# Case Study

Clean process water for BASF facility in Dahej, India

<table>
<thead>
<tr>
<th>Location</th>
<th>Dahej, India</th>
</tr>
</thead>
<tbody>
<tr>
<td>System Integrator</td>
<td>Wipro Water</td>
</tr>
<tr>
<td>End User</td>
<td>BASF Chemical Plant, Dahej</td>
</tr>
<tr>
<td>Plant Capacity</td>
<td>1,500 m³/day (0.4 MGD)</td>
</tr>
<tr>
<td>Market / Industry</td>
<td>Chemical</td>
</tr>
<tr>
<td>Application</td>
<td>Process water</td>
</tr>
<tr>
<td>Feed Water Source</td>
<td>Surface water</td>
</tr>
<tr>
<td>Commissioning Date</td>
<td>May 2013</td>
</tr>
<tr>
<td>Membrane Type</td>
<td>dizzer® XL 0.9 MB 60 W</td>
</tr>
<tr>
<td>Total No. UF Modules</td>
<td>13</td>
</tr>
<tr>
<td>Racks / Lines</td>
<td>1x T-Rack vario</td>
</tr>
</tbody>
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Clean process water for BASF facility in Dahej, India

Overview

BASF’s future chemical production facility in Dahej, Gujarat is an INR 1000 crore (≈ 185 mil. USD) project, making it BASF’s single largest investment in India. Ultrafiltration technology is to be used as a prefiltration stage for the reverse osmosis (RO) system which will produce process water for the facility. inge®’s Multibore® UF technology has been selected for the project due to its excellent track record and outstanding performance features including zero fiber breakages and very low chemical and energy consumption.

Treatment Objectives

The water from the Narmada river which will be fed to the plant has high turbidity and TSS levels, especially during the Monsoon season. Several treatment stages prior to RO will ensure that the RO system is supplied with silt-free feed water. Clarifier and sand filtration alone are not able to guarantee water of a constant quality, especially under peak load conditions. The decision was therefore taken to use inge®’s Multibore® 0.9 membrane – featuring capillary diameters of 0.9 mm – based on its ability to deliver conditioned feed water to the RO system at a constant level of quality. The UF system is designed to achieve treated water quality targets of turbidity < 0.1 and SDI < 3 regardless of variations in feed water turbidity and SDI.

Feed Water Parameter

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Unit</th>
<th>UF Feed Water</th>
</tr>
</thead>
<tbody>
<tr>
<td>Turbidity</td>
<td>NTU</td>
<td>&lt; 5</td>
</tr>
<tr>
<td>TSS</td>
<td>mg/L</td>
<td>&lt; 10</td>
</tr>
<tr>
<td>TOC</td>
<td>mg/L</td>
<td>5</td>
</tr>
<tr>
<td>pH at 20°C</td>
<td></td>
<td>7 - 8</td>
</tr>
</tbody>
</table>

Performance

Flux | 80 l/m²h (47 gfd)
TMP | 0.1 – 0.25 bar (1.5 – 3.6 psi)
Backwash | Low chemical consumption: caustic & acid CEB (chemical enhanced backwash) once a day
CIP | Anticipated frequency of CIP: once a year

Process Flow Diagram