aerator and clarifier are found to be sound and these equipments are functioning satisfactory in our effluent treatment plant. Their delivery was on schedule an equipments were cost competitive. We are satisfied with their AFTER SALES SERVICES.

**GUJARAT FLOTEK PVT. LTD.**

Mr. J. P. Tosniwal - Director  
 15.10.2003

This has reference to your visit to our plant in connection with above. The said mechanism (clarifloculator) supplied by you in August '92 (for our ETP) is functioning satisfactorily since then.

**STOVEC INDUSTRIES LIMITED**

Mr. Tarak Parikh - Environmental Engineer  
 08.04.1994

M/s. Environ Engineering company has designed, manufactured, supplied and erected two nos. 25HP fixed type surface rotors for our Aerator No. 1 of effluent treatment plant against our order No: CS:0:009:89 dt. 20.4.89.

These are running since last two months without any problem giving satisfactory results.

**SARABHAI COMMON SERVICES**

Mr. N. R. Diwanji - Manager (engg. Services)

08.10.1989

M/s. Environ Engineering Co., Vadodara, supplied 3Nos. of surface aerators (10HP capacity) and 3Nos. of clarifier scrapers mechanisms (7mt Ø). These equipments were commissioned on 16.11.1994 and working satisfactorily till date.

We are also satisfied with after sales service of M/s. Environ Company.

**GUJARAT INSECTICIDES LIMITED**

Mr. R. P. Desai - Dgm (technical)

02.05.1996

M/s. Sterling Biotech Limited (Division: Sterling Gelatin) had produced the several Surface Aerators from M/s. Environ Engineers for the Effluent Treatment Process Application.

We have replaced the our old Diffuser System with new Surface Aerators for Aeration Application. It has helped us to solve the Amonical Nitrogen Problem in our Treated Effluent Water. Performance of the Surface Aerators are found satisfactorily, at 5.5Mtr. SWD of aeration tank.

**STERLING BIOTECH LIMITED**

09.05.2012

This is to inform that the hydraulic testing in the presence of our representative is hereby waived. You are requested to arrange earliest despatch of the Aerators through Kerala Transport CO. to Thalapatrambu under intimation to us.

We have decided to waive Hydraulic Testing, since the same type of Aerators pre-tested in the presence of our representative & supplied accordingly are working well.

Please ensure that all quality and technical parameters are strictly adhered to.

**HINDUSTAN NEWSPRINT LIMITED**

Sr. Manager

27.05.2008

We at M/s. Oneiro Chemicals Ltd, have replaced diffused aeration system of 15HP with Fixed Type Slow Speed Energy Efficient Aerators of 7.5HP supplied by M/s. Environ Engineering Company. We are Highly satisfied with the performance of equipment as well as service provided by party. After installation of surface aerator energy consumption of effluent plant have reduced significantly. Aerator provides very effective mixing up to 4.6 mts. depth and minimizes settings of biomass at the bottom of the tank. We are thankful to M/s. Environ Engineering Company for their support in the good cause of environment and energy consumption and wish them good luck for feature endeavors.

**M/s. ONEIRO CHEMICALS LIMITED**

Mr. Dushyant Patel - Chairman

22.08.2013

You have supplied the above slow speed energy efficient surface aerator for our effluent guard pond of central ETP. The pond size of 66mtr. X 134mtr. X 3.3mtr. Liquid depth, in 2010. We are totally satisfied with the workmanship, Design and results of the Aerator. We are also satisfied with your excellent after sales service.

The performances of the slow speed surface aerator are very good & fulfill the purpose which it was installed.

**G. N. F. C.**

Mr. A. V. Contractor - Manager (ETP Mech.)

Mr. S. R. Desai - Manager (ETP)

16.11.2013

**TREATED ALL TYPES OF EFFLUENT**

**EXPORTED at:** + Metachem Exports P. Ltd. - Nigeria + Puritas Ltd. - Colombo (Sri Lanka) + Elite Garments Ind. Ltd. - Bangladesh + Knit Asia Ltd. - Bangladesh + Abul Khair Steel Ind. Ltd. - Bangladesh + German Knitwear - Bangladesh (2 Times) + Sun Flag (Tanzania) Ltd. - Tanzania + Alexandria Fibre Co. - SAE - Alexandria (Egypt) + Amion Water Systems - Nani Daman (Nigeria) + Ramky Enviro Engineers Ltd. - Hyderabad (Keraya) + Jedara International (P) Ltd. - Kalubowlia + Sri Lanka (For National Water Supply & Drainage Board, Galle Road, Ratmalana & United Nations Office for Project Services (UNOPS))

**COMMON EFFLUENT TREATMENT PLANT:**

So far as, CETPs are concerned, we have manufactured, supplied, erected and successful commissioned our ETP Equipments at the following CETP: + WAZIRPUR CETP: NEW DELHI through M/s. L&T (ECC) Div. - CHENNAI. + BADLI CETP: NEW DELHI through M/s. UEM INDIA LTD. - NEW DELHI. + M/s. DOMBIVLI BETTER ENVIRONMENT SYSTEM ASSO. (CETP) - DOMBIVLI. The FIRST successful CETP with required results by MPCB of Maharashtra, having the Aeration depth of 4.5M. One of the successful achievement of ENVIRON. In CETP at Dombivli, EIO2 AERATORS were running & had ZERO D.O. Level & MPCB had issued legal notice. These AERATORS were replaced by our 8Nos. of 40HP ENERGY EFFICIENT AERATORS. They got the results as per the MPCB Norms. + (supplied 1No. 20HP Floating Type Aerator with Draft Tube Arrangement, 1st TIME IN INDIA for Higher Depth of 4.8M). + M/s. PATTANCHERU ENVIRO TECH. LTD. - PATTANCHERU, one of the Biggest & successful CETP of India (One of the Biggest achievement of ENVIRON). + M/s. BHARUCH ECO-AQUA INFRASTRUCTURES LTD. - BHARUCH supplied 1No. 50HP Floating Aerator (the only equipment working trouble free at CETP) through M/s. L&T - A'bad. + NANDESARI CETP - NANDESARI. + GLOBAL

**ENERGY SAVING REPORT HIGHLIGHTED ON WEBSITE OF BILT**

**Project 2: Installation of 4 Nos. Improved Design Energy Efficient Surface Aerators in ETP**

The Effluent treatment plant was having conventional design surface aerators. It was proposed to install new aerators with improved design along with to reduce power consumption. A study was carried out for the same & 4 Nos. Aerators were replaced. Power consumption for those aerators reduced from 24 kW to 15 kW per aerator.

Annual energy saving	: 2.69 Lakhs KWh
Annual monetary saving	: 6.13 Rs. Lakhs
Investment made	: 8.0 Rs. Lakhs



**REPORT OF ENVIRON ENERGY EFFICIENT AERATOR PRINTED IN VAPI IND. DIRECTORY - 2012**

It was observed that the Discused Design (D2) in the first round of aeration tank was low, new surface aerators of high capacity and innovative design were installed in the aeration tank. Substantially has been reduced a great time as a result the speed of DO recovered. Online Online DO meters has been installed in all the aeration batteries in order to monitor the DO round the clock.

**ENVIRO make 20 NOS. 40HP ENERGY EFFICIENT FIXED TYPE SLOW SPEED SURF ACE AERATORS WITH DRAFT IMPELLER**



Publisher: **INDIA**

ENVIRO CARE LTD. - SACHIN (SURAT). + PERFECT ENVIRO CONTROL SYSTEM - SARIGAM. + WAPI WASTE & EFFLUENT MANAGEMENT CO. LTD. (WAPI CETP) - WAPI (Order Repeated 3 Times). + JALANDHAR CETP - JALANDHAR (Through M/s. Ramky - Hyderabad). + MMA CETP - Mahad, Dist: Raigadh (Maharashtra). (They were facing problem in their existing Diffused Aeration System & so they approached us for replacement of the same by our Energy Efficient Aerators. We have already installed, at MMA - CETP, our 9Nos. 30HP Energy Efficient Slow Speed Floating Type Aerators with specially designed impeller, in Jan. 2011 & the Aerators are giving satisfactory results). + ENVIRO INFRASTRUCTURE CO. LTD. (CETP) - VILL: UMARAVA, TAL: PADRA, VADODARA (GUJ.).

**SEWAGE TREATMENT PLANT:** + JK Cement - Nimbahera + Kevadia Colony - Kevadia + SRP Colony - Vir + Airforce Colony - Vinannagar (Pune) + Kandia STP - Kandia + GACL STP - Baroda + Hindalco Ind. Ltd. (FOIL DIV.) - Khatli, Silvassa. SASTRA + Deemed University - Thanjavur Campus (TN) + Thiruvkool Water Supply Scheme - Colombo, Sri Lanka + Gujarat Ind. Power Co. Ltd. - Nani Narioli, Tal: Mangrol (Surat) + JP Greens (SIMA) - STP-1 / STP-1A, Noida + Telcon (SIMA) - Kolkata + ERA NTPC (SIMA) - Hrajgar + Kurushetra Uni. (SIMA) - Kurushetra + Nanded Municipal Corporation - Nanded (MS) + KUIDFC, NKUSIP, (Eagle Infra) - Gokak, Karnataka, Kangra, (Dogra Construction) - Bhoranj (HP) + Vadodara Mahanagar Seva Sadan (VMSS) (Eco Chem) - Vadodara + Reliance Ind. Ltd. - Jamnagar (4 Times).

**GLOBAL WARMING & THE ENVIRONMENT HAVE BECOME THE CAUSE OF GREAT CONCERN & THE REAL LIVE ISSUE OF THE WORLD**

Today, due to rapid industrialization, Global Warming & the Environment have become the cause of great concern and the real live issue of the world. Industries are being pursued rigorously to ensure that the Pollution Control & Energy Conservation systems adopted are continuously under operation. Hence adoption of suitable economically cost effective, energy conserving and very efficient methods of Pollution Control is the TOP PRIORITY of any industry.

We, at Environ Engineering Company are a technology driven company where innovation is the key to New Product Development. We strongly believe that, the environment is a valuable gift of nature & it is our responsibility to protect it.

**162+ VALUABLE CLIENTS WHO HAVE OFFERED REPEATED ORDERS**

162 Valued Clients who have offered Repeated Orders in each & every expansions. It proves the performance of the Equipments with Reasonable Price, Quality, Timely Delivery, Excellent After Sales Service & Friendly Approach with Clients.

**30 TIMES**

▲ AUROBINDO PHARMA LIMITED HYDERABAD, BACHUPALLY, PASHMYLARAM, CUCCAPOTHARAJ, PYDIBHANGIRAM, BORAPALA CUDALORE. (All the plants throughout AP)

**16 TIMES**

▲ PRECITECH LABORATORIES LTD. - VAPI

**13 TIMES**

▲ REVA ENVIRO SYSTEM (P) LTD. - NAGPUR

▲ FRIGORIFICO ALLANA LTD. (ALLANA GROUP) ZAHEERABAD (AP) / ALIGARH (UP) / VERNAL, URAO

**12 TIMES**

▲ SAI ENVIRO ENGINEERS PVT LTD. HYDERABAD (A.P.)

**11 TIMES**

▲ WASTE ENCORE (INDIA) P. LTD. - THANE

**10 TIMES**

▲ UNITECH WATER TECHNOLOGIES PVT. LTD. - KOLKATA (WB.)

**9 TIMES**

▲ GUJARAT REFINERY - VADODARA

**8 TIMES**

▲ SIMA LABS - DELHI

▲ LUPIN LIMITED - ANKLESHWAR / PUNE / MANDIPPEJ / TARAPUR / DABHASA (BARODA)

▲ DETOX CORPORATION PVT LTD. - SURAT

**7 TIMES**

▲ GUJARAT INSECTICIDES LTD. (ISO 14001 COMPANY) - ANKLESHWAR

▲ DOSHION LTD. - AHMEDABAD

▲ NITREX CHEMICALS - ABRAMA (VALSAD)

▲ RELIANCE IND. LTD. - HAZIRA / JAMNAGAR

**6 TIMES**

▲ K. PATEL CHEMOPHARMA PVT. LTD. ANKLESHWAR

▲ TORRENT PHARMACEUTICALS AHMEDABAD, VATVA, BHAT, INDRAD

▲ GETP SYSTEMS PVT. LTD. - AUNDH (PUNE)

▲ CADILA - ANKLESHWAR

**5 TIMES**

▲ HERO HONDA MOTORS GURGAON, DHARUHERA

▲ ATUL PRODUCTS - VALSAD, ANKLESHWAR

▲ MAIZE PRODUCTS - KATHWADA, A'BAD

▲ GAYATRISHAKTI PAPER & BOARDS LTD. - VAPI (GUJARAT)

▲ JAPRO ENGINEERING PVT. LTD. - THANE

▲ INDIAN SPACE RESEARCH CENTRE (ISRO) - A'BAD/NAGARDOLE/MSUBU/BANGALORE

▲ SABERO ORGANICS LIMITED SARIGAM, DIST : VALSAD

▲ TRANSPER INDUSTRIES LIMITED KALAJI, DULABARA (BARODA)

▲ PATTANCHERU ENVIRO TECH LTD. (CETP) PATANCHERU (A.P.)

▲ GREENEARTH ENGINEERS & CONSULTANTS - DADER (C), MUMBAI

▲ WAPI WASTE & EFFLUENT MANAGEMENT CO. LTD. (WAPI/CETP) WAPI

▲ INTAS PHARMACEUTICALS LTD. MATODA, TAL: SANAND, (AHMEDABAD)

▲ KADAM PROJECTS PETLAD, VADODARA, ANKLESHWAR, GUJARAT

▲ ARVIND LTD. (ARVIND GROUP) - A'BAD

**4 TIMES**

▲ IPCL - VADODARA

▲ THE JEYPORE SUGAR CO. LTD. CHAGALLU

▲ SUN PHARMACEUTICALS PANOLI / AHMEDNAGAR / ANKLESHWAR

▲ INDIA GELATINE & CHEMICALS LTD. VAPI

▲ SUN PAPER MILL - TRINULVELU

▲ DEVANSHI DYESTUFF - ANKLESHWAR

▲ HEUBACH COLOURS LIMITED ANKLESHWAR

▲ ALEMBCO LIMITED VADODARA / BACCI / HALOL

▲ N. R. AGARWAL INDUSTRIES LTD. VAPI (GUJARAT)

▲ MELSPUN TERRY TOWELS (100% EDU) MORSI VAPI, FALGSHAR

▲ APAR INDUSTRIES LTD. (ISO 9002 CO.) VALIYA, DIST : BHARUCH

▲ STERLING BIOTECH LTD. (DIV. STERLING - GELATIN) KAIRAHADI (VADODARA), HANPUR

▲ VAISHAL PATILPUTRA DUGH UTPADAKI SAH. SANGH LTD. (PRTNA DAIRY PROJ.) BAURANI/PHULVARSARF (BHAR)

▲ VMISHI CHEMICALS LTD. (MCDL PHARMA. SPECIALITIES LTD.) ASSANSOL, BARABANKI, TAJPUR (ASSAM)/JAGDISHPUR (UP)

▲ UNIQUE CHEMICALS (A DIV. OF J. B. CHEM & PHARMA. LTD.) PANOLI (BHARUCH) / DANAN

▲ HETERO DRUGS LTD. - RAJMYNAPET, VIZIG

▲ RAMKY ENVIRO ENGINEERS LTD. HYDERABAD

▲ GARDEN SILK MILLS LTD. - JOLWA

▲ GRASIM INDUSTRIES LTD. (HARSHAR POLYBRES) - KUMARRAPATNAM, HARIHAR

▲ SHUBHAM INC. - AHMEDABAD

▲ RECKITT & COLMAN - ASANSOL, DHARDA

▲ S.S.M. SHANKARRAO MOHITE PATIL SSK - AKLU

▲ GUJARAT FLOTEX PVT LTD. - CHHATRAL

▲ G.N.F.C. - NARMADANAGAR, BHARUCH

**3 TIMES**

- ▲ DOMBINVI BETTER ENVIRONMENT SYSTEM ASSOCIATION - DOMBINVI (E)
- ▲ TAMILNADU PETROPRODUCTS LTD. CHENNAI
- ▲ NIRMA LIMITED - AHMEDABAD, MANDALI
- ▲ JAYANT PAPER MILLS LIMITED - UTRAN
- ▲ AVON ORGANICS LIMITED - MEDAK
- ▲ GAYATRI DAIRY PRODUCTS PVT. LTD. AHMEDABAD
- ▲ BLACK DIAMOND BEVERAGES (COCA COLA) - DANKUN, TARATALA
- ▲ ION EXCHANGE (INDIA) LIMITED RABALE, NEW MUMBAI
- ▲ HARI MACHINES LTD. - KOLKATA
- ▲ UNIVERSAL STARCH-CHEM ALLIED LTD. - DONDACHA
- ▲ HINDUSTAN NEWSPRINT LTD. KOTTAWAN DIST.
- ▲ ALCHEM INTERNATIONAL LTD. NEW DELHI / NEEMRANA (GUJAR)
- ▲ DEESAN AGRO-TECH LTD. - DHULIA
- ▲ DR. REDDY'S LABORATORIES LTD. PYDIBHIMAVARAM (HYDERABAD)
- ▲ TECHNIO AQUA TECH - VISAKHAPATNAM (AP)
- ▲ MAC OIL PALM LTD. AMPAPURAM, KRISHNA DIST. (AP)
- ▲ LEPRO HERBALS PVT. LTD. - PANIPAT
- ▲ S. D. FINE-CHEM LTD. BOGAR (DI); THANE / POICHA (BARODA)
- ▲ TECHNOCRAFT IND. (I) LTD. (MILK SACKS) - MURBAD, DIST: THANE
- ▲ MADHAV AGRO FOODS PVT. LTD. DABHASA, DIST: BARODA
- ▲ MCCAIN FOODS (I) PVT. LTD. BALISAN, DIST: MERSANA
- ▲ METRO DYE-CHEM LTD. - A'BAD, MANDALI
- ▲ ASIAN PAINTS ANKLESHWAR, PITANCHERU, BHANDUP
- ▲ HEMANI INDUSTRIES LTD. (HEMANI GROUP) - VAPI / DAHEJ
- ▲ SOMBANSI ENVIRO ENGG. PVT. LTD. GHAZIABAD (UP)
- ▲ AMION WATER SYSTEMS - NANI DAMAN
- ▲ PEACOCK AQUA ENGINEERS - HYDERABAD
- ▲ FRESENIUS KABI ONCOLOGY LTD. (FORMERLY DABUR PHARMA) - KALIANI, (WB)
- ▲ MAHI MILK PRODUCER CO. LTD. CHOTILA, WADHWAN, PATADE
- ▲ SRF LTD. - DAHEJ - IL DIST: BHARUCH
- ▲ UNITED PHOSPHOROUS LTD. (ISO 14001 CO.) VAPI, ANKLESHWAR
- ▲ DELHI STATE INDL. DEV. CORPN. WAZIRPUR, BADLI - CETP
- ▲ IFFCO LABORATORIES LTD. (INNOTECH PHARMA LTD.) - WALLI, AURANGABAD

**2 TIMES**

- ▲ L & T LTD. - ECC DIVISION AHMEDABAD / CHENNAI

- ▲ JAYANT SILK MILLS - SURAT
- ▲ SRI SARVARYA SUGARS LIMITED CHELLURVA
- ▲ PIGEON TEXTILE LTD. - SURAT
- ▲ JAYANT OIL MILL LTD. WOODDARA / MEHSANA
- ▲ SURYA ROSHNI LIMITED MALANPUR, BAHADURGADH (HARYANA)
- ▲ JAYANT VITAMINS LIMITED - RATLAM
- ▲ STERLING AGRO INDUSTRIES LTD. MALANPUR (M.P.)
- ▲ STOVEC INDUSTRIES LTD. - AHMEDABAD
- ▲ LYKA LABS LTD. - ANKLESHWAR
- ▲ ANIL STEEL - JAFUR
- ▲ SEARLE INDIA - ANKLESHWAR
- ▲ CHEMIQUIP LTD. - AMBERNATH, AHMEDABAD
- ▲ CHALTHAN SUGARS - CHALTHAN
- ▲ CLARISIS ORGANICS - VADODARA
- ▲ ASHOK ORGANICS ANKLESHWAR, NANDESARI
- ▲ JAYSYNTH DYE-CHEM LIMITED VAPI, PITALGANGA
- ▲ HINDUSTAN LEVER LIMITED ORAL, CHHENDWARA
- ▲ GLAXO LIMITED - NASHIK / ANKLESHWAR
- ▲ VATAN DYE-CHEM LIMITED DAHOD / ANKLESHWAR
- ▲ N. K. PROTEINS LTD. - KADI / NANI KADI
- ▲ LUPIN CHEMICALS - JUVVA
- ▲ BIHAR STATE CO-OP. MILK PRODUCERS LTD. (RANCH DAIRY) PATNA, (BIHAR)
- ▲ VEERJI PAPER INDUSTRIES PVT. LTD. BIDAR
- ▲ AUDICHEM (INDIA) PVT. LTD. - A'BAD
- ▲ ADARSH CHEMICALS & FERTILIZERS LTD. - UDHANA
- ▲ SAHYADRI STARCH & INDUSTRIES LTD. - MIRAJ
- ▲ GULSHAN POLYOLS LTD. JHAGADIA / DHAULA KUAN
- ▲ CLARIS LIFESCIENCES LTD. VASNA (AHMEDABAD)
- ▲ MANALI PETROCHEMICAL LTD. - CHENNAI
- ▲ ORCHID CHEMICALS & PHARMACEUTICALS LTD. - WALLI (AURANGABAD)
- ▲ BALLARPUR IND. LTD. (PULP & PAPER UNIT) YAMUNANAGAR (HR)
- ▲ ABDUL KHAIR STEEL IND. LTD. (THROUGH WATREAT ENGINEERS) BANGLADESH (EXPORT)
- ▲ FAMY CARE LTD. - SARKHEJ (AHMEDABAD)
- ▲ PARLE BISCUITS PVT. LTD. - SANKHOL (HR) / GONDE DUMALE (DIST: NASHIK)
- ▲ INDUSTRIAL SOLVENTS & CHEMICALS LTD. - ANKLESHWAR
- ▲ SHIDIMO INTERAUX PVT LTD. LAJPORE (DIST: SURAT)
- ▲ STONEWOOD CEM-FAB (I) PVT. LTD. (SHARON BIO-MEDICINES LTD.) TALOJA, DI. RAJGAD

- ▲ SOHAM ENTERPRISE - BHARUCH
- ▲ J. K. CEMENT (JKEM LTD.) NIMBAHERA (RAJ.) / BAGOLKOT (KARNATAKA)
- ▲ RALLIS INDIA LTD. ANKLESHWAR / LOTE PARSHURAM
- ▲ GUJARAT THEMIS BIOSYN LTD. - VAPI
- ▲ ANDHRA ORGANICS LTD. PYDIBHIMAVARAM (A.P.)
- ▲ INDOFIL CHEMICAL COMPANY SEZ DAHEJ, DIST: BHARUCH
- ▲ SHRI DAMODAR YARN MFG. PVT. LTD. SARRAM (GUJ.)
- ▲ MEGHMANI ORGANICS LTD. ANKLESHWAR (GUJ.)
- ▲ PBM POLYTEX LTD. - PETLAD, (GUJARAT)
- ▲ VISHUDDHA ENVIROTECH MAHIM, MUMBAI
- ▲ TAMILNADU NEWSPRINT & PAPER LTD. - KAGITHAPURAM, KARUR (TN)
- ▲ REVOLVE ENGINEERS PVT. LTD. HYDERABAD
- ▲ HINDUSTAN COCA COLA BEVERAGES P. LTD. - RAIGAD / GOBLEJ (GUJ.)
- ▲ A. P. CO-OP. OILSEEDS GROWERS FED. LTD. - ASHVARANDEPET, KHAMMAM (AP)
- ▲ VISHAL FABRICS PVT LTD. - AHMEDABAD
- ▲ NANDED MUNICIPAL CORPORATION (STP) (SHARDA CONST.) NORTH NANDED (MS)
- ▲ BAJAJ HEALTHCARE LTD. MANLUSAR (BARODA)
- ▲ VISVAS PAPER PAPERS PVT. LTD. MADURA (TN)
- ▲ SOLARIS CHEMTECH IND. PVT. LTD. KHAJUDA - (BHUJ) / VADODARA
- ▲ MODERN PETROFILES KARJAN, DIST: BARODA
- ▲ NITTA GELATIN INDIA LTD. COCHIN (KERALA)
- ▲ UNITED ENVIROTECH PVT. LTD. - PUNE
- ▲ KIWALITY MILK FOODS LTD. KANCHIPURAM (TN)
- ▲ PAUSHAK LTD. - PANELAV, HALOL (GUJ.)
- ▲ ONEIRO CHEMICALS LTD. - DHALBARA
- ▲ MERCURY LABORATORIES LTD. JAROD, DIST: VADODARA
- ▲ AIA ENGINEERING LTD. - MORAJA
- ▲ PURITAS LIMITED COLOMBO (SRI LANKA) (EXPORT)
- ▲ ZARTECH LTD. - NIGERIA (EXPORT)
- ▲ WESTERN FLOC - CHHATRAL
- ▲ ECHJAY INDUSTRIES PVT. LTD. SAIKOT (GUJARAT)
- ▲ TEJASWI ENVIRO TEACH - HYDERABAD
- ▲ VISHWARAJ SUGAR INDS. LTD. (FORMERLY VISHWANATH SUGAR LTD.) BELLAD - BAGAWADI, DIST: BELGAUM
- ▲ SHREE PANDURANG SSK LTD. SHREEPUR, DIST: SOLAPUR

## ENVIRON HIGH TORQUE CENTRAL DRIVE CLARIFIERS, CLARIFLOCCULATORS, HIGH RATED SOLID CONTACT CLARIFIERS (HRSC) & THICKNERS

**CLARIFIER:** Environ Clarifiers, described hereunder, are for chemical effluents, various types of industrial processing & even metallurgical processing, where the efficient separation of solids from liquids is the 'NEED'. Efficient separation of suspended solids or sedimentation is an important and essential aspect in effluent treatment, since it not only reduces considerably suspended solids loading, but also helps in reducing the COD / BOD loading, thereby contributing in reducing the sizing of subsequent process viz. that of Biological treatment etc.

Thus, Clarification / Sedimentation, the process to remove suspended solids, is economical & has become an essential part of ETPs & raw water treatment plants. Suspended solids removal up to 70% & settle able solids removal up to 90% to 98% & COD removal as high as up to 40% are achievable with proper design of the clarifier unit.

The process is purely of gravity separation. This is achieved by the reduction in velocity of the fluid & nearly 180° change in the direction of the flow. The separate solids would flow downward & settle on tapered floor.

The slow moving scraper mechanism having scraper arms with Neoprene Rubber / PP / HDPE / Brass Squeegees, scrapes the floor and brings the settled sludge (suspended solids) to the central sludge well. The velocity or the movement of scraper arms, squeegees is designed in such a way that the sedimentation process is not distributed at all.

Having more than 30 Yrs. of manufacturing experience in effluent treatment plant machineries & having full fledged R&D Department attached with hydraulic testing facilities up to 150HP Aerators & having manufacturing facilities of total 40,000 sq.ft. area, we have developed & incorporated following essential cum efficient features in ENVIRON Clarifiers.

**Special Features:**

- High Torque 'ENVIRON' Centre Drive with gears is designed for achieving high scraping efficiency with additional Greaves gears to achieve High reduction ratio.



- SCRAPER ARMS LIFTING DEVICES in two varieties:

- HAND OPERATED SCRAPER ARMS LIFTING DEVICES:** This is our standard inbuilt feature in clarifier. This is provided at NO EXTRA COST. When the scraper arms are embedded, in sludge, due to prolonged stopping of the clarifier, the clarifier mechanism cannot be restarted. The motor will trip, the scraper mechanism gets twisted up & drive gets overloaded and damaged. In such cases the effluent has to be pumped out & settled sludge has to be removed to restart the mechanism. While in our Clarifier there is NO PANIC, Operator has to come on the platform & has to operate the hand wheel. Both the scraper arms are lifted to a maximum height of 200mm. Then the mechanism can be switched on the scraper arms can be lowered down slowly by operating handle in reverse direction.
- MOTORIZED SCRAPER ARMS LIFTING DEVICE:** Only 0.5HP extra electric motor & gearing operate the lifting of the



scraper. This feature is provided by us at an EXTRA COST, if asked for.

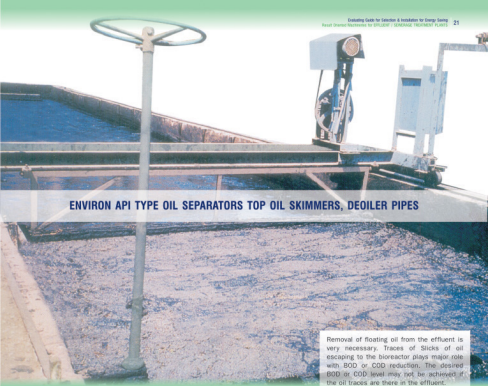
- Fixed type full span bridge of Lattice structure suitably designed to take required torque, and having least linear deflection. One meter high double row hand rails is provided.
- Suitably designed centre drive rotates the heavy mild steel tubular central pipe, having two scraper arms with neoprene rubber / HDPE / PP / BRASS squeegees.
- Central sludge well scraper.



- Overload protection & lifting devices: Electro-mechanical overload protection device has load indicator, Hooter alarm and drive motor cutoff switches. In addition to this unique feature particularly for Thickeners, Motorized semi automatic or automatic scraper arms lifting devices are also incorporated by us on clients demand. Hand operated scraper arms lifting device are provided with all ENVIRON CLARIFIERS & THICKNERS as a standard feature.
- Offering Polypropylene (P.P.) Intake Well as standard feature.

**ENVIRON CLARIFIERS WITHOUT BOTTOM SLUDGE WITHDRAWAL PIPE:** For the first time in India, we have Developed & Introduced for minimal maintenance, the ENVIRON Clarifiers without bottom sludge withdrawal pipe. The sludge at 5 to 10mt. total head (pressure) can be obtained at the end of the platform simply by pipe flange connection, this can be taken either to sludge drying beds &/or to aeration tanks for activated sludge plants.





## ENVIRON API TYPE OIL SEPARATORS TOP OIL SKIMMERS, DEOILER PIPES

Removal of floating oil from the effluent is very necessary. Traces of Slicks of oil escaping to the bioreactor plays major role with BOD or COD reduction. The desired BOD or COD level may not be achieved if the oil traces are there in the effluent.

"ENVIRON" make top Oil Skimmers are specially designed to remove the separable oil viz. waste oils, vegetable oils, animal fats, froths, dairy waste scum fats etc. from the effluent. Thus the recovered oil can be used as raw material for other products to achieve savings. The Oil Skimmer tank is designed as per American Petroleum Institute Standard (API). The oil is collected through the DE-OILER pipe mechanism.

Motorised trolley with four wheels with antifriction bearings travels to & fro on MS rails having electrical limit switches on either side. PP / HDPE / Neoprene rubber skimmer place. Control panel consists of air break reversing contactors, timer etc. Push button station, flexible cable, drive consists of 0.5HP / 1HP electric motor, 415 V, 50 C/s, 3 phase, AC, Radicon worm reduction gearbox, chain etc. Hand operated slotted pipe mechanism would be there to collect the oil.

Uptill now we have installed more than 50 nos. of such top Oil Skimmers in various industries like Sugar, Oil, Dyes, Chemicals, Automobiles, Pharmaceuticals, Dairies, Distilleries etc.

## MINIMAL MAINTENANCE & MINIMAL DOWN TIME

Apart from process consciousness ENVIRON seriously believes that the design of the equipments should be such that there should be minimal maintenance & minimal down time, since the equipments have to perform continuously round the clock & prove their performance.

Under our QUALITY ASSURANCE PLAN, each & every Aerator & Agitator is manufactured, shop assembled, tested by us in our Testing Facility for 2 hours prior to dispatch & checked for vibrations of the equipment, oil leakage in the Gearbox, Motor Noise, Current Drawn, Freeness of the assembly, concentric running of the Impeller & Shaft, due to which the Aerator can be installed & commissioned within Minimal period, without facing any problem at site, since the problems are rectified during the Hydraulic Testing Facility before despatch.

Almost 150 Nos. of Reputed valuable clients to whom ENVIRON had an opportunity to serve repeatedly for their each & every expansion. The Number of

clients, who are placing repeated orders is continuously increasing every year.

Also, since in any ETP / CETP / STP the highest energy is consumed in Biological System, so by upgrading the AERATOR

Performance having more & more OXYGEN TRANSFER per HP per Hour (hence increasing the efficiency of the AERATORS), we can reduce the Energy Consumption in the existing Aeration System, if more attention is given for reduction of energy in Aeration Tanks, it would result in HEAVY ENERGY SAVING. So, carrying out ENERGY AUDITING of Aeration System in existing ETP's & STP's would not only result in ECONOMICAL running of Industries, but also the Electrical Energy saving would help in satisfying the future need of Electrical Energy required for new coming up industries & can also help in reducing GLOBAL WARMING.

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*Save Energy by installing Environ Energy Efficient Aerator*



**INHOUSE OXYGEN TRANSFER TESTING & HYDRAULIC TESTING FACILITY**



SAVE ENVIRONMENT



SAVE ENERGY



**ENVIRON ENGINEERING COMPANY**

*A Company with a tradition of Innovation (since 1979)*

**Environmental Engineers, Manufacturers**

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*Environment is a gift of Nature ..... Let us preserve it*