WASTE WATER RECYCLE MANAGEMENT

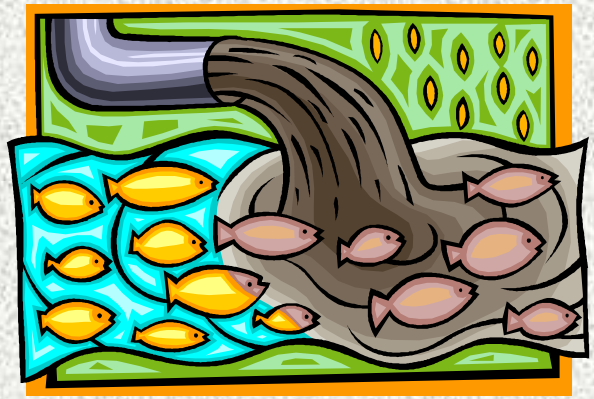
ION EXCHANGE INDIA LTD

Blue Issues

Scarcity & rising costs

Drought

Pollution



Tremendous pressure on available finite water resources due to

Rapid industrialisation,
Expanding population,
Increasing pollution and
Excessive use and misuse of water

- Water – A limiting factor for Industrial development

- Source Substitution – An alternative to meet growing demand

SOURCES OF WATER

Conventional Sources

A) Surface Sources

- Rivers
- Ponds
- Lakes
- Glaciers etc

B) **Underground Sources**

- Wells (Bore-wells, Open wells)
- Springs etc

Emerging Sources

- Sea Water
- **Treated Sewage**
- **Treated Industrial Effluent**

→ SCARCER

WASTE WATER RECYCLE & REUSE

A SUSTAINALBLE SOLUTION

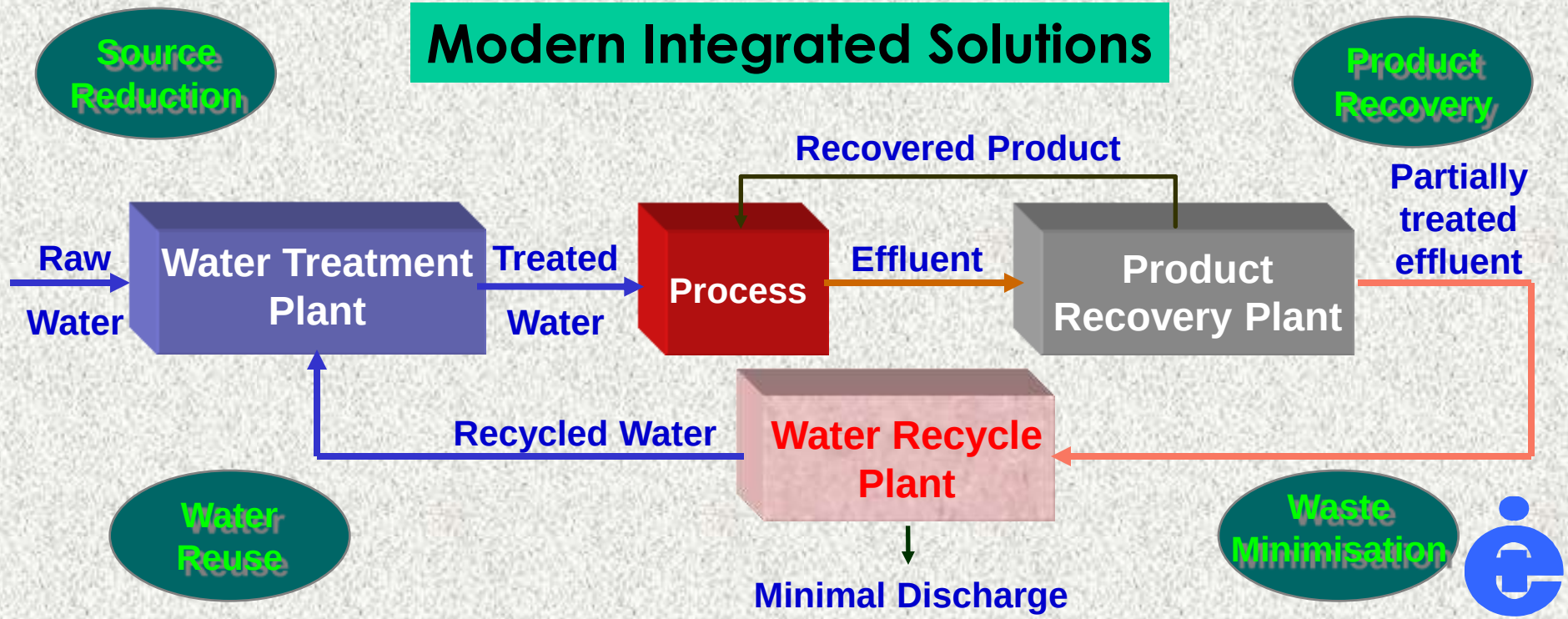
Recycling ? why ?

- **Raw water scarce**
- **Raw water cost high**
- **Strict discharge regulations**
  - both in terms of quantity and quality
- **Zero discharge - ISO14001**

Recycle for Industry

Conventional treatment

Modern Integrated Solutions



Technology Options for Recycle of Industrial Waste Water

Reverse Osmosis/Ultra Filtration

Membrane technology - most advanced purification process worldwide.

Reverse Osmosis Removes:

- All dissolved solids, harmful minerals, metals & pesticides

Ultrafiltration Removes :

- All undissolved contaminants like suspended solids & colloidal particles
- Bacteria & viruses
- High molecular weight organic compounds

Membrane treatment?

- ✓ **Quick payback**
- ✓ **Simple to operate**
- ✓ **Rugged & Modular construction**

- ✓ **Immediate results**
- ✓ **Consistent, high-quality effluent**
- ✓ **Positive barrier**

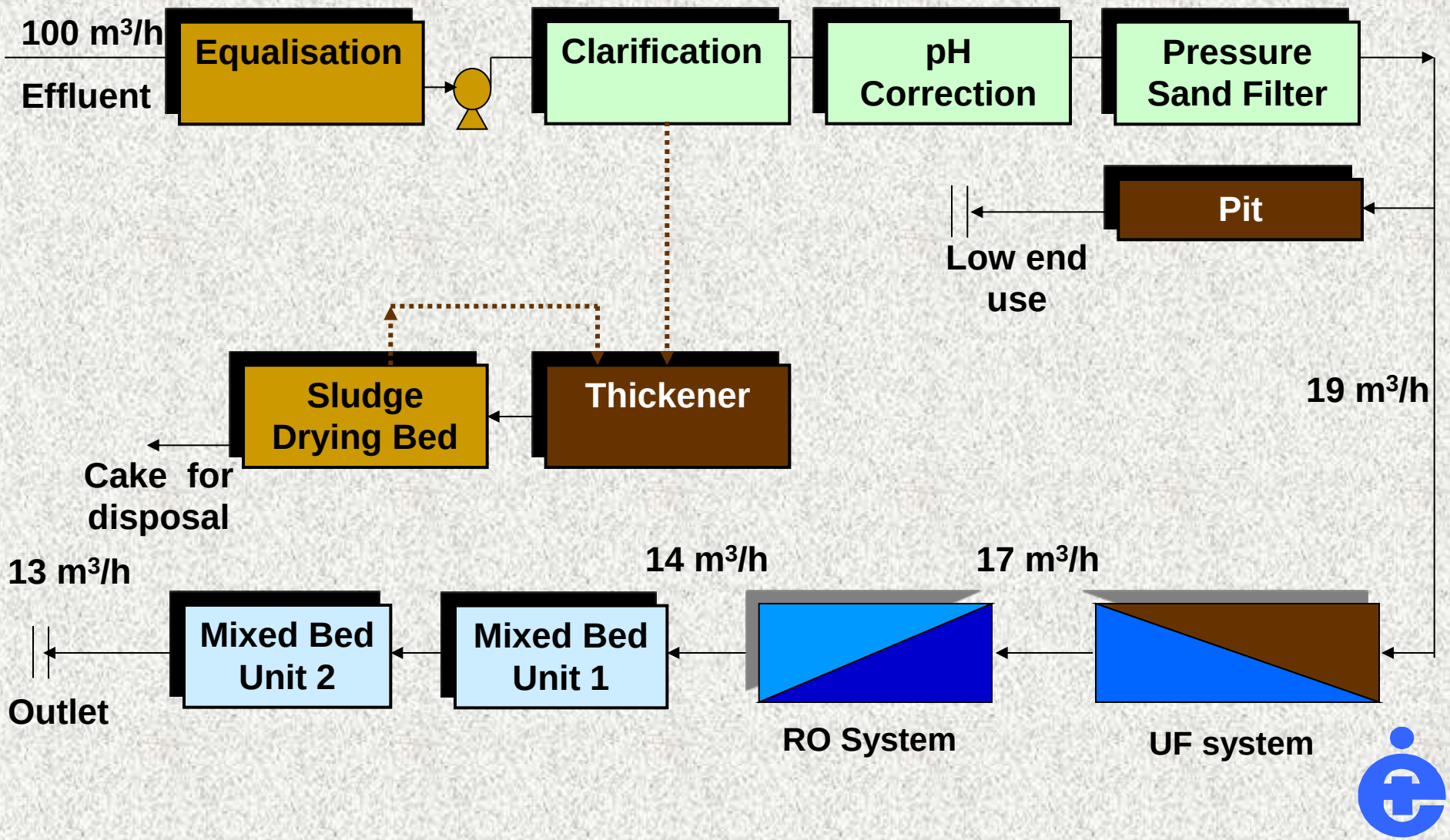
VARIOUS RECYCLE SCHEMES

Wastewater treatment scheme selection

- **Disposal (Under Pollution Control Board norms)**
- **Water Scarcity (Need for Recycle)**
- **Zero Discharge Norms (Government Regulations)**
- **Common Effluent Treatment Plants**
- **Process products recovery**

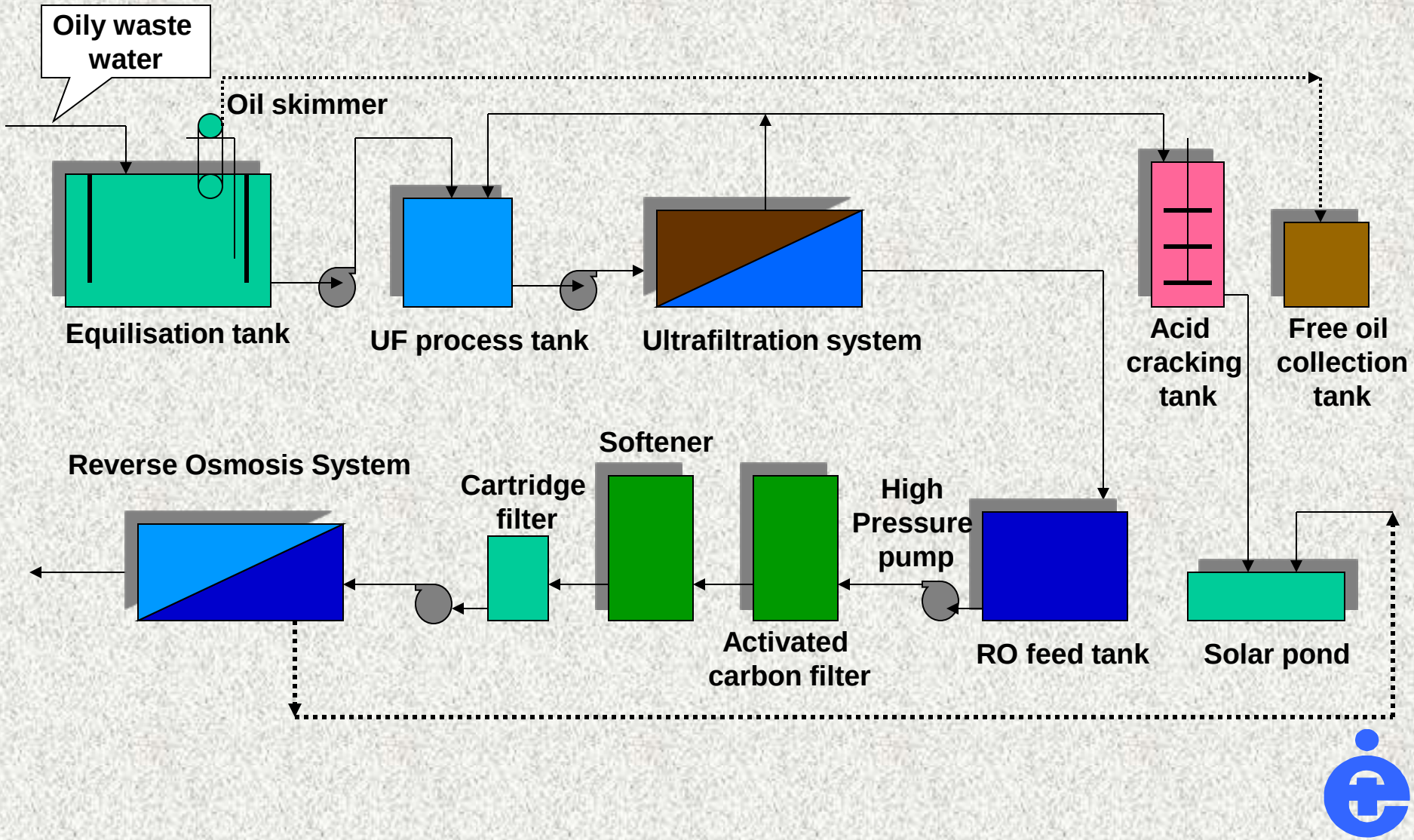
ELECTRONIC INDUSTRY

- To Produce high purity water from effluent



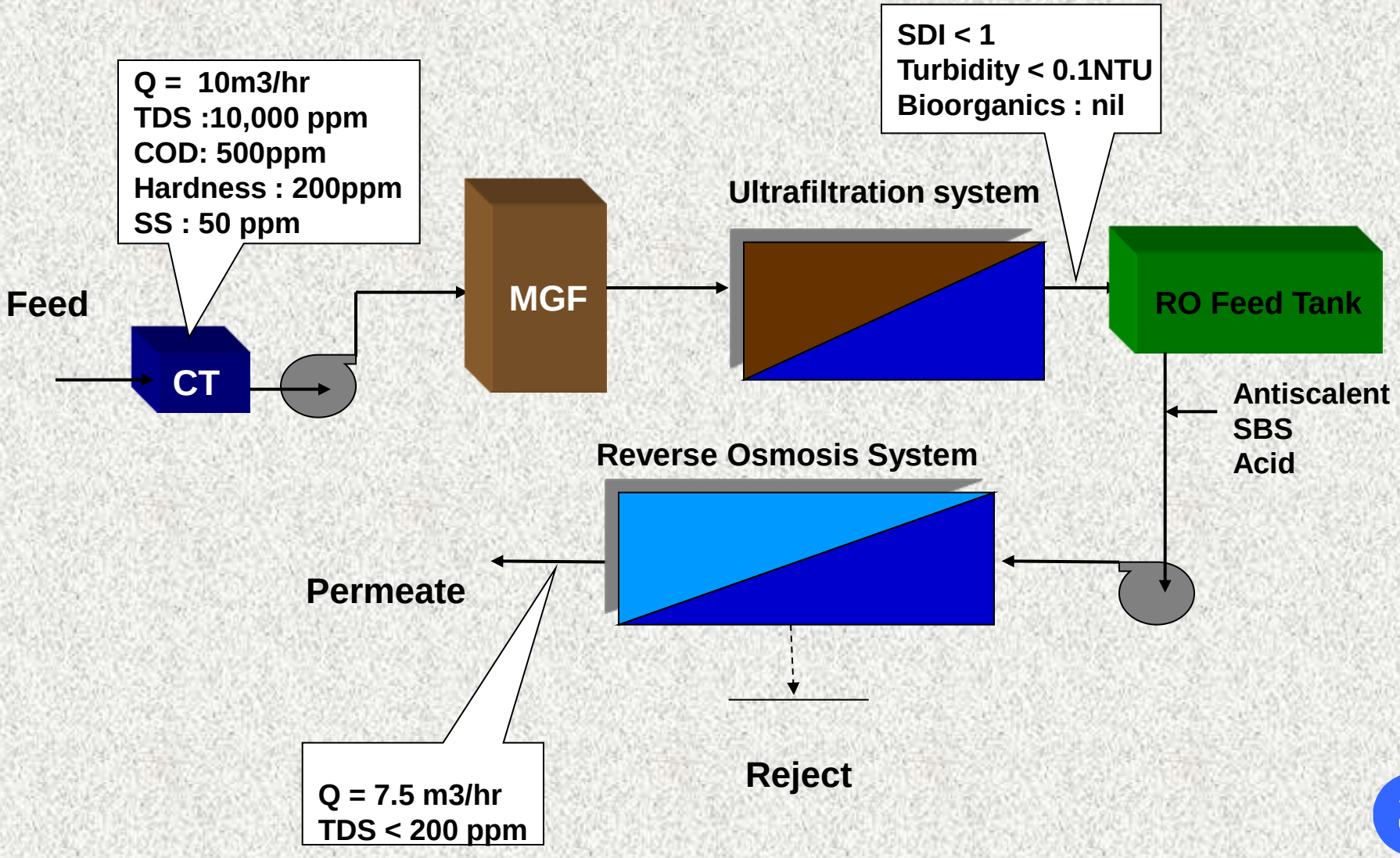
Oily Waste Water Recycle

- To recover oil & produce process water from effluent

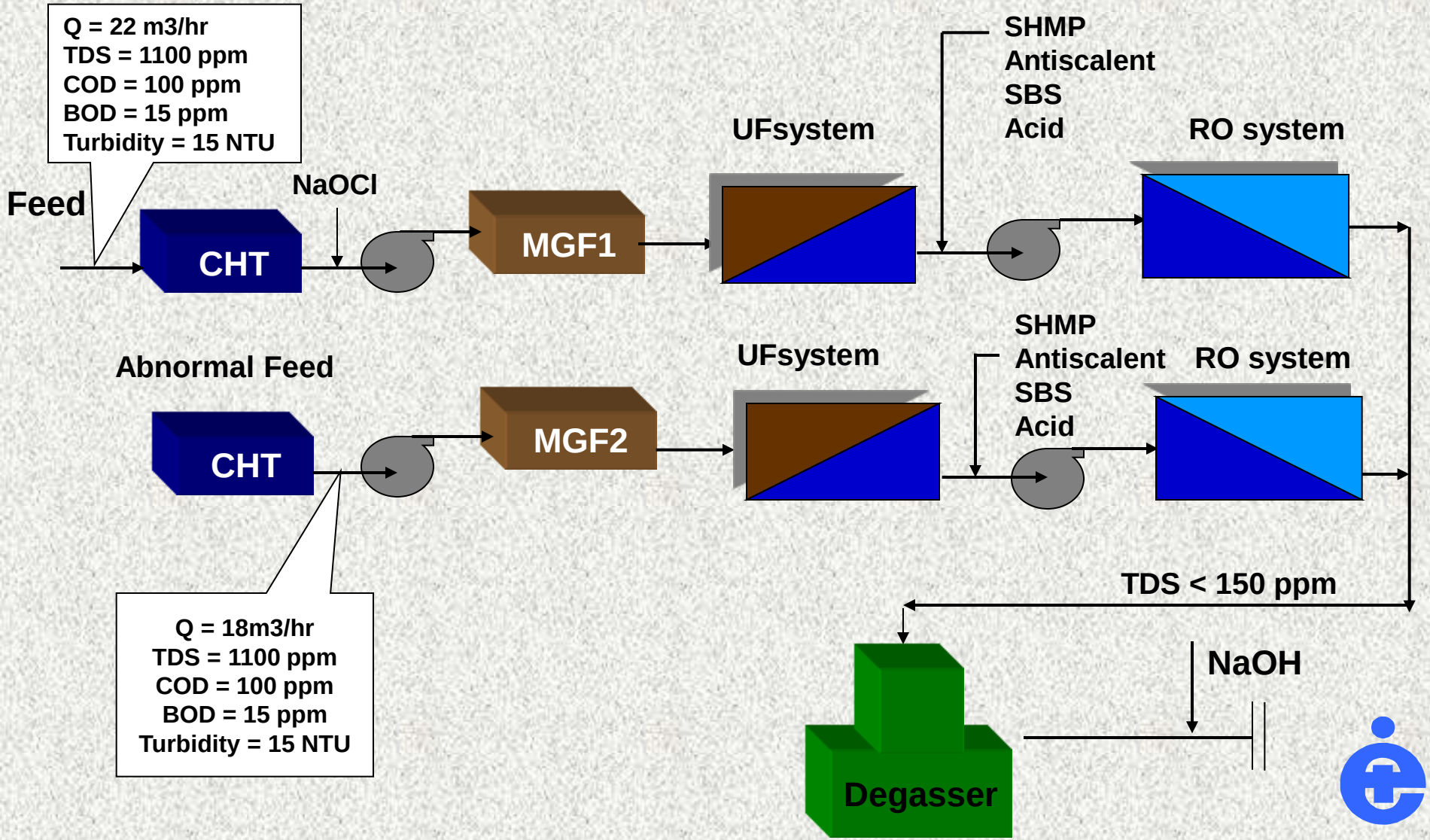


CHEMICAL INDUSTRY

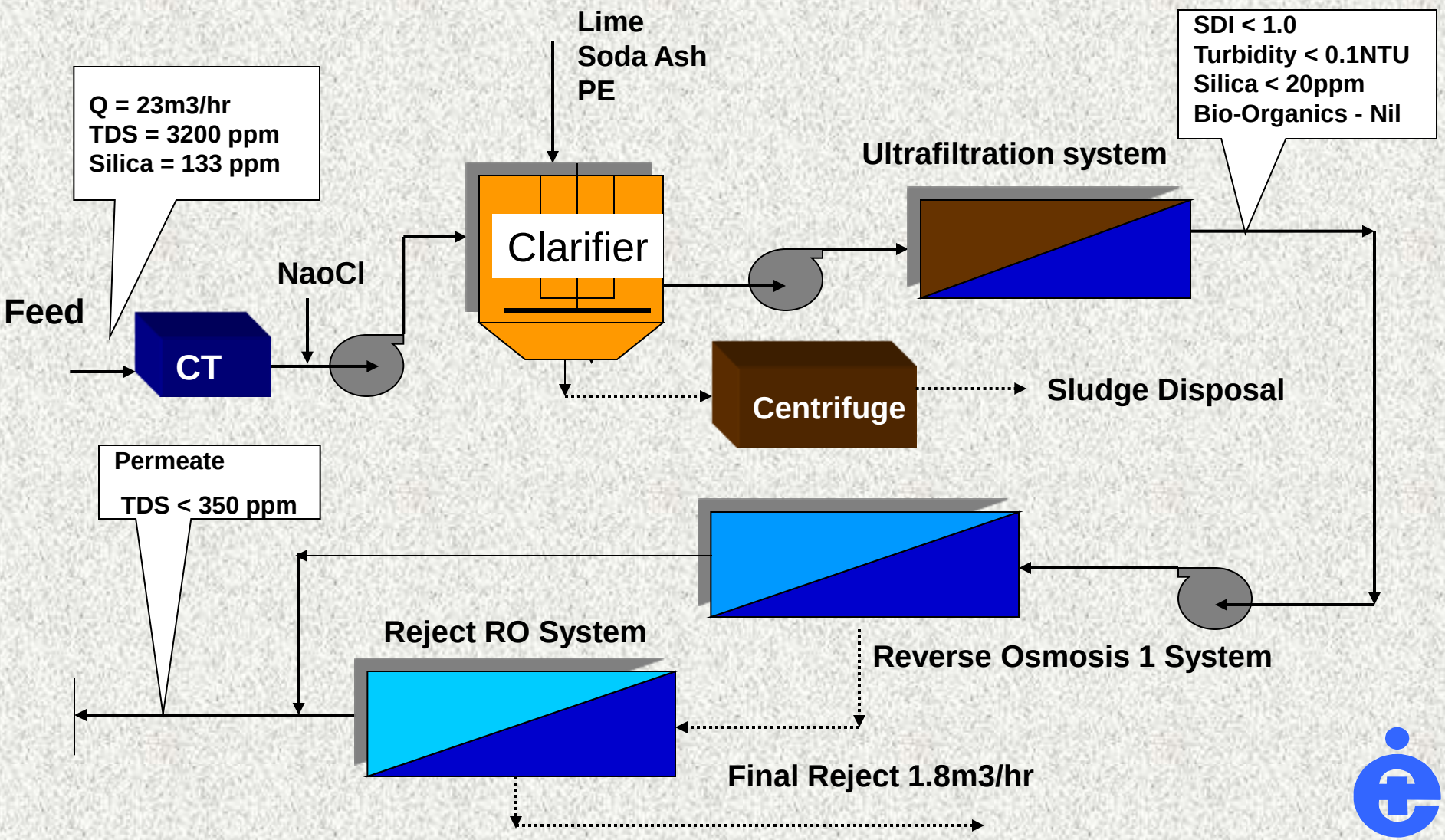
- To produce process water from effluent



AUTOMOBILE INDUSTRY



CEMENT INDUSTRY



What You Achieve ?

- Produces process water of consistent quality
- Substantial savings
- Low dependence on fresh water supply
- Compliance to effluent discharge norms
- Payback period often less than 2 years

WASTE WATER TREATMENT

-

Viable & Dependable Water Resource

Municipal Sewage Recycle- Emerging Trend

- Waste water recycle – A particularized or Private approach …So Far…. (Industries/ Commercial or Residential complexes)

- A broader or Public approach

  Treat And Recycle Municipal waste water

SEWAGE TREATMENT

- OPTION I – CENTRALISED STP

- OPTION II – DECENTRALISED STP

TECHNOLOGY OPTIONS FOR Waste Water Recycle

(ETP/STP)

- **Rotating bio contactors (RBC) / Attached Growth Process**
- **Fluidised Media Reactor (FMR)**
- **Membrane Bioreactor (MBR)**
- **Sequential Batch Reactors (SBR)**

PUBLIC APPROACH

NEW GENERATION
SEWAGE TREATMENT PLANT

RBC

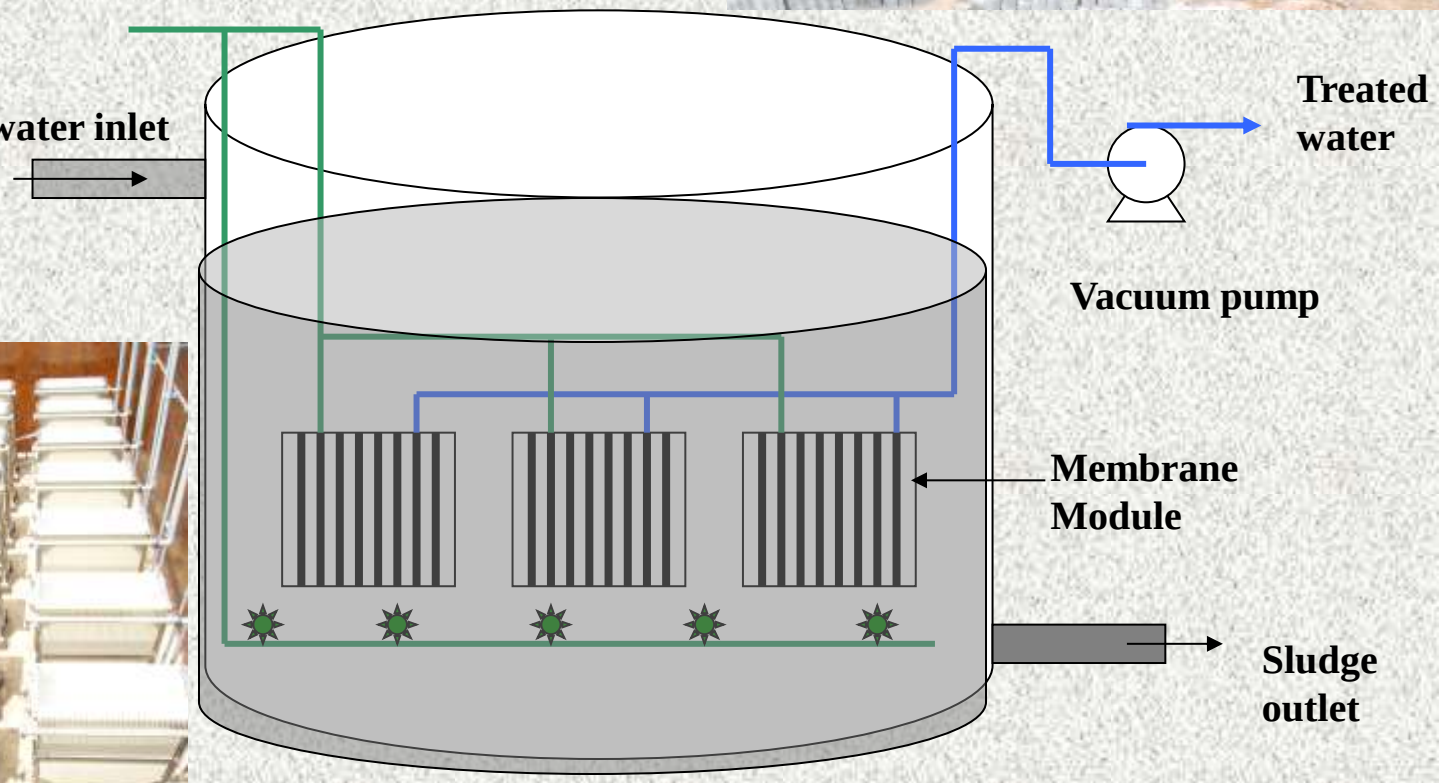
FMR

- Single tank design
- Low power consumption
- Low operating cost
- 1/3 space requirement than Conventional
- Superior quality treated effluent

INNOVATIVE SOULTIONS

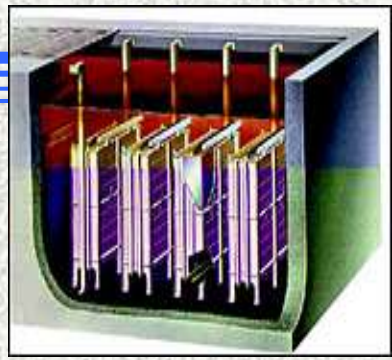
MEMBRANE BIOREACTOR

MEMBRANE BIO REACTOR



KEY FEATURES

MEMBRANE BIOREACTOR (MBR)



- Immersed Ultrafiltration membrane system
- Compact, requires ¼ space over a conventional system
- Low energy consumption
- 99.9999% removal of total coliform
- No chemicals required during treatment
- Modular in construction
- Single packaged unit with minimal civil construction

Sewage Treated Water !-
---------A Drinking Water Source

सीएम ने सीवेज ट्रीटमेंट प्लांट का निरीक्षण किया

नई दिल्ली। दिल्ली की मुख्यमंत्री शीला दीक्षित ने ओखला स्थित सीवेज ट्रीटमेंट प्लांट का बृहस्पतिवार को दौरा किया और वहां नवीनतम मेमब्रेन बायो रीएक्टर (एमबीआर) टेक्नोलॉजी आधारित प्लांट के प्रदर्शन का जायजा लिया। इस मौके पर दिल्ली जल बोर्ड के मुख्य कार्यकारी अधिकारी राकेश मोहन सहित कई अधिकारी मौजूद थे।

दिल्ली जल बोर्ड द्वारा यूएस-एईपी/ यूएसएआरडी के सहयोग से ओखला स्थित सीवेज ट्रीटमेंट प्लांट में गंदे पानी को साफ करने का काम किया जा रहा है। यहां गत जून से एक पायलेट स्केल मेमबरेन्स बायोरियेक्टर (एमबीआर) संयंत्र का परीक्षण प्रचालन किया जा रहा है। इस योजना का परीक्षण सफल रहा है। इसके तहत उच्च गुणवत्ता का उपचारित अपजल प्राप्त हो रहा है तथा संपूर्ण ठोस अवशेषों को हटाने के लिए एक रिवर्स ओसमोसिस संयंत्र लगाया गया है।

दिल्ली जल बोर्ड में पायलट परियोजना की स्थापना नवीनतम एमबीआर टेक्नोलॉजी के प्रदर्शन का मूल्यांकन करने के लिए की गई, ताकि यह पता चल सके कि सीवेज के पानी का विभिन्न इस्तेमाल के लिए उपचार करने में इसका कैसा प्रदर्शन रहा है। इस पानी का उपयोग मॉल के कूलिंग टॉवर, रेस्त्रां, होटलों, फैक्ट्रियों आदि में किया जा सकता है। पानी की निरंतरता हासिल करने के लिए एमबीआर टेक्नोलॉजी अहम भूमिका निभाएगी।

FUTURE TREND

DJB's hi-tech plans to recycle water

By Ruhi Khasin / TNN

New Delhi: There's good news for water-starved Delhi. Precious potable water that is waste for secondary purposes like flushing, gardening and car washes could soon be saved.

As a pilot project, the United States Asia Environmental Partnership (US-AEP) has got the latest technology in sewage water treatment installed at the Delhi Jal Board's(DJB) sewage water treatment plant (STP) in Okhla. It is expected to treat the sewage that the plant gets and the recycled water will be used for non-potable purposes.

The latest 'membrane bioreactor' (MBR) technology has been installed at the plant to treat water which would then be used for multiple applications like in cooling towers at AC plants of malls, restaurants, hotels and factories.

What's more, the DJB promises to repeat this at all its STPs if the new technology shows good results. "The

- Latest technology in sewage water treatment installed at the DJB's sewage water treatment plant in Okhla
- The membrane bioreactor technology has been able to produce good results
- It will treat all the sewage that the plant gets, and this recycled water would be used for non-potable purposes

MBR plant at Okhla is working well. The decision to utilise it in water plants will be taken after exploring the viability.

The process not only helps in resource conservation but also in power conservation," said DJB chief, Pradeep Mohan.

He added that a version of this technique would be installed in colonies as well so that residents use potable water only for drinking, cooking and bathing. The MBR has been designed and constructed by Onsite Exchange India Ltd. "Large amounts of potable water is wasted in gardening, car-washing and washing clothes. The new initiative, if applied in all plants could help provide non-potable water for carrying out such activities and therefore prevent wastage of potable water," said the CEO of the company.

Very nearly 40% of water is recycled in Delhi. The two main reasons for this is that it is a very cost and space intensive activity that doesn't seem to work in urban centres like Delhi," said Jyoti Sharma, president of Forces, an NGO that deals with water related issues.

Dual pipeline would need to be installed for this project to be a success. The water would be used to augment public water supply by providing for purposes other than drinking.

Recycle - Major Benefits

- **High Quality effluent discharged to ground water for Indirect Use**

Indirect Use

- **Prevents salt water intrusion**
- **Augment surface water reservoirs**
- **Recharging ground water aquifers**

Direct Use

- **Low End Purpose – Flushing/Gardening etc.**
- **High End Purpose- Cooling / Process water in Industries**

Recycle benefits- Overview

- Meet growing demand of water
- Reduces cost of fresh water
- Compliance to PCB discharge norms
- Decreases load on Public Utilities
- Product recovery (Industry Specific)
- Corporate Social Responsibility (CSR)
- Meeting ISO 14000 standards

Required – A Unified Approach

Industries

Builders & Architectural Communities

Municipalities

Industry associations

Citizen Action Groups

Water Treatment Companies


THANKYOU