



ADB E-MARKETPLACE

for a Water-Secure and Resilient Asia and the Pacific

Spotlighting **innovative solutions**, **latest technologies**, and **best practices**.

Carbon-Negative, Water-Positive Innovative Wastewater Management Technologies

26 August 2025, 1:00 – 2:00 p.m. (Manila, GMT+8)

Introduction



Jitendra Kumar Singh (Moderator)

Water Supply and Sanitation Specialist
ADB

Welcome Remarks



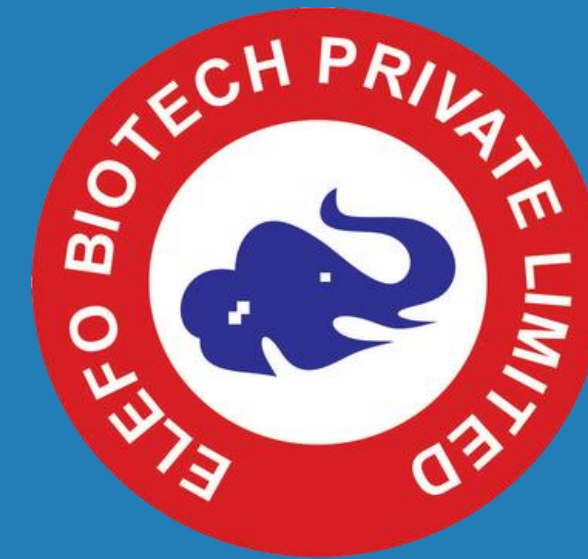
Laxmi Sharma

Unit Head, Project Administration, Water and Urban
Development Sector Office, Sectors Group
ADB

Pitch Presentations

Two (2) innovative solutions featured at the AWUF 2025 Innovation Fair

ALGAE SYS



Use the Q&A function (not the chat box!) to enter your questions

ALGAESYS



Soner Bekir

Managing Director, Algaesys



ALGAESYS

**S U S T A I N A B L E , O F F - G R I D , E A S Y T O
M A N A G E W A S T E W A T E R T R E A T M E N T &
R E S O U R C E R E C O V E R Y S Y S T E M**



About ALGAESYS

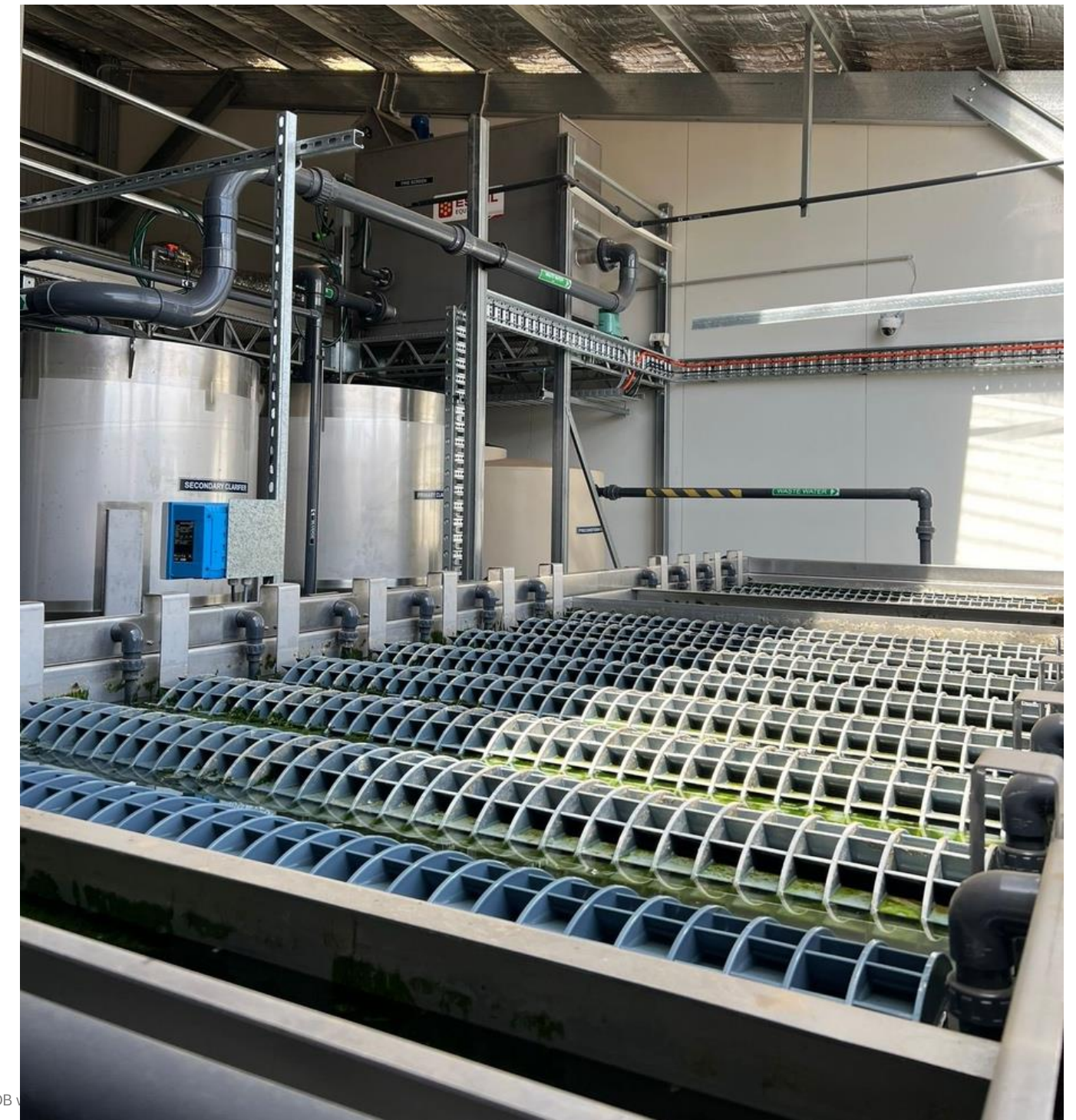
Just add Sunshine

Sustainable wastewater treatment made simple.

Looking for a reliable, low-maintenance system that's easy to manage and thrives in even the most remote, off-grid locations? **Meet ALGAESYS.**

No island too remote

Powered by the sun, ALGAESYS plants deliver advanced wastewater treatment with minimal energy, a smaller footprint, and no compromise on sustainability.



Who we are

We believe wastewater is a resource. Traditional systems are difficult to manage and work economically at a small scale.

ALGAESYS delivers solutions that are:

Practical

Simple, efficient and effective

Accessible

Easy to manage by any trained staff

Sustainable

Carbon-negative, chemical-free, minimal power usage

Resource-Recovery

Recycles water at source, creates useful biomass



Bioremediation

Nature treating itself

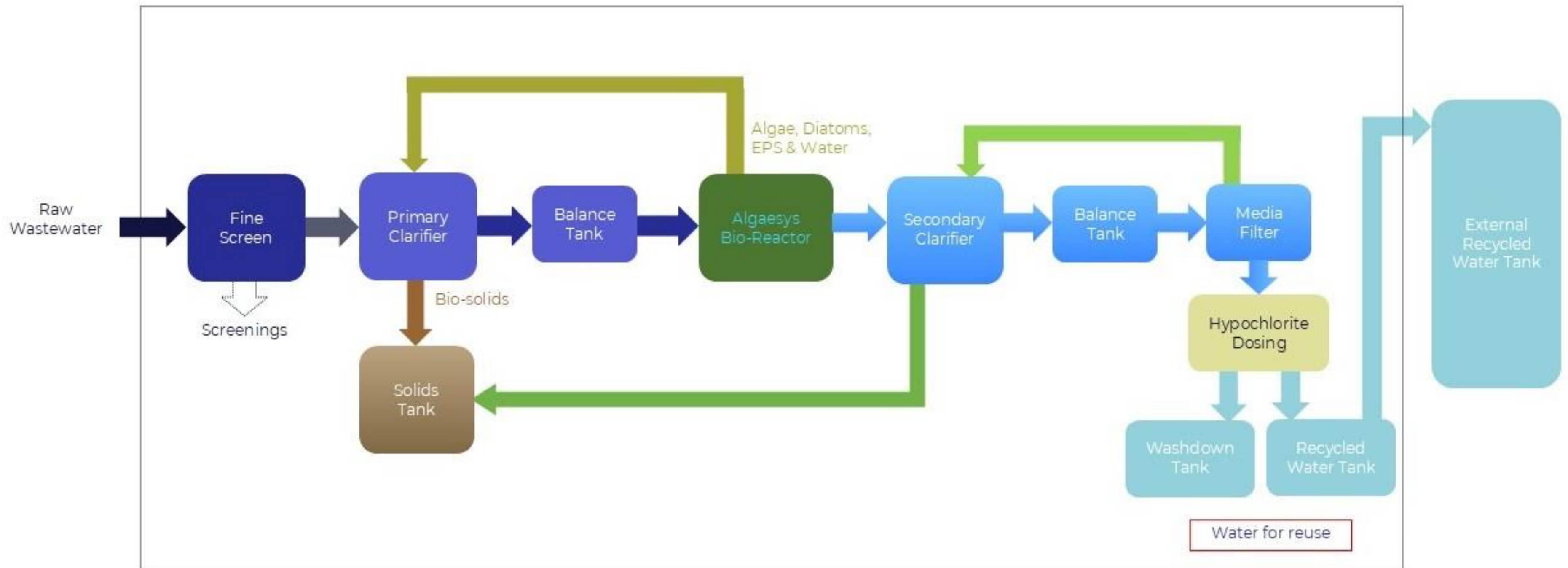
Our plants use algae, bacteria and other phototrophs to treat diverse wastewater types, but they excel in treating municipal waste.



Resilient organisms that thrive in all environments, only requiring sunlight and warmth.

Capable of removing heavy metals, organics, and hard-to-treat compounds to meet reuse standards.

How ALGAESYS Works





Why ALGAESYS Works Better



Fast Treatment

Matches traditional WWTP throughput with a hydraulic retention time of just 4–8 hours (vs. 1–3 days for most bio-remediation systems)



Compact Footprint

Entire plant capable of servicing up to 75 houses fits within a 50m² footprint



Low Maintenance

Operable by on-site staff. No specialist engineers required.
Backed remotely by Algaesys engineers with continuous monitoring.



Rapid Deployment

Fully operational in 16 weeks from project start

The Benefits of ALGAESYS

Summit Lake Park Longest-Running Project

- Application: Seasonal campground serving park rangers and up to 350 RVs
- Built in just 12 weeks, with 3 weeks allocated for concrete curing
- Exceeds U.S. EPA effluent standards
- Operated by park staff, requiring just 2 x 3 hours of weekly maintenance
- Housed in a greenhouse structure to ensure optimal light and temperature control in a climate ranging from -10°C to 30°C

2014

*Operating >10yrs
with no incident*

273 m³

*Daily treatment
volume*



Gingin, Western Australia

First system in Australia/Southern Hemisphere

- Purpose: Onsite wastewater treatment for Eco Lifestyle Villages residential estate
- Unique first: Locally validated & verified system under regional commissioning complexities
- Water recycling for irrigation of local landscape
- Reliable, scalable, sustainable system delivered for community purpose

110

*Number of homes in
development*

<50kL

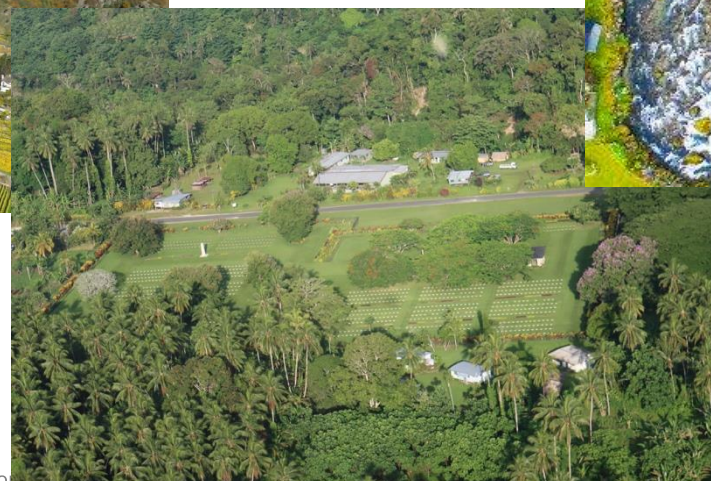
*Daily treatment
volume*



Assuming we can achieve the Magic ratio 100/10/1 – C/N/P

Municipal waste typically does this well

- Remote tourism sites (especially island-based, where dispersion of nutrient-rich water can impact local biological systems)
- Hotels, where a single system can reduce the power and water requirements for the property
- Residential developments, where no sewerage infrastructure currently exists
- Breweries, Distillers & Vinyards
- Milking Parlors & Feedlots
- Aquaculture
- Food Processing
- Airports, Universities, Stadiums



Costs of project



CapEx

- AUD \$350k – \$450k.
(system for up to 75 homes)
- Cost varies according to
local labor & materials costs



OpEx

- ~AUD \$750 / month
- Covers remote monitoring, cloud
platform, and test kits



Costs

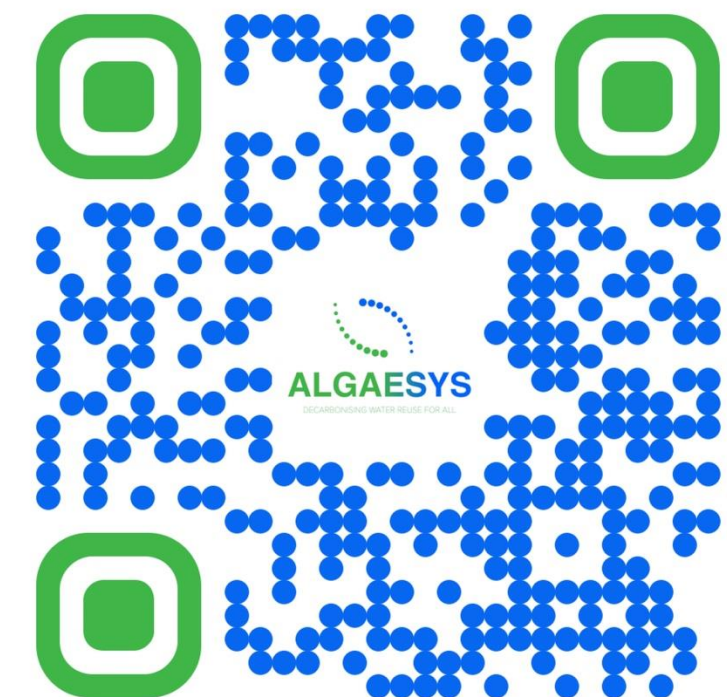
THANK YOU

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[Intake Form](#)



ELEFO BIOTECH



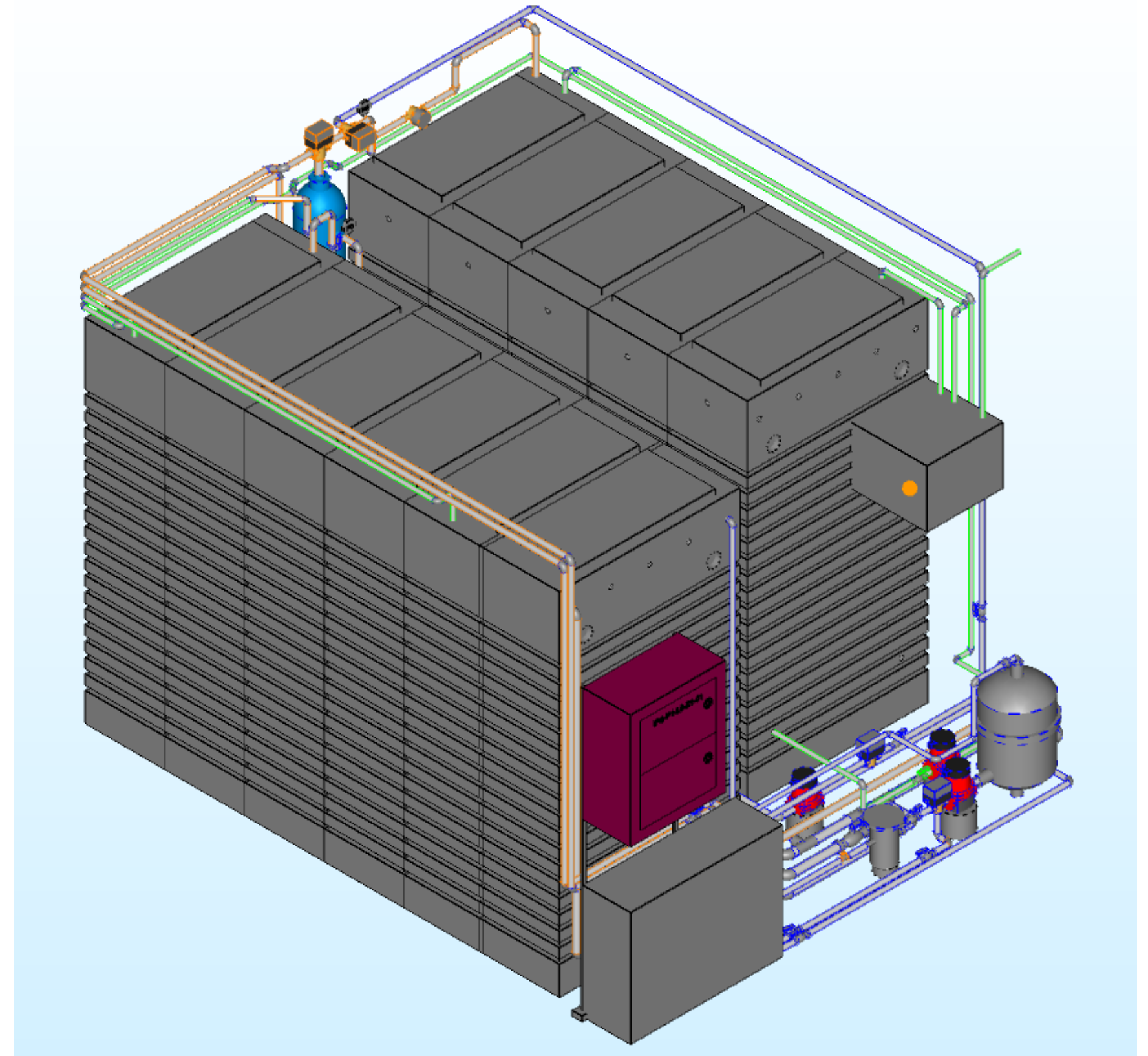
Rohit Kumar
Director, Elefo Biotech

Elefo CRT: Onsite Wastewater treatment system with recycling

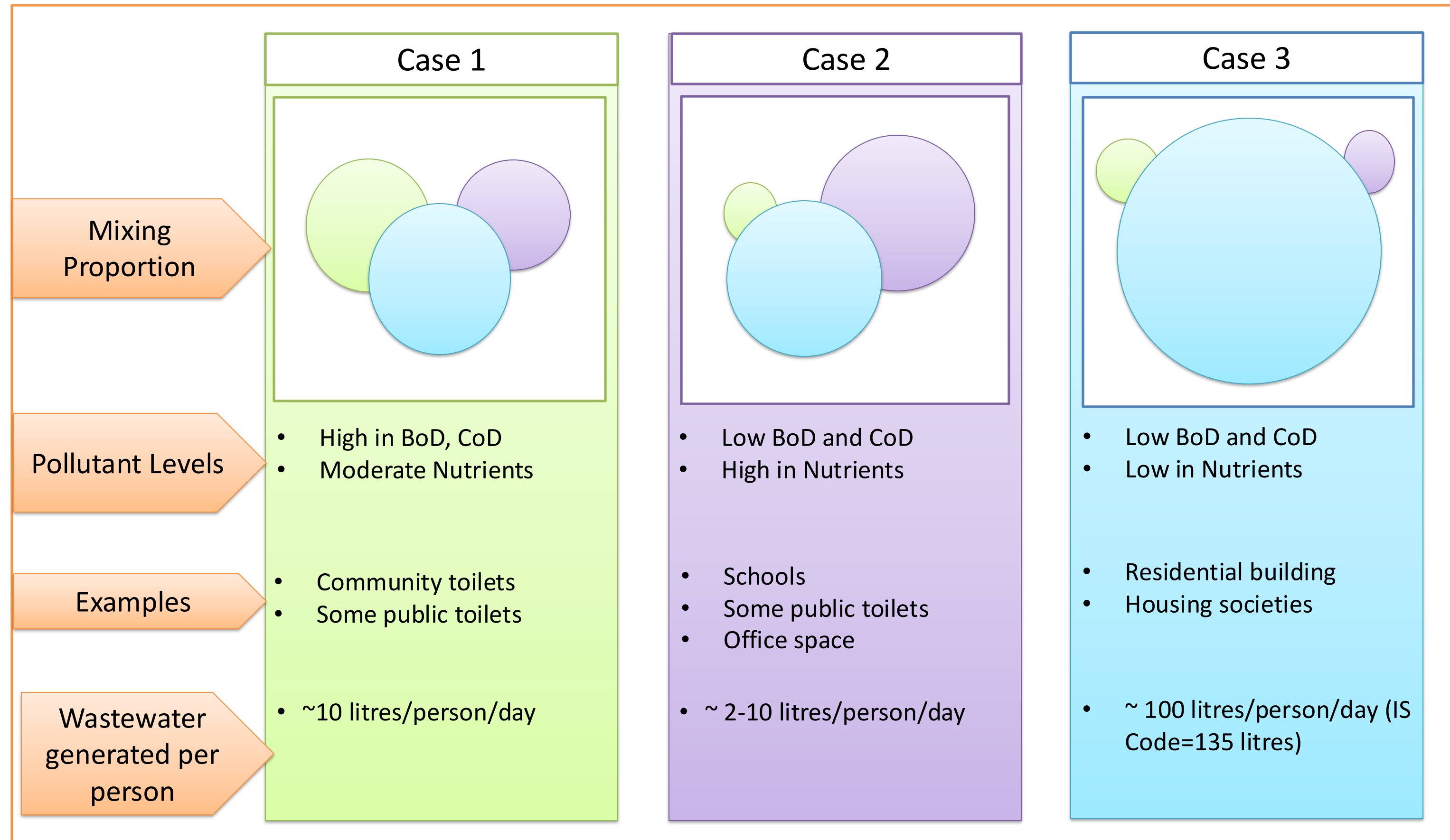
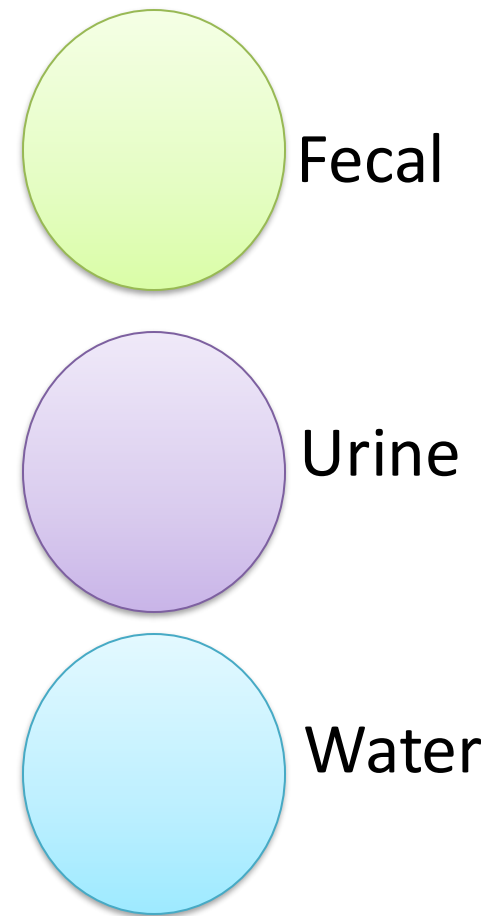


Agenda

- How we see sewage: An Elefo view
- Elefo CRT
 - CRT set up
 - Tech behind the CRT
 - Key features
 - Case studies
 - Available versions and Cost
- Introduction of Elefo
- CRT development journey
- Sourcing of Elefo CRT



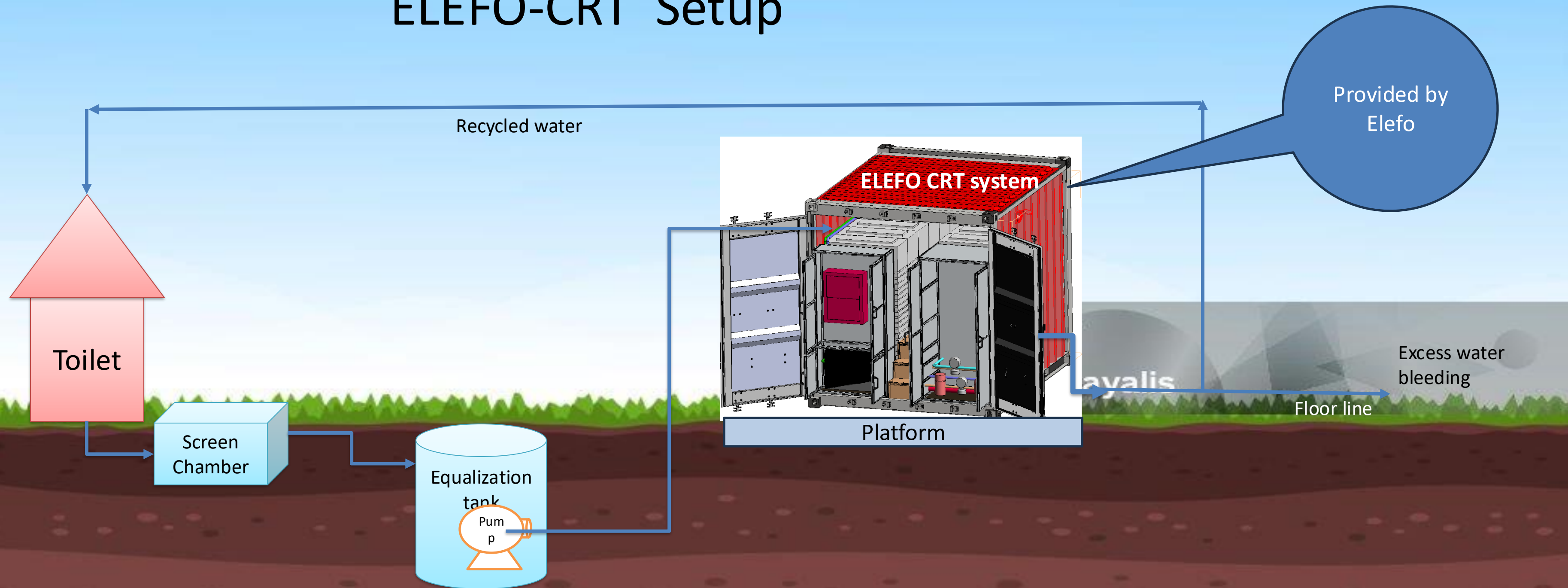
Elefo Classification of sewage water: The three cases



Elefo CRT has undergone extensive long term tests for Case 1 and Case 2 sewages

Elefo CRT

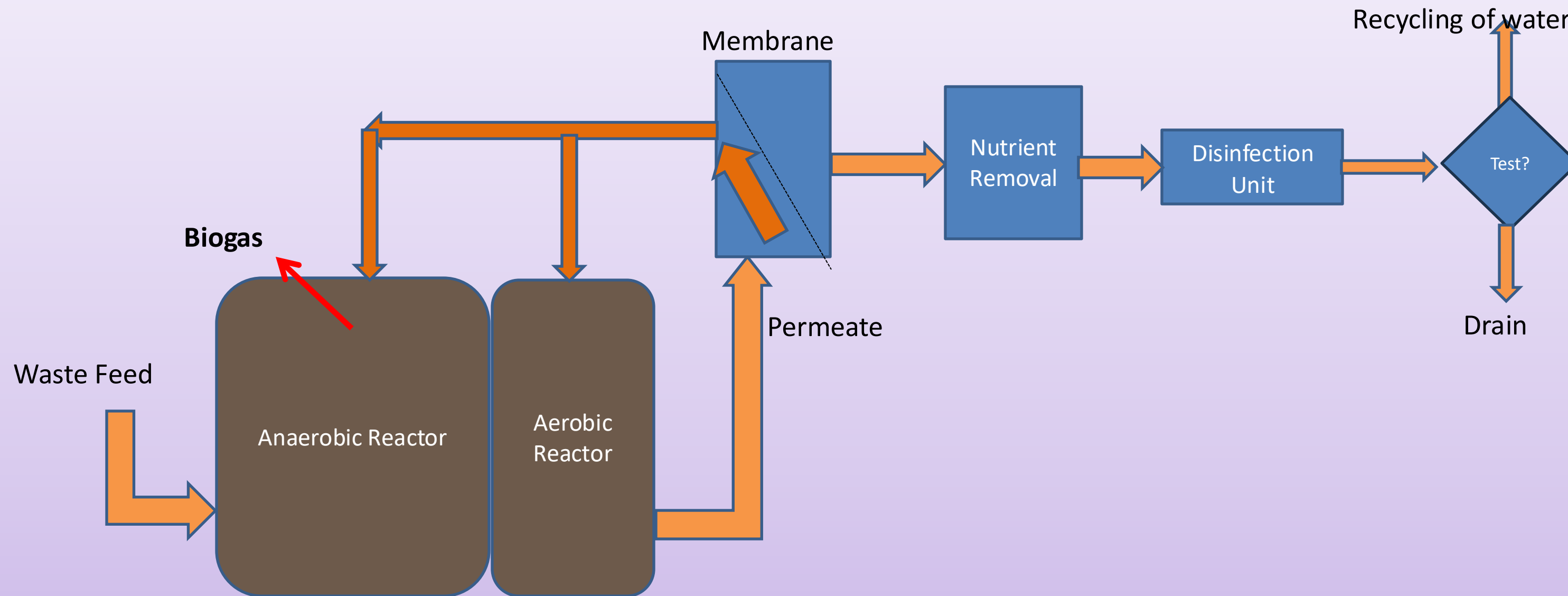
ELEFO-CRT Setup



ELEFO-CRT is a plug and play system, it will however require the following things

1. A screen chamber with a screen
2. An Equalization tank from where sewage water will be pumped into the CRT system
3. Platform to put Elefo CRT system
4. Treated water storage (optional)

Tech Behind the CRT



Features:

- Can handle both grey and black water
- Can handle water with COD upto 50,000 mg/L
- **Membrane removes bacteria and viruses regardless of temperature and bioactivity**

Key features

High Performance

- High-quality pathogen-free
- Easy monitoring
- Water saving through recycling of water

Compact & Easy

- Small footprint
- Easy to transport and Install
- Rapid startup and autonomous operations



Operations, Maintenance, Monitoring (OMM)

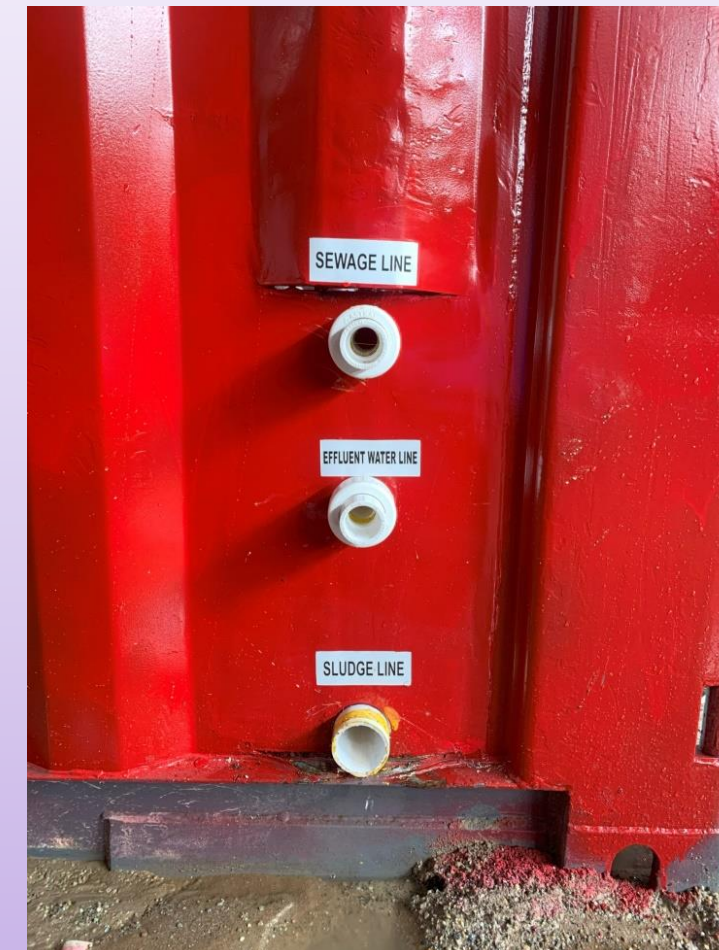
- Fully automatic system
- Monthly Maintenance
- IoT based remote monitoring of effluent quality, quantity and recycled water is inbuilt
- Low energy consumption (around 1 unit per 1KL)
- Flexible power (grid and off grid)
- Adaptable to different settings and front end inputs
- Can be installed on the top of the toilet complex

Case Studies- Government Primary Schools in Ahmedabad, India



Ahmedabad:

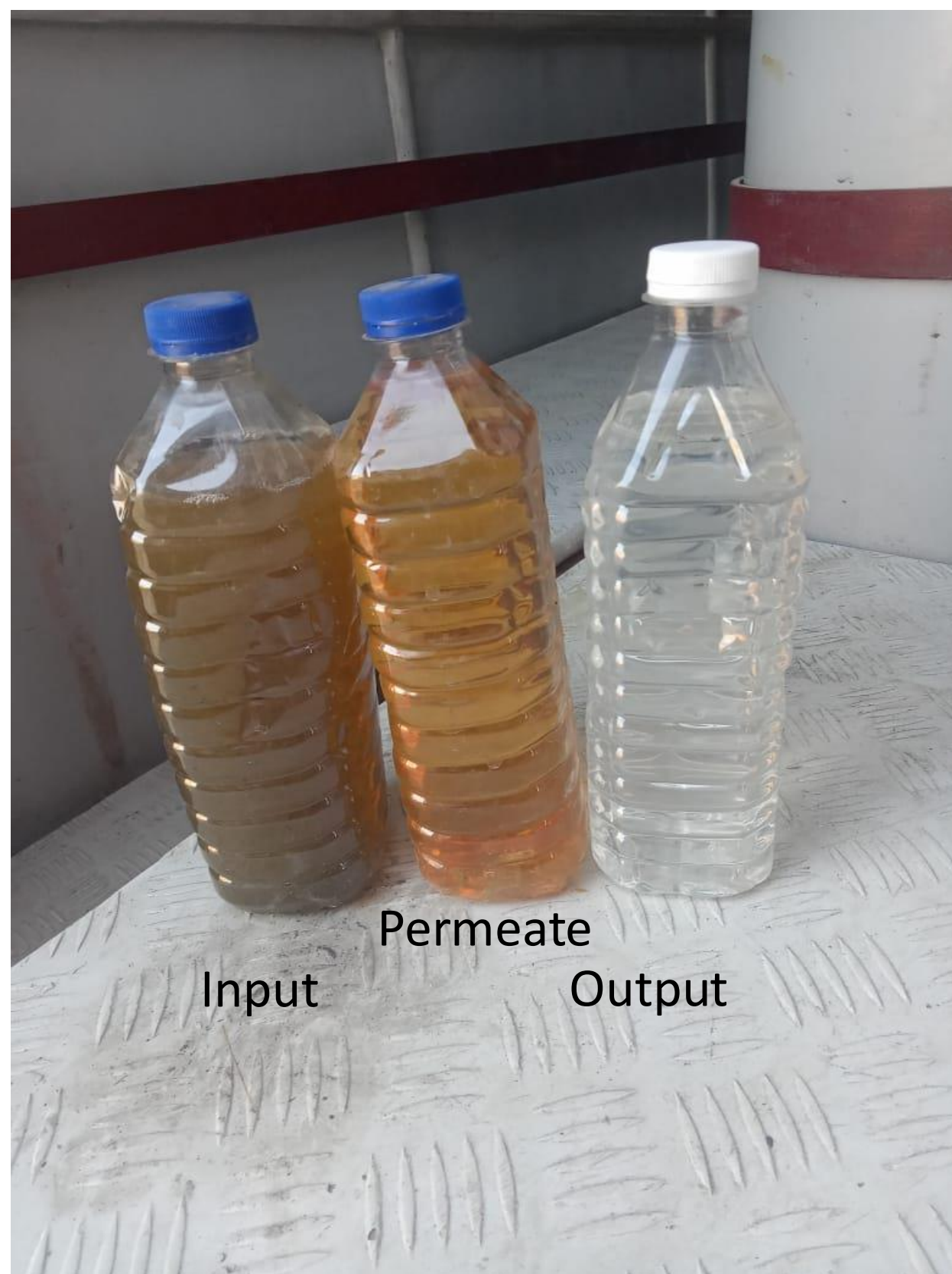
Mota Chapra Primary School:
600 students and staff



Ahmedabad:

Devdholara Primary School:
550 students and staff

Khichripur, New Delhi: Case Study



Sr. No.	Parameters	Units	Typical Input wastewater result	Output water quality
1	BOD for 05 days at 20°C	mg/l	2,347	5.8
2	Chemical Oxygen demand	mg/l	6,864	21
3	Color	Hazen Units	2000	10
4	pH		7.06	7.98
5	Total Suspended Solids	mg/l	5,830	7.1
6	Turbidity	NTU	2400	5.0
7	Residual free Chlorine	mg/l	Nil	Nil
8	Total Nitrogen as N	mg/l	347	7.3
9	Total Phosphorous as P	mg/l	2.29	0.14
10	Helminths	Counts/l	72	Negative
11	E. Coli	CFU/ 100ml	9100	19

Input and output water test report from Khichripur, Delhi Site May 2022

Various Size Options for Elefo CRT and ex factory cost

Sr. No.	Container sizes	Volume (number of people waste)*	Ex factory cost (in USD**)
1	Container Size: 10 x 8 x 8 feet Sand Filter= 3 x 3 x 2 feet	3,000 liters 300 people waste per day (1. Fecal usage*: upto 300 usages ; 2. Urinal**: upto 1200 usages)	USD 25,000 Transportation, installation, Commissioning, taxes and O&M Extra
2	Container Size: 20 feet x 8 feet x 8 feet Sand Filter= 1.25m x 1.25m x 0.5 m	7,000 liters 700 people waste per day (1. Fecal usage = upto 700 usages ; 2. Urinal = upto 2800 usages)	USD 35,000 Transportation, installation, Commissioning, taxes and O&M Extra
3	Container Size: 40 feet x 8 feet x 8 feet Sand Filter= 1.5m x 1.5m x 0.5 m	15,000 liters 1500 people waste per day (1. Fecal usage = upto 1500 usages ; 2. Urinal = upto 6000 usages)	USD 46,000 Transportation, installation, Commissioning, taxes and O&M Extra



*Fecal usage: includes anal and hand washing, menstrual Blood, Bile, Toilet paper, flushing (6 liters)
**Urinal Usage: 1 litres per usage including flushing water, cleaning water
*** Treatment volume will be 5 times more in case of grey water
**** one USD = 87 INR
Above sizing is as per ISO 30500 guidelines

Elefo and Elefo CRT Journey

About Elefo

- Elefo Biotech was established in 2014
- **Elefo Cleantech was established in the year 2022 to carryout R&D activities and retain patents for all the group companies**
- Largest manufacturer and supplier of Anaerobic Microbial Inoculum (AMI) in the country with plants in Haridwar, India & Chennai, India
- Operates few very large toilet complexes in Delhi, India and FSTPs in Mirzapur (UP), India based on DEWATS technology
- Extensively involved in research and development projects in collaboration with DRDO and IIT Roorkee
- Worked in India and Nepal

12 million liters of AMI sold (for 70,000 railway coaches)

Executed over 75 projects in 22 states

Employ around 30 people

Over 3 Million liters of Bio-digesters installed

R&D focused Organization

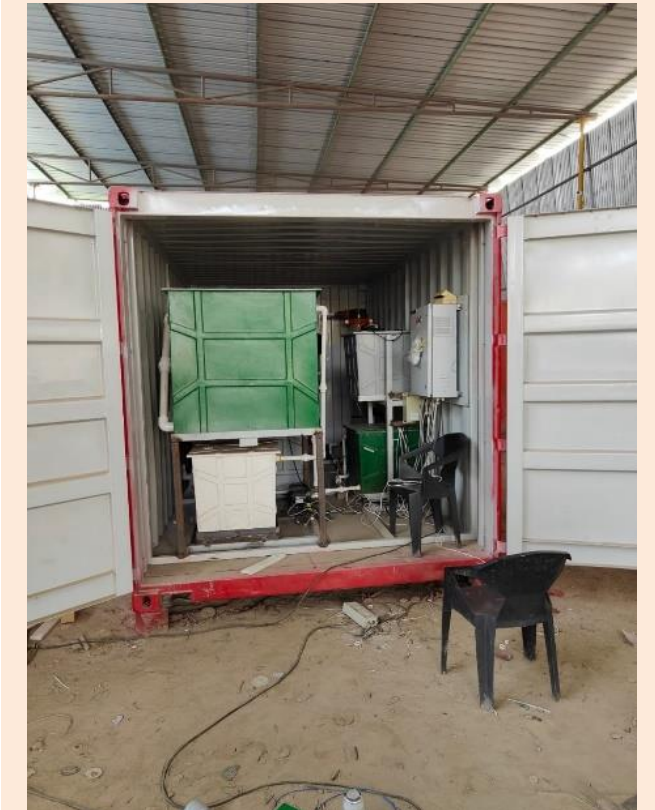


High Altitude Toilets (11,000 feet)

Biodigesters & AMI



Elefo CRT



AMI

Elefo CRT Development Journey

Genesis of Elefo

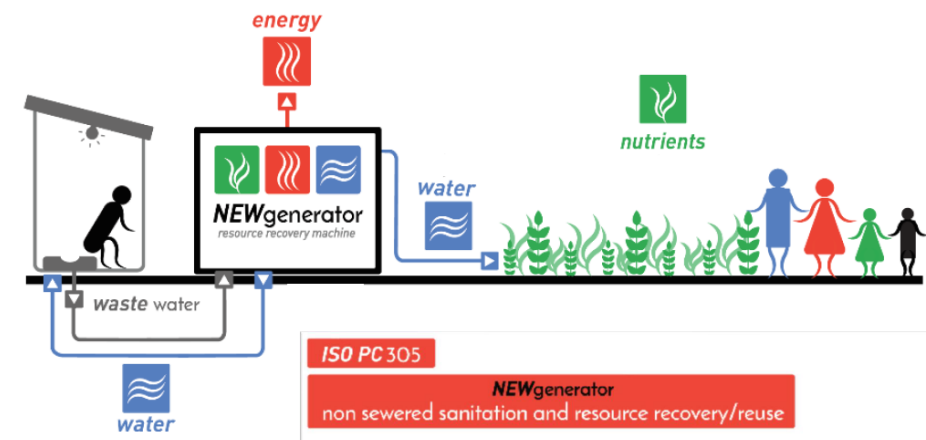
Elefo Biotech Incorporated

Sept 2014

Elefo licensed Biodigester* technology from DRDO

Feb 2015

Commercial Partnership



Gates Foundation and offered Commercial partnership for technologies

Sept 2019

Elefo took licenses from of US based universities

June 2020

CRT Development Timeline



First CRT demo

May 2021

R&D work shifted to Elefo Cleantech

Innovation, Engineering improvement, maximizing space utilization.

First process patent applied.

ELEFO CRT V1.0

Dec 2023
Patent- May 2024

Full Automation

Improved nutrient recovery and aesthetics

IoT introduced

Elefo CRT V2.0

2025

* DRDO Biodigesters are a special type of anaerobic reactor for primary treatment of wastewater

- Elefo CRT patents are under Elefo Cleantech name and all the research and development is undertaken by this entity.

Sourcing of Elefo CRT

- Steps before ordering
 - Volume of water to be treated
 - Quality of wastewater
- Sizing selection
 - 3 KL
 - 7 KL
 - 15 KL
- Preparation before installation
 - Completing the civil works including Screen Chamber, Equalization tank and platform for the CRT unit
- Installation: Elefo team will do the installation and commissioning
- Operations and Monitoring
 - IoT based O&M
 - Physical periodic maintenance is required once in a month (can be done by local person after training)

Rohit Kumar

Director,

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Questions?

Next Month

Data-Driven Resilience & Operational Intelligence in Water Systems



Fathom Global



HR Wallingford



Detectronic

in partnership with



**Department for
Business & Trade**



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Spotlighting **innovative solutions**, **latest technologies**, and **best practices**.

Thank you for joining us today!