



Case Study 103: Waste Water Recycling for an Automobile Tyre manufacturing Plant in India.

A 650 KLD waste water recycling plant at a leading automobile tyre manufacturing plant in India. The Waste water recycling Plant was designed and engineered by EWE Consulting Engineers., NOIDA India at the behest of a Water Treatment OEM Company and has been in operation since November 2012. The manufacturing plant faced water shortages and problems with the feed water and thus implemented the ZLD scheme as part of the innovation scheme. The Engineering has been of superior grade and the **summary of the Plant after Two and a Half year** (2.5 years) of operation is as:

Plant Feed Design Capacity	:	650 KLD (28 m³/h)
Scheme	:	Physico – Chemical / MGF / ACF / UF / RO – I / RO – II
Status of UF Membranes	:	As on 10.10.15 - Original membranes running since November 2012 (Nearly 3 years as of now and expected to run for another 2 years)
Configuration of UF	:	Recovery : 90 - 95 %
	:	Feed : Industrial Waste Water
	:	Numbers of Membranes : 09
	:	Make & Model : Hydraunatics / HydraCAP 60
Status of RO – I Membranes	:	Original Membranes Lost as of April 2015 (Life Attained 2.50 years on waste water)
Configuration of RO –I	:	Permeate Flow Designed : 20 m ³ /h
	:	Feed Flow : 28 m ³ /hr
	:	Banks : 02
	:	Array : 4:2
	:	Numbers of Membranes : 30 (5 Elements per Tube)
	:	Feed TDS : 5000 – 9000 ppm
	:	Product TDS : 150 – 300 ppm
Status of RO – II Membranes	:	Original Membranes in Operation (Life as on 10.10.15 : 03 years +)
Configuration of RO –II	:	Permeate Flow Designed : 7.0 m ³ /h
	:	Feed Source : Reject of RO - I
	:	Feed Flow : 14.0 m ³ /hr
	:	Recovery : 50 %
	:	Numbers of Membranes : 12
	:	Feed TDS : 12,000 – 18,000 ppm
	:	Product TDS : 350 – 550 ppm

The membranes for RO – I are being replaced with newer anti fouling membranes and is expected to last 3 + years. The system has been operated as per our guidelines and periodic cleaning / CIP has been conducted.