

INDION® PF/DT Reverse Osmosis System for the Pharmaceutical Industry

Manufacturing processes in Bulk Drug, API & Intermediates produce wastewater that is generally characterised as high-strength organic effluent - waste streams that are challenging to treat with conventional wastewater treatment.

INDION PF/DT Reverse Osmosis System, with its flat-sheet membrane technology, is an effective alternative to treat complex wastewater generated by the industry. It treats wastewater with minimal pre-treatment and footprint. It produces water that is free from particulates, colloids & organic matter, has very low dissolved solids and is recycled for critical & noncritical uses.

Features

- High-pressure systems to maximise recovery
- Auto and manual control of entire Reverse Osmosis (RO) plant
- Built-in safety features such as dry run protection, overload protection, etc. to prevent high-pressure pump and membrane system from damage
- Onscreen simulation of complete operation and fault indication
- Inbuilt clean-in-place (CIP) for periodic membrane cleaning

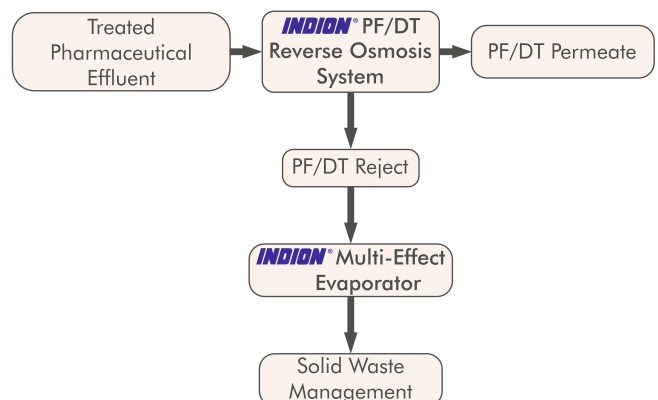
Advantages

- Precursor to complete Zero Liquid Discharge (ZLD) & Multi-Effect Evaporator (MEE) system to reduce life cycle cost of the system
- Minimal pre-treatment [INDION Multigrade Filter (MGF) + INDION Cartridge Filter (CF)]
- Elimination of extensive chemical treatment and ultra filtration systems



- More reusable permeates from primary/secondary treated effluent
- Modular system design which is upgradeable
- Savings in evaporator - Capex & Opex

Typical Treatment Scheme for the Pharmaceutical Industry



Typical Feed Parameters of Pharmaceutical Effluent

Parameters	Unit	Bulk Drug (API Unit)		Formulation	
		Feed	Permeate	Feed	Permeate
Total Suspended Solids (TSS)	mg/l	200	Nil	200	Nil
Conductivity	µs/cm	4000 - 10000	500	7000 - 20000	1000
Total Dissolved Solids (TDS)	mg/l	3000 - 7000	350	5000 - 15000	750
Chemical Oxygen Demand (COD)	mg/l	1000 - 5000	250	2000 - 5000	250
Biological Oxygen Demand (BOD)	mg/l	600 - 3000	150	500 - 2000	100
Recovery	%	70 - 85		60 - 75	
Temperature	°C	30 - 35		30 - 35	

Note: The above parameters are typical and may change based on site conditions.

Ion Exchange also offers a packaged solution which includes INDION Effluent Treatment Plant (ETP), INDION RO & INDION Multi-effect Evaporator (MEE) to achieve Zero Liquid Discharge (ZLD).

Our state-of-the-art manufacturing facilities are ISO 9001, ISO 14001 & ISO 45001 certified.

To the best of our knowledge, the information contained in this publication is accurate. Ion Exchange (India) Ltd. maintains a policy of continuous development and reserves the right to amend the information given herein without notice. Please contact our regional/branch offices for current product specifications.

INDION is the registered trademark of Ion Exchange (India) Ltd.



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