

MECHANISED REVOLUTION

Technology



With increased urbanisation, there is a growing need to improve sewage treatment facilities in a simpler and faster manner.

With the **increasing** pace of urbanisation and the struggle of the municipal infrastructure to keep up with the rapid increase in garbage as a result, it is expected that there will be about 25,000 MLD of sewage left untreated by 2018. Efficient management of sewage is one of the most significant urban sanitation challenges that our cities face currently. According to the Central Pollution Control Board, only 32 percent of total sewage is currently treated in tier-1 cities; the situation is even worse in tier-II cities with only 9 percent of sewage being treated. This not only poses a significant sanitation hazard to cities but also

poses a critical environmental hazard to the surroundings, water bodies and ground water. To improve the situation, sewage must be treated in various capacities through decentralised waste management. Sewage in different areas - residential or municipal, and industrial waste may call for different measures and technologies on the basis of their composition. Moreover, technologies to do so must become more easy to handle and reliable.

An effective way to manage sewage is to treat the sewage in a sewage treatment plant (STP). STPs work like a septic tank, but mechanical components provide a process to help break down solids to produce a cleaner, more environment-friendly effluent. Conventionally, the focus has been on having a centralised, large-capacity STP for cities. However, with growing cities and increasing costs, not to mention the hassles of pumping sewage to a centralised facility, this doesn't prove to be very effective. Thus, the focus has now shifted to decentralised, smaller capacity STPs that can effectively treat sewage and recycle the treated water for reuse locally. Like all technologies, there are a few unreliable and inefficient conventional solutions in the decentralised waste management market.

One-point package

However, there are also technologies that are fast making a mark in the industry. One of these is Grewa-RS, which is a next-gen product plug & play, fully automatic, packaged product for sewage and wastewater treatment. Greywater is a Mumbai-based specialised product technology company that has developed Grewa-RS. These plants are built on the globally validated SBR technology, which is based on five steps.

The five process steps are sequenced and containerised in a single reactor; it is optimised for best output quality; and incorporates features such as variable load handling and holiday mode. Grewa-RS is engineered to minimise life cycle cost and installation time. As it is fully automatic, it requires minimal manual intervention. It offers significant cost savings of up to 60 percent reduction in operations and maintenance bills.

Besides, the flow of sewage in residential, commercial, hotel or hospital establishments varies from season to season and also within a day. Conventional plants are not capable to handle variable loads thus leading to poor performance and eventual shutdown of plant.

charges and hassles to restart the plant. Grewa-RS is engineered to handle 20 percent to 110 percent of design capacity. Also, during extremely low load conditions, the plant automatically switches to holiday mode in which it maintains the status quo and prevents the plant from shutting down. Moreover, Grewa-RS is completely noiseless, odourless, environment friendly and aesthetically designed to fit in small area and basement.

A case study - Helping conserve India's only home for Lions!

Greywater conducted extensive research on all the factors that are likely to affect the installation, treatment philosophy and monitoring mechanisms at a resort set in one of the most amazing locations in India. It is a government-designated and protected 'Wildlife Reserve'. This forest is home to the largest Lion population of India, but has very less fresh ground water supply. Constructing pipelines through the forest would have involved extensive permission issues, while also destroying the flora and fauna. Besides, effluent discharge from the jungle resort would have resulted in environmental degradation and pollute the ground water resources.

The resort faced the additional challenge of fluctuating occupancy rates between 25 percent up to 100 percent, which necessitated a treatment plant that could handle varying loads, be compact, not require any site fabrication or construction, use no chemicals, operate as silently as possible, be operated and maintained remotely yet, ensure full recycle capabilities.

The solution

Post the research, Grewa-RS Model 1050 B was suggested for primary treatment of the wastewater and effluent. It was coupled with add-on modules Grewa-F (MGF-multi grade filter) and Grewa-C (ACF-activated carbon filter) to enable tertiary treatment for recycling the treated wastewater and effluent for non-potable use or applications.

Greywater's solution not only protected the forest's reserves but also helped the resort save up to 30,000 liters of fresh water every day. Currently, 65-70 percent of the resort's wastewater is being recycled and reused in flushing, gardening and horticulture making it a perfect example of how a choice of efficient wastewater treatment solution can help save the environment cost, time and efforts.