

# Integrated Water Management & Zero Liquid Discharge for Synthetic Yarn Producer



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Ion Exchange (India) Limited a leading company in the field of water & environment management was chosen by India's largest producers of polyester fibre and synthetic yarn, to build an integrated total water management facility for its largest Polyester Filament Yarn (PFY) unit. This was based on the successful installation and start-up of two previous wastewater treatment facilities for this company.

**T**he major challenge faced by the unit was water scarcity and 'No Consent' to discharge complex effluent so Ion

Exchange recommended 'Integrated Water management with Zero Liquid Discharge System'.

For integrated water management with Zero Liquid Discharge (ZLD), Ion

Exchange has built a raw water treatment plant with advanced clarification and filtration process as pre-treatment to a state-of-the-art, completely skid-mounted Indion Swift Demineralization system. To meet the integrated water management projects' requirement of high purity demineralised water, low footprint and completion of the project in minimal time, Indion Swift Demineralizer



(L) INDION Zero Liquid Discharge, (R) INDION Swift Demineralizers

which operates on the principal of short cycle-rapid regeneration with simultaneous regeneration of cation and anion unit also helped in producing near-neutral effluent thus minimizing the volume and cost of effluent treatment. The unit which is completely automated consistently produces mixed bed quality water.

The state-of-the-art effluent treatment process comprises of high rate MBBR system (Indion FMR) followed by a high recovery Ultrafiltration and Reverse Osmosis system. The ultimate recovery of >95% for the ZLD Effluent Treatment Plant (ETP) was achieved through Indion Multi-Effect Evaporator system as the terminal unit of the ZLD process. Further, to meet a very challenging project completion schedule, the construction time was reduced significantly by

constructing all water holding tanks using glass-reinforced steel bolted tanks.

For utility water management in this integrated project, Ion Exchange supplied the Indion Auto Valveless Gravity Filter (AVGF) that requires minimal power, chemicals, footprint and operator attention while producing consistent water quality required for the cooling water circuits.

With the completion of the integrated water management project for India's largest Synthetic Yarn producer, Ion Exchange has helped them once again achieve its objective of integrated water management and Zero Liquid Discharge. ■