

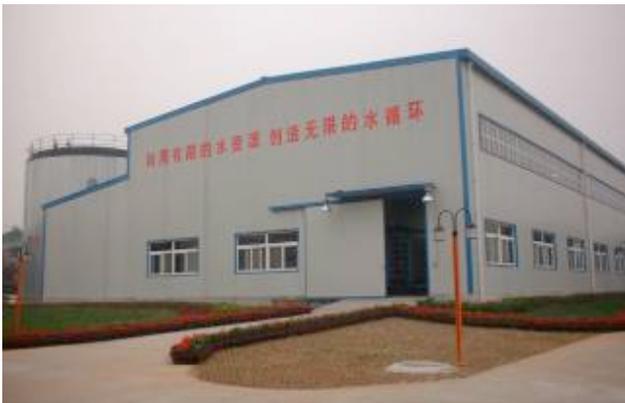
Beijing Yanshan Petrochemical Company

Application: Tertiary treatment of industrial and municipal secondary effluent for RO feed and reuse

Capacity: 6.9 MGD (26,120 m³/d)

Location: Beijing, China

Commissioned: July 2004



introduction

Beijing Yanshan Petrochemical Co. (BYPC) is the largest petrochemical enterprise in China. BYPC has been in operation for over 30 years and has made great contributions to the revitalization and development of China's petrochemical industry. The company primarily manufactures resins and plastics, synthetic rubber, and basic chemicals at its eight plants. BYPC's products are sold predominantly in China. The Beijing plant produces polyethylene pellets for packaging.

challenge

As the population of China continues to grow in size and affluence, an enormous burden is being placed on water supply. Water shortages are widespread throughout the country. Industry in China consumes nearly 70 percent of the nation's precious water supply. For this reason, the Chinese government has put a high priority on wastewater treatment and reuse. Municipal and industrial wastewater reuse is required to increase

to 70 percent for all major cities. Such strategies will help reduce water pollution and lessen the tremendous demands Chinese industry places on the country's dwindling potable water supplies.

Yanshan Petrochemical Company is one of the nation's leaders in adopting advanced wastewater treatment technologies to minimize water consumption and conserve resources by recycling wastewater for industrial processes.

solution

SUEZ was selected to supply a ZeeWeed* ultrafiltration (UF) system to provide tertiary filtration of secondary effluent for reuse within the BYPC plant. Industrial and municipal secondary effluent from the oxidation ditch of the Niu Kou Yu reservoir is first treated by oil removal, pH adjustment, dissolved air flotation, and biological treatment before being discharged into a reservoir. ZeeWeed immersed UF membranes treat the reservoir water and the resulting tertiary effluent is then further filtered by reverse osmosis (RO) to produce ultra-pure boiler feedwater for the production of polyethylene pellets.

Yanshan Petrochemical is the second in China to implement ZeeWeed membranes for UF pretreatment prior to RO. The plant consists of four process trains, each operating independently so that one train can be cleaned while the other three are in production. This feature offers flexibility in terms of meeting peak flows.

ZeeWeed UF pretreatment ensures a consistent RO feedwater supply regardless of raw water quality. With a nominal pore size of 0.04 µm, the membranes form a physical barrier against virtually all suspended solids and colloidal materials that may be in the water. As a result of this robust UF filtration technology, BYPC can typically recover about 94 percent of the water from the wastewater stream and consistently provide high quality feedwater to the RO system regardless of variability in the raw water source.

Find a contact near you by visiting www.suezwatertechnologies.com and clicking on "Contact Us."

*Trademark of SUEZ; may be registered in one or more countries.

©2017 SUEZ. All rights reserved.

ZeeWeed UF always produces a feedwater with an SDI < 3, turbidity < 0.1 NTU and TSS < 1 mg/L. This quality of water is ideal for RO membranes leading to reliable performance, reduced cleaning requirement, and a long membrane life.

process overview

- The plant is designed with four independent trains
- The ZeeWeed UF plant runs at an average recovery rate of 90 – 94%
- The ZeeWeed UF system can continue to operate with one train down for short-term cleaning or maintenance, and still handle peak flow requirements
- The ZeeWeed system requires only a 1mm feedwater strainer and does not require any pretreatment such as clarifiers or multi-media filters
- The ZeeWeed system consistently produces a permeate with a TSS < 1 mg/L, an SDI of < 3, and a turbidity of < 0.1 NTU

Typical Treated Water Results		
	Raw Water	Treated Water
COD (mg/L)	50	< 25
BOD (mg/L)	20	< 5
TSS (mg/L)	20	< 1
Turbidity (NTU)	5	< 1
SDI	N/A	< 3

