

The treatment plant designed and installed at the sewerage pumping station-3 inside the IIT Kharagpur campus comprises of two stage biological treatment followed by an optional chemical dosing assisted state-of-the art clarifier unit, dual media filter and three stage disinfection units followed by an pressurized activated carbon filter. The final treated effluent is being either reused for an in-house aquaculture pond or can be diverted towards the in-campus agricultural fields to be safe for unrestricted irrigation. The process flow diagram is designed to aid the technical personnel to bypass any particular unit at each operational stage and also to test combination of the different installed disinfection/ advanced oxidation processes. The block diagram given below renders an idea of the treatment stream starting with the first unit as an anoxic moving bed biofilm reactor (MBBR) unit that receives the effluent of an in-house upflow anaerobic sludge blanket (UASB) reactor. An aerobic MBBR unit follows the course to facilitate organic matter removal and sufficient nitrification. A recirculation of the treated effluent from the aerobic MBBR tank to the anoxic chamber ensures denitrification of the nitrified effluent. The lamella clarifier downstream is provided for removing suspended solids followed by a treated water cum chlorine/HOCl dosing tank to render first stage disinfection of the treated effluent. This is succeeded by a pressurized dual media filter for further removal of suspended solids from which the clarified and treated effluent is sent to the two stage UV and ozonation disinfection unit followed by an activated carbon filter to removal any residual pollutants.

The collaboration between IIT KGP and WIN Foundation goes far beyond the scope of this project, with a vision to become knowledge-based service providers to different government and corporate bodies for delivering sustainable solution for wastewater treatment, for different communities in urban and rural areas as well as industries, across India. The industry and management experience of the WIN team leader Mr. Paresh Vora and the in-depth field knowledge gained through vast industrial consultancy experience of the IIT KGP team leader Prof. Makarand Ghangrekar, Prof. & Head, School of Environmental Sciences, IIT Kharagpur, is an added benefit for the team players. Apart from that, Prof. Brajesh Dubey, the Co-Principle investigator of IIT KGP team, brings in-depth knowledge and experience of life cycle assessment of different designed systems and product that is beneficial for the assessing the sustainability of the designed plants. An experienced team of Research Scholars at IIT Kharagpur, Indrajit Chakraborty, Sreeniwas Sathe and Roshan Appa, are implementing this project. WIN Foundation and IIT KGP are also indebted to Mr. Ron Gupta, Chair, IIT Kharagpur Foundation, USA, whose benevolent funding and guidance are an integral factor for the success of this project and future collaborations. Prof. V.K. Tewari, is personally monitoring progress of the project, with keen interest in successful implementation, and with regular visits to plant as required

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