

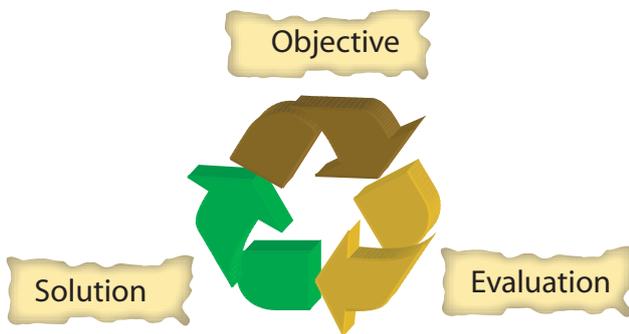
# WASTEWATER REUSE/RECOVERY

Innosep has been actively involved in developing, design, fabricate and install Industrial water recycle system to meet specific water quality requirement and to reduce waste discharge.



## RECYCLE/REUSE APPROACH

Usual approach for any recycle starts with an objective to meet by client. It is then evaluated by Innosep Engineers for suitability and budgetary information are submitted for way forward on piloted. Upon approval Innosep manufacture the designed process and provide installation and aftersales support.



COLLOID AND BOD REMOVAL FROM ORGANIC WASTEWATER



COLOR AND COD REMOVAL FROM CHEMICAL WASTEWATER

## CHEMICAL FREE SYSTEM

Membrane systems are preferred when conventional treatment (such as chemical precipitation, biological treatment etc.) cannot achieve the effluent or reusable quality. It is also preferred as a tertiary treatment of effluent coming from existing process.

Micro (MF) and Ultrafiltration (UF) is used to remove colloidal and high molecular weight particles including BOD. UF is available in various pore size that can separate molecules to the desired level.

Nanofiltration (NF) is employed in case of COD or color is an issue. NF also removes heavy metals, pesticides and smaller organic molecules.

Reverse Osmosis (RO) is employed as a final step to remove dissolved inorganic salts and thereby producing pure water suitable for various industrial process.

## GENERAL OBJECTIVE OF RECYCLE

- To meet discharge standards/limit
- To reuse water due to limited and costly incoming supply
- Reduce capacity of existing WWTP
- Reuse valuable chemicals, metals etc.
- Reduce chemical/hazardous waste volume for disposal etc.
- Etc.



UF SYSTEM TO REMOVE COLLOIDS AND BOD

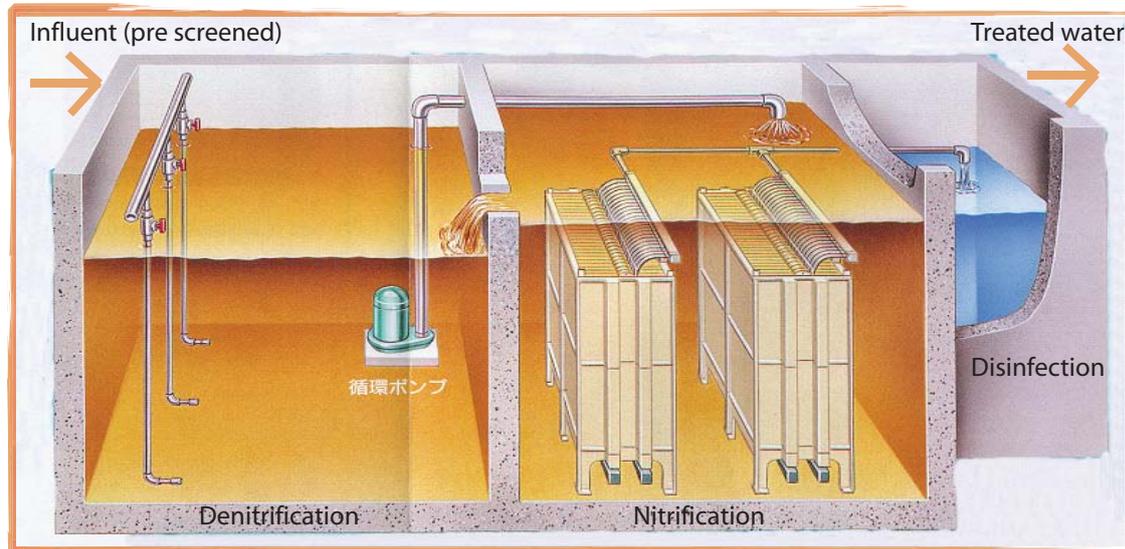


NF SYSTEM TO REMOVE COLOR AND COD

## MBR FOR EFFLUENT TREATMENT



Membrane Bio Reactor (MBR) is a new way of treating industrial and domestic wastewater with very high quality effluent suitable for recycle or to discharge. It also helps in expanding existing plant capacity, while keeping the foot print to minimum as well as reducing environmental hazard.



TYPICAL SCHEMATIC OF MBR FOR WASTEWATER TREATMENT

MBR achieves a very high MLVSS resulting plant foot print to reduce much smaller than conventional process. The membrane forms a physical barrier that prevents biomass or suspended solids to pass even in case of upstream process upset.

Due to high quality effluent achieved by MBR, it can be further processed to remove residual color, salt, to reuse back in process like boiler feed, cooling tower, floor cleaning, flushing and chemical based processes.

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