GCS HOSPITAL, AHMEDABAD
SEWAGE TREATMENT PLANT CASE STUDY

Technology 'TORAY' kuraray Partner

CAPACITY:
BUILD-UP: 1000 m^3/day
INSTALLED: 500 m^3/day

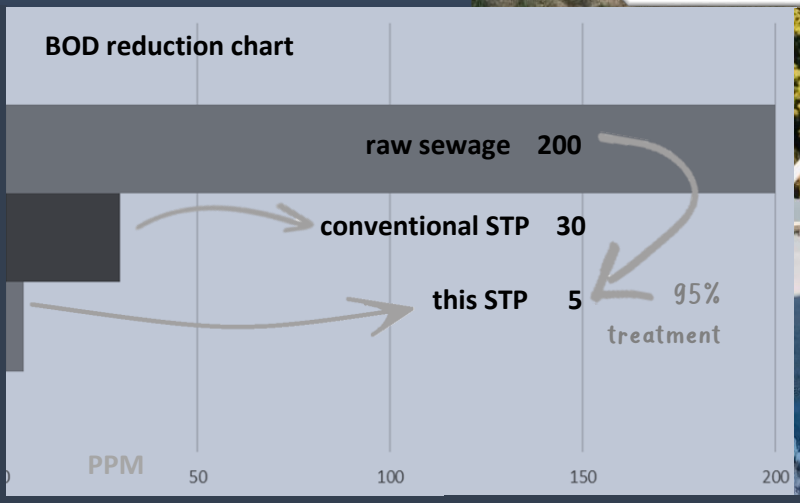
COMMISSIONING YEAR:
OCT – 2021

TECHNOLOGY:
PVA GEL + MBR

FOOT PRINT:
15.0 m X 12.0 m

POWER:
~400 Units
~ ₹ 2800 per day

PROJECT NATURE:
TURN-KEY



GOAL:

To treat 500 m^3 of sewage per day not only to meet GPCB standards & gardening purpose but also to be of excellent quality fit for reuse in toilet flushing.

CHALLENGES:

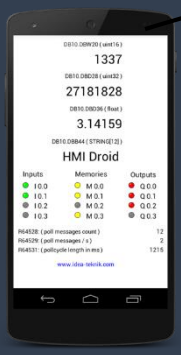
1. Laundry, Canteen, hospital waste & sewage containing high pathogens/bacteria from patients leads to sewage composition which is tougher to treat compared to municipal sewage
2. 800-meter-long underground piping was laid to bring raw sewage to treatment location and distribute treated water to various location for re-use.
3. Odor-free & noise-free design was required as plant is inside the campus and just 50.0 m away student's hostel.
4. Easy-to-operate & simple-to-maintain plant was required as hospital service staff may find difficult to operate an industrial grade treatment plant.
5. Robust and fool-proof design having a balance of Automation, simplicity and functionality while delivering the experience of a complex industrial grade plant in terms of both built quality and performance.

100 m^3/d treated water keeps the huge landscape gardens green & rest to toilet flushing(planned).

↔ 15” HMI with user-friendly graphics.

↔ Hard-buttons for manual operation.

↔ Remote operation & monitoring by **smart phone** via internet.



↔ Data storage & graphical representation.

↔ “Hibernate Mode” for power saving when there is no sewage to treat.

↔ Easy-to-edit basic automation parameters by HMI input, no laptop, software & experts required.

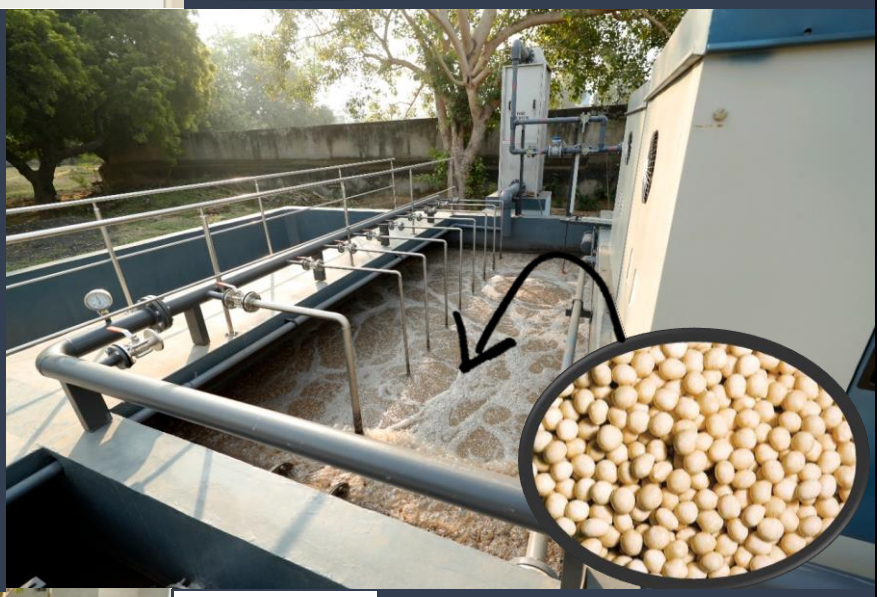
↔ Automation adjustment of whole plant by single input of “Required Flow” in HMI.

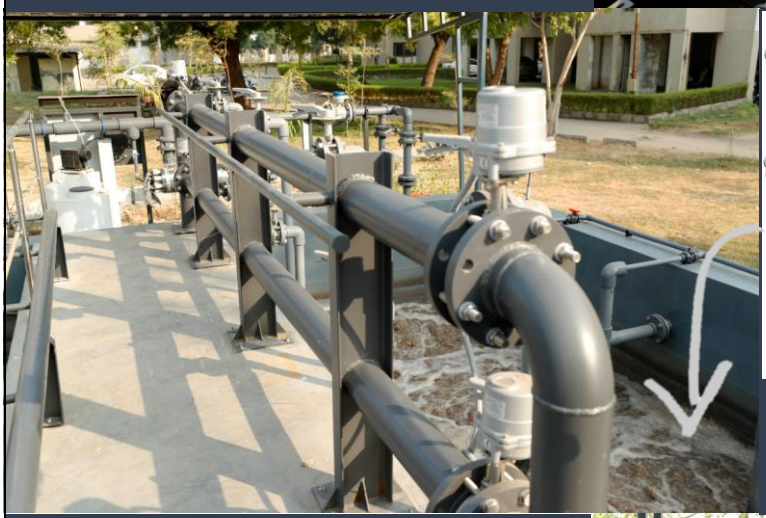
PVA GEL TECHNOLOGY

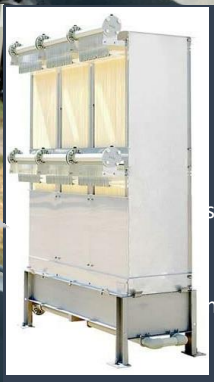
Aeration tank capacity: 5.5m X 2.5m X 3.0m = 42 m^3
Retention time: 2.0 hours

Advantages:
1. Reduced area of aeration tank to 1/2nd compared to other MBR technology and 1/4th compared ASP.
2. 50% lesser sludge generation.
3. Excellent biomass preservation in case of shutdown and no-sewage-load.

↔Screening: 1.5mm – SS316 Static screen
↔Diffusers: Retrievable type, Silicon membrane & SS304 piping with individual isolation valve.
↔Instruments:
Level switch: For tank overflow alarm
Oxygen meter: Interlock with Blowers for power saving.
Flow transmitter: For Flow control and Auto-operation.







MBR TECHNOLOGY

↔ 0.08-micron filtration PVDF membranes.
↔ TSS < 3 PPM, Turbidity < 1 NTU
↔ Removes bacteria, pathogens & cryptospors
↔ No water backwash, back wash pump,
s & chemical dosing pump required.
↔ Auto diffusers cleaning.
↔ CIP of membrane is required every 6
no need of weekly chemical cleaning.
↔ Whole system is interlocked with inlet flow transmitters to adjust parameter as per feed.

↔ Instruments
Flow Transmitter: For Auto flux adjustment.
Level Transmitter: For recirculation and permeate pump auto operation. Pressure transmitter: for transmembrane pressure.

RESULTS

↔ Ultra-filtered from MBR further passes through UV sterilizer and provision of chlorine dosing is also there making the treated water safe and fit for intended use.

↔ Innovative technologies, Ergonomic design, smart automation, simple operation, high quality components and energy efficient machines made the sewage treatment plant a perfect fit for the requirement of GCS hospital management and address all of the unique challenges faced by this medical college & hospital.