

CASE STUDY: ZLD Installation at Unity Dye-Chem Pvt Ltd

COMPANY'S INTRODUCTION:

Unity Dye Chem Pvt. Ltd. is a flagship company of Unity Group of Industries. Unity Dye Chem Pvt Ltd has specialized in pigments for more than 37 years and has acquired a strong ranking, especially in the colour business, in India & worldwide. With considerable market share, they are one of the major pigment suppliers, among both Indian companies and MNCs. Unity is designated an ISO-9001:2015 Company.

Company manufactures specialised pigments for various applications like plastics, rubber, paints, printing inks, cosmetics, pigments dispersions, leather industries etc. Their range of products comprises organic pigment powders of mono azo and dis azo group in yellow, orange & red series. They are a technology-focussed company, with high investment in R&D, offering excellent technical service and customized products.

The company is run by a team of chemical engineers supported by quality control chemists & supervisors. A fully-equipped application laboratory with an experienced team of technologists makes their pigments most suitable for specific applications. They continuously upgrade their product to meet new challenges in the modern hi-tech world.

Much of the produced pigment is exported to United States of America, Mexico, Australia, and various countries in Europe, Africa, the Middle East and Asia.

RATIONALE FOR ZLD FACILITY:

- Looking to the future scenario of eco-friendly and clean-environment production facility
- Recycling of existing effluent will lead to expansion of their existing production facility
- Recycling water quality is much better than existing ground water quality
- To reduce carbon footprint

CONSTRAINTS IN SETTING UP SUSTAINABLE ZLD SOLUTION:

- Quality of effluent is varying in wide range as per their pigment production which is directly related to market demand
- High COD/BOD with variation on wide range which leads to fail any ETP and thus ZLD
- Skilled man power is not easily available and skilled man power is must to operate ETP where effluent quality is varying on wider range

SEARCH FOR SUSTAINABLE ZLD SOLUTION:

- Challenge to find sustainable ZLD system which can operate hassle free if COD/BOD level is varying on a wider range
- For around 2 years, client evaluated all available options for setting up ZLD System with combinations of ETP/ERS/Evaporation and tabulated CAPEX/OPEX Data
- Client visited more than 10 installations of AEL's ZLD installation

Name of Client: Unity Dye Chem Pvt. Ltd., Khambhat, Gujarat

Name of Directors: Mr. Jayanti Patel / Mr. Jaswant Patel

ZLD Plant Capacity: 100 KLD

ZLD Treatment Scheme: Pre-Treatment + MVRE + MEE

FINAL SOLUTION FOR ZLD SYSTEM:

- After a long techno-commercial evaluation, client decided to go with AEL's Advanced Technology – MVRE (PFET – Polymeric Film Evaporation Technology) as a sustainable ZLD solution which satisfies their all expectations
- Final scheme: 100 KLD Pre-Treatment + 100 KLD MVRE + 30 KLD MEE
- About 95% water recycled

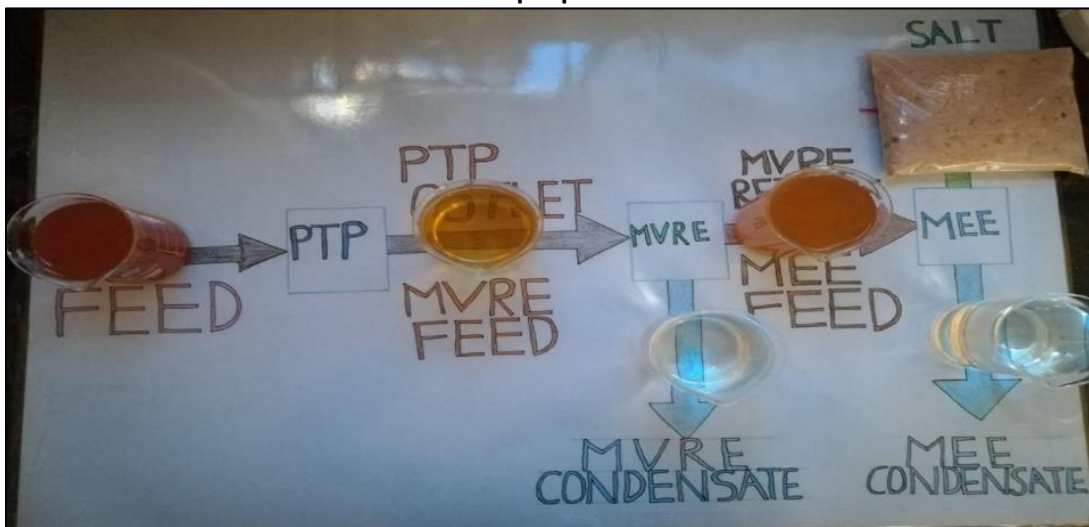
INLET/OUTLET Characteristics

Sr.No.	Constituent	Unit	Inlet	Outlet
1.	pH		7 – 7.5	7-7.5
2.	BOD	ppm	3,375	30
3.	COD	ppm	16,400	150
4.	Total suspended solid	ppm	202.00	<1
5.	Oil & grease	ppm	113.2	NIL
6.	Total dissolved solids	ppm	30,660	300
7.	Total Hardness as CaCO ₃	ppm	2,266	<15

ZLD PROJECT IMPLEMENTATION:

AEL received purchase order for ZLD System in 2017 and within 9 months successfully commissioned the entire ZLD System

Sample photo



PRE-TREATMENT SYSTEM



MVRE SYSTEM



MEE SYSTEM

