

## Modification of Reverse osmosis membranes to Nanofiltration membranes for surface water purification

<b>Title of Product/Design/Equipment</b>	Conversion of RO to NF membrane for surface water purification
<b>IPR Status</b> <b>Patent/Copyright/Trademark secured in Indian/Abroad</b> <b>IPR Details</b>	To be patented
<b>Application/Uses</b>	The cost effective moderate capacity conversion of RO to NF plant is useful for the treatment of surface water. The permeate water is remineralized to 60 to 120 ppm TDS.
<b>Salient Technical Features including Competing Features</b>	This plant removes all impurities in a single step including excess total dissolved solids (TDS), salinity, hardness, turbidity, heavy metals and microbial content the option of blending is not necessary to the permeate The reject water from the plant is being recycled for domestic purposes Greater water recovery (80%) with low rejects volume. The reject water can be reused for washing water, laundry and other purposes Retention of sufficient mineral content, Ca, Mg, P, Na, K essential for human consumption and health. Longer membrane life and lower fouling by impurities. The operating cost in these plants is about Paise 5-7 per L of purified water generated.
<b>Level/Scale of Development</b>	Pilot Scale
<b>Environmental Considerations</b>	Environmentally safe as the materials used in the process are recycled and reused for other chemical treatments
<b>Status of Commercialization</b>	Ready for transfer
<b>Major Raw Materials to be Utilized</b>	Preoperative Chemicals, Surface Water and Washing Chemicals.
<b>Major Plant Equipment and Machinery Required</b>	Raw Water Pump, High Pressure Pump, Pressure Vessels, Pressure Gauges, Rotameters, Prefilters, Membrane Modules, Storage tanks
<b>Techno-Economics</b>	Competing technology is not available at present
<b>Technology Package</b>	The technology covers a membrane assembly unit with high pressure pumps, prefilters, and pressure vessel and auxiliary equipment

For further information please contact

CSIR-Indian Institute of Chemical Technology  
Uppal Road, Tarnaka, Hyderabad - 500 007 Telangana  
E-mail: [director@iict.res.in](mailto:director@iict.res.in)