

# Reliable Sewage Wastewater Treatment For Indian Conditions

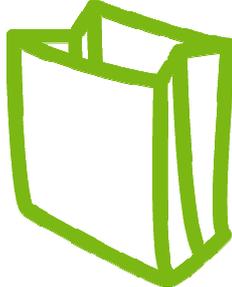
## Advanced SBR Technologies for Sewage Treatment



- Fully Automatic
- Economic
- Saves Money
- Safe
- All India Service Network
- No Regular operator needed
- No Chemical added
- Meeting New PCB Norms
- Efficient
- High Quality
- Fully Biological
- Future Ready

# Why EcoTec!

As front runner in providing technologies for small sewage treatment plants, we set the market standards for small Sequencing Batch Reactor-SBR based STPs in India. Our competitive edge over others make us stand above convention and we are,

|                                                                                                                                                                                         |                                                                                                                                                                                     |                                                                                                                                                                              |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  <p><b>Reliable</b><br/>Continuous Customer and Collaborators Relationship</p>                         |  <p><b>Efficient</b><br/>We have right solution of each of your wastewater character</p>           |  <p><b>Economical</b><br/>Highest quality product with very long life</p>                 |
|  <p><b>Advanced</b><br/>Meet present and Future PCB norms</p>                                        |  <p><b>Eco Friendly</b><br/><b>Fully</b> biological treatment unless there are special needs</p> |  <p><b>Flexible</b><br/>Our designs can be adapted for your local conditions</p>        |
|  <p><b>Sustainable</b><br/>Long lifetime products without need for frequent replacement of parts</p> |  <p><b>Safe</b><br/>Our design takes care for human and environment safety seriously</p>         |  <p><b>Innovative</b><br/>Made in India for Indian conditions with German Standards</p> |

# EcoTec You Can Rely on...

## Benefit from our Expertise and Experience

EcoTec is the first company in India to introduce SBR process for small sewage treatment applications. Where public sewers are not possible, be it individual homes, hotels, hostels, schools, industries and any other institution that has sewage outflow, EcoTec provides solution to meet the regulatory requirement and your personal intention to protect the environment. With an unmatched experience with our plants operational in all corners of India, is testimonial to our expertise and knowledge of technology and local conditions. The advanced technology is future ready when there is a need for better treatment and our experts are always ready to support you with special designs that will treat your sewage and wastewater.



*We specialize on designs that work just right for you!*

## Knowledge Sharing

Our customers and clients are the core to our business. Our customers know about their water and we find the solution their sewage water problems. Each industry has different sewage water composition and we find the right treatment options. We constantly improve our technology to provide the best solutions that are economical, robust and reliable. Every customer benefits from our research and knowledge gathered over many years.

## Our Customers

Our customers benefit from expertise and quality we define for our product. Centralized product development ensures high quality of sewage treatment installation in each customer location.

## Strategic Partnership

We work with right channels to deliver the high quality sewage treatment systems to the final customer. Our partners are supported in design, technology, installation, service of our fully automatic SBR sewage treatment systems

## Our Network

Our strength is our network of sales and service providers. Every dealer is given in depth education and training to serve our customers better with wide knowledge acquired from EcoTec. Global knowledge is transferred to each and every location in India through our network. This makes us the market leader in small SBR sewage treatment plants in India.



*Our First SBR plant is running successfully even after 6 years*

# EcoTec SBR-Sewage Treatment Systems

## Application

Our wide range of application starts from the smallest possible sewage treatment system for your individual home to as big as your community.



*Single home STP can be installed in hours by local plumber*

## Single Home

When it comes to having your own STP at home, EcoTec STPs gives you the best price, performance and ROI. You only have to let us know your family size and we provide the right size of plant that can be retrofitted into your existing septic tank or in a tank constructed as per our design. We can retrofit our EcoSBR into your existing tank without need for any major change to the tank.

## Cluster of Homes and apartments

For apartment blocks from 20 houses in stilts, we have designed many STPs that work without an operator, yet performing the treatment beyond the statutory requirement. Thanks to our expertise and foresight to develop STP that are fully automatic and intelligent. Many buildings with our STPs have been rated green buildings.



*Green Rated building with our Automated SBR system reuses 100% wastewater*

## Mid Sized Communities

If you are a community of 50 homes and up to 150 dwelling units, EcoTec SBR sewage treatment plants can treat the water to very high quality to reuse for your flush and any other reuse purpose. Only periodic supervision of the plant is required and not a regular operator. EcoTec SBR plants have reduced the cost of sewage treatment to a very high degree to our clients.

Larger communities with up to 700 dwelling units are benefiting from our special designs. We have retrofitted many non performing STPs to improve the quality of treatment. Our special designs for larger communities save huge initial investments and reduce operational cost drastically during low occupancy period. Thanks to our module based designs.



*A community of 75 villas reuses the treated sewage in their garden*

# EcoTec References

## Industries, Offices, Schools, Hotels, Hospitals and Recreation centres

When occupancy, quality and quantity of sewage and wastewater is varying on a regular basis, EcoTec STPs still produce the same treatment results. Our intelligent *EcoSave* mode determines whether to do a treatment or wait for the right situation for proper treatment. Thanks to our sensor based control systems. Special Designs are always possible when we know your wastewater situation. The below reference give an idea of our robustness,



*A hospital with 200 beds treat the wastewater surrounded by houses*



*One has to walk over the STP before entering a hi-tech office*



*Underground tanks being prepared for a hotel sewage treatment plant*



*Treat Sewage water used in garden in a software company with 1000 employees*



*A lake uses our treated sewage wastewater for growing fish and for recreation*



*A hotel with 50 rooms treats its sewage to protect the environment with our advanced SBR system*



*Best in the market components being used for long life and rugged use*



*Our Advanced microcontroller is programmed to treat sewage without minimum loading conditions*



*Many manufacturing industries have retrofitted their existing STPs with our automated SBR system*

With our experience in various geographical and site conditions, we can always provide you with special designs based on your present effluent characteristics, future change in effluent characteristics, space available, etc. You have the sewage and we have the solution to give clean and clear water.

**Eco Friendly** - No chemicals required for our treatment process

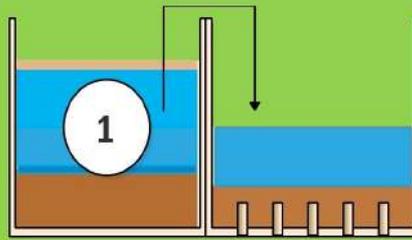
**Safe**- No Motors/ No pumps/ No Electrical Parts in water unless absolutely needed

## SBR- Process

Each person discharges 60 grams of waste in to the water when involved in activities such as bathing, washing, laundry and flushing the toilets. There is also water being used in the kitchen for washing utensils, food before and after cooking. EcoTec sewage treatment plants ESBR and EcoSBR treat this sewage wastewater where treated water can be sent to nature without any harmful effect on the environment and people. SBR process is reliable and is acknowledged by the Indian regulators and the Pollution control boards. SBR is considered as one of the few promising treatment systems for nutrient removal from sewage water.

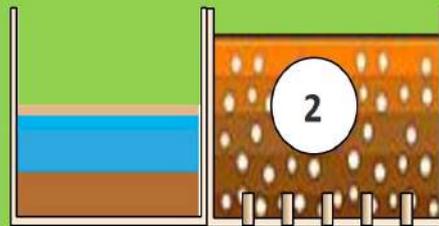
### 1. Filling

Required quantity of sewage water from the collection tank is pumped into the aeration chamber also called as SBR chamber/reactor for treatment.



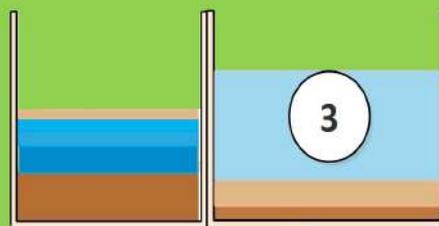
### 2. Aeration

Activated sludge in the presence of air/ oxygen consumes the pollutants in the SBR chamber. Air is supplied in time sequenced manner in this phase.



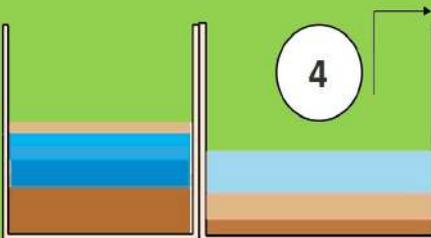
### 3. Sedimentation

Activated sludge settles to the bottom when air supply is cut off, with a clear water zone appearing at the top. This clear water is ready to be taken out of the chamber.



### 4. Discharge

Clear water with low suspended solids is taken out of the SBR chamber for disposal, treatment for reuse and recycle. The settled sludge is removed for further storage and disposal.



### Intelligent

Our advanced sensors and analytical devices incorporated in each plant based on your needs, the plant performs sewage water treatment based on incoming quantity. The output water always meets the required standard at all times without any need for human interference on a regular basis.

### Shock Load

When there is high flow, the collection tank buffers the excess inflow and distributes in different treatment cycles. All this is possible with our efficient design process.

### Under Load

Most sewage treatment plants suffer when there is low inflow or no inflow. EcoTec SBR systems are capable of adjusting the operations based on the inflow of water for short and long periods.

## Efficient

EcoSBR unique treatment systems use naturally occurring micro-organisms to treat sewage. Achieving highest treatment values with least use of electromechanical equipments is always our aim; this reduces dependency on unreliable pumps.

| Sewage parameter #                           | At Inlet* | SBR Values*** | SBR Efficiency |
|----------------------------------------------|-----------|---------------|----------------|
| COD (chemical oxygen demand)                 | 800 mg/l  | 40 mg/l       | 95%            |
| BOD <sub>5</sub> (biochemical oxygen demand) | 400 mg/ l | 9 mg/l        | 97%            |
| SS (suspended solids)                        | 467 mg/l  | 20 mg/l **    | 96%            |
| NH <sub>4</sub> -N (ammonium nitrate)        | 73 mg/l   | 3.5 mg/l      | 90%            |
| P <sub>tot</sub> (phosphate removal)         | 12 mg/l   | 0.5 mg/l      | 95%            |

# Each individual produces 60 g BOD and 120 g COD in 150 lt/day

\* When there is low water usage then the design is made by using waste produced and by volume of water disposed

\*\* When additional filtration units are added the treatment values are even better

\*\*\* The are results are average of our various plant operational results and not from testing conditions

**EcoSave**-When no sewage flows into the collection tank within a treatment period, then the plant switches automatically into *EcoSave* mode saving energy and money until there is flow to run a treatment.

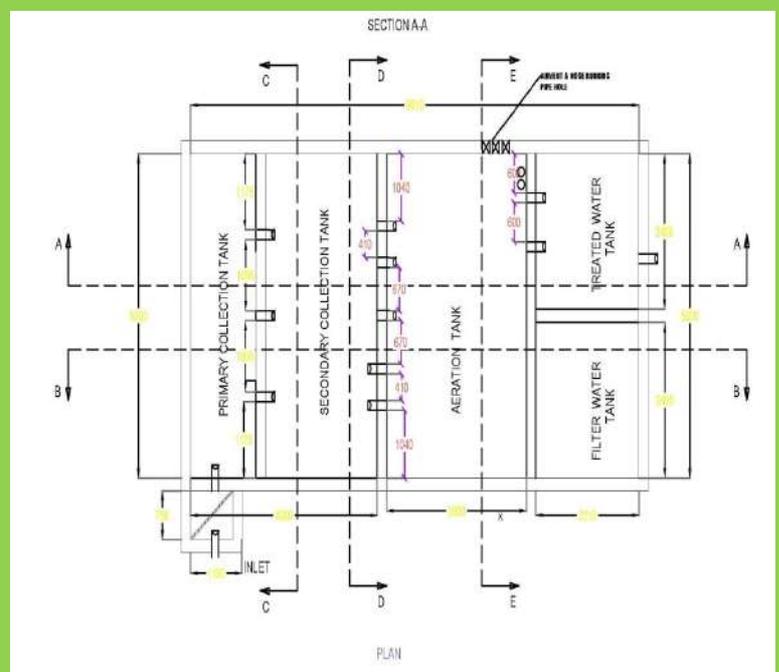
## Our Design

### Correct information for right design

Your sewage characteristic (BOD<sub>5</sub>, COD, N, P, pH, etc) and the required output in quality is the most important information needed for good design. Your flow is decided by the number and type of users and the type of building. Such information decides the type, flow and nature of sewage water.

The space available, location of the STP and the preferred location of the machinery is also required in choosing the right pumps with right head. The air required is dependant on the depth of water in the tank, so please wait for the design finalisation before asking for the price of a system.

You know the local conditions better, so keep us fully informed on the power fluctuations, power cuts and all the other information related to electric supply. We value your investment for the right treatment, so support us with all the information necessary for the right design and be a happy customer with required treatment.



**Your Inputs - Our Design - Right Treatment**

# Reuse And Recycle

with **EcoTec<sup>Blue</sup>**



EcoTec<sup>Blue</sup> range of advanced filtration systems are available to bring the required treated water quality for reuse in laundry, flush, gardening, carwash and any other reuse purpose. EcoTec SBR systems coupled with EcoTec<sup>Blue</sup> systems have made many offices, schools and institution reuse treated sewage water for many days. Our customers have saved Lakhs of rupees in a year by choosing our recycle systems. Thanks to our expert design



### Ultra filtration

Compact ultra-filtration system provides pure treated water in excellent quality to be reused in laundry and flushing for even single homes. The same systems are available for drinking water treatment too.



### Sand Filtration

Sand Filtration systems for larger communities for flush and garden reuse. Sand filtration is reliable for water reuse in flushing. Our successful installations are in operation for more than 4 years in harsh conditions.



### Submerged Ceramic Filtration

Advanced submerged ceramic filtration system gives bathing quality water which can be used for any reuse purpose. This is long life product for very high quality water. Recommended for treating large volume of water reuse.



### Ammonia Removal- Key to Reuse

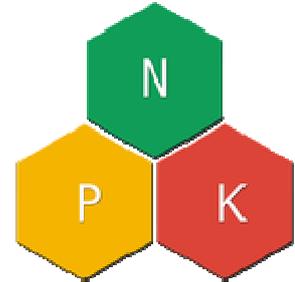
When ammonium and nitrates are removed from treated water, disinfection is efficient with low levels of chlorine required. Nutrient removal also deters the formation of smell and biological re-growth in treated water.

**Reuse for Laundry-** For buildings with more than 50 dwelling units, our ceramic filters can deliver water with very high quality that you can use for laundry

# Special Cases and Special Treatment

## Nutrient Removal

Nutrient removal is not possible in continuously aerated plants, while EcoSBR series of plants remove nutrient to a very high degree. Thanks to sludge recycling and intermittent aeration process. All our plants can remove nutrients biologically without need for chemicals and additional installations.



**HIGH PERFORMANCE**

## Need for High Treatment Performance

When there is a need for high treatment performance in conditions where there are many limiting factors such as power fluctuations, frequent power cuts and varying loads it is simply possible to treat the sewage without any excuse. Our special program can accommodate the process in any condition to provide consistent treatment.



## Solar powered Sewage Treatment

For treatment to happen during the day time using solar energy, our combination of anaerobic and aerobic process for night and day treatment respectively is a dream come true for our customers. Anaerobic treatment happens during the day in one chamber while aerobic treatment happens in day time. There is a small usage of power for activated sludge maintenance during the night.



## Temporary Sewage Treatment Plants

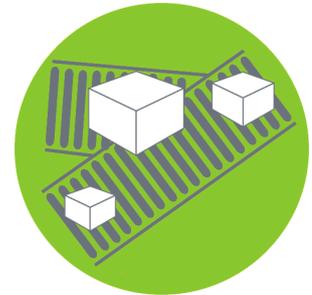
Our flexible design can incorporate the required treatment plant in containers, on the surface tanks and in temporary structures. These plants can be dismantled and reassembled in a different location easily. Our special pumpless system is reliable compared to sewage treatment plants with pumps. Our control system ensures consistent treatment without need to train site personnel. The only pump requirement would be to transfer sewage from underground sump to the overhead container/s.

**Aesthetic-** No need large space at the ground level, fully underground plant is possible  
**No Noise and odour issues**

# Our Treatment/ Warranty

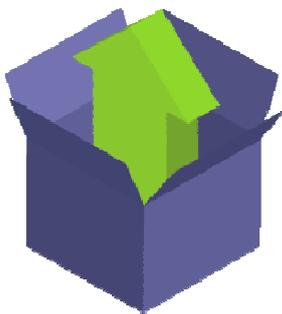
## Combination of continuous and batch process

In situations where there is no possibility to have a full batch treatment, combination of batch and continuous process is possible taking advantage of both process benefits. Sludge recirculation, sedimentation and discharge can be batched while continuous inflow can be accommodated. Inflow is only disrupted for a short period of time during settlement and discharge. These plants are working well where there is insufficient collection tank volume.



## Overloading Conditions

When the sewage treatment plant is overloaded with slightly higher BOD and COD than the designed values, the plant program can be altered to run longer cycle period and longer aeration in a cycle to achieve required treated water parameters.



## Special Wastewater treatment

In case your wastewater is different than the usual sewage water character, you can be sure that we have the design that is right for you. Our experience with different kinds of sewage, wastewater and effluent biological plants can come to your help.

## Warranty

Our High Quality components come with standard 2 years warranty for controllers and compressors. The warranty does not include free service of components as part or whole. It is the responsibility of the buyer to maintain the plant as per the operation instructions. Conditions Applied.



# Some Answers to Your Questions!

## *What are small Sewage Treatment Plants?*

Small Sewage treatment plants are those that fall under the category of 1 KLD to 250 KLD. EcoTec provides fully automatic systems that can be placed in underground tanks or even in existing septic tanks. The treated water from these plants beat the threshold set by government by a very high degree. The operation and maintenance of these plants are very low when compared to the expense of running a STP from where sewage is taken out in trucks regularly and sometimes even daily. For example the operation charge for a EcoTec STP system in a 50 apartment building is only 150 Rs/ day and there is no need for an operator. The treated water can be used for flushing after disinfection.

## *What advantages make SBR more reliable choice of technology?*

SBR plants are usually automated and are less dependent on operators in small sewage treatment plants. In a batch process like SBR water is filled into the reactor and processed for a longer period of time until it is fully treated and then let out once the batch of water is treated. EcoTec SBR works in 4 batches in a day during normal operation and with lesser cycles when there is less sewage output. On the other hand continuous processes struggle when there are load and flow fluctuations.

## *How does SBR system take care of low occupancy and low load in sewage?*

Our intelligent sensing system in our advanced plants can detect the low flow conditions and adjust the treatment to the low inflow automatically. If there is a continuous low load conditions the program can be revised for low flow. Both work the same in saving energy and yet providing required treatment maintaining the MLSS necessary for the treatment process.

## *How does one know when to carry out maintenance or service of the plant?*

Each plant has its own service and maintenance plan programmed in the controller. When the time for service and maintenance is nearing, the plants send alarm for service and maintenance respectively. You have to call the professional for service of the plant based on the warning message.

## *What are the standards available for such treatment and technologies?*

When it comes to small plant, at present there are no design standards available in India that government stipulates. There are systems that use standard designs and are more reliable as they are regulatory and statutory means to be followed by designers and technology providers. Sequencing Batch Reactor is one of the standardised methods of treatment of sewage. Although there are some proprietary techniques adapted by various companies, the basic design and the principle of operation remains the same. EcoTec uses standardised SBR design and follow German Standards for sewage treatment plant design as this is one of the most reliable worldwide.

## *Why do STPs fail so often and many tanker Lorries are found removing and disposing sludge and sewage everywhere we see?*

Badly designed collection tanks are cause of failure of many sewage treatment tanks; most of the water comes in 3 hours of the day in the morning and 3 hours in the evening. Collection tank also has to be designed factoring in these details and the interval for removing the settled and floating sludge in collection tank. Most operators blame residents of using a lot of water, soap, detergent, disinfectants and oil. A properly designed tank should be able to handle the household waste that comes from a residence and community.

## *Is there a need to have a sludge press for the EcoTec SBR?*

No! EcoTec SBR design takes care for reducing the need for frequent sludge disposal in EcoTec SBR. The bio-sludge build up is reduced by providing a sludge recirculation process where sludge is accumulated at the bottom of the collection tank and can be removed once in year or even with longer storage. Our engineers can tune the plant to have more or less circulation based on local conditions.

## *If something goes wrong, how can one know it?*

It does not happen often, but when it happens there are alarms that give you the information on failure. Most of the failures are with machine and controllers, which can be solved in a matter of hours. There is no need for getting into the tanks for any repair any time.

# Clean Water for Clean Environment

EcoTec Engineers and Consultants

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**There is no WasteWater, only Wasted Water**