Green Building Recycles Black And Grey Water By Innovative Technology

Background

Biodiversity Conservation India Ltd. (BCIL) is the largest green residential builder in South India. It has built a reputation as an environmentally-conscious builder, and prides itself on building homes that consume less energy over the years of its occupancy. They were building a residential apartment project called ZED Collective, set over 1.5 acres and providing a Green experience to the residents.

Water reuse was a key element for the builder, fitting with their corporate ethos and vision. They wanted to offer a unique and innovative technology, which had not been used previously in this sector. Moreover, they wanted a solution that would be extremely energy-efficient and environmentally friendly.

Domestic Sewage is generated from the apartment's toilets, baths, showers, kitchens and storm water drains that is disposed of via sewers. The total sewage capacity is about 80 kilolitres per day.

Solution

As an innovative pioneer in the sewage recycling sector, Fontus Water designed, built and installed a sewage recycling plant to meet the ZED Collective's requirement. It suggested an innovative concept of segregating the black and grey water coming from the unit.

The black water coming from the toilets passes through a Primary Treatment including a bar screen to protect the plant from larger-sized objects. This is followed by a Submerged Aerator Fixed Film (SAFF) Reactor that uses totally submerged fixed media to support biomass growing as a thin biofilm on their surfaces. The air in form of fine bubbles coming from the bottom of tank comes in contact with Water & SAFF media. The tank is provided with fine bubble non-clog diffusers for the biological oxidation of sewage. This system is capable of handling shock loads with high efficiency and is easier to operate. The overflow of SAFF tank is taken in to the Tube Settler. The Tertiary Treatment includes Multi-grade Filter and Activated Carbon Filter. The treated water tank provides recycled water for gardening, which has a BOD less than 20 mg/litre. The size of the black water treatment plant is 25 kilo litres per day.

The 55 kilo litres per day grey water treatment for the water coming from the kitchen and the showers, follows a parallel treatment scheme. But the water from the activated carbon filter is passed through a 1250 litres per hour ultrafiltration system, which has membranes with a pore size of 0.01 micron. This system removes BOD levels to less than 2 ppm, making the water extra-pure for any non-potable reuse requirement like toilet flushing. The UF membranes also remove all microbiological contamination, and this is the first project in India in the building sector using this technology.

Results

By using the black and grey water recycling plants supplied by Fontus Water, the ZED Collective project from BCIL is able to live up to its reputation of a green and environmentally-pioneering building group. The project reduces its fresh water consumption, and is likely to be a pioneer for numerous such projects in this sector.

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