

**Water & Wastewater Treatment  
Equipment and Solutions**





*Water is critical to our way of life as only a small fraction of available water on our planet is fresh water and hence efficient management of this scarce & precious resource becomes imperative. Water Business Group of Ionberg realized this decades ago and has been offering complete range of Water & Wastewater Treatment solutions utilizing innovative and the latest*



*equipment & technologies across the wide spectrum of applications. As tightening water quality regulations are challenging the limits of conventional*

*treatment systems, we provide cost effective systems and services that help optimize operational efficiencies and lower life-cycle costs.*

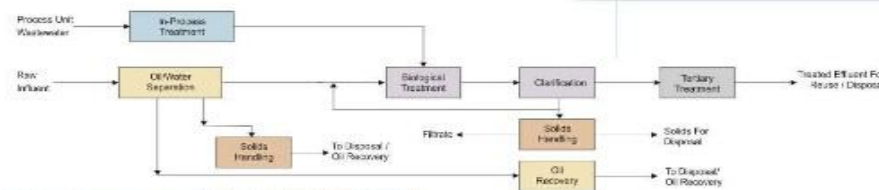
***Ionberg** brings globally available most advanced products and processes supported by State-of-the-Art technologies sourced from the global leaders.*



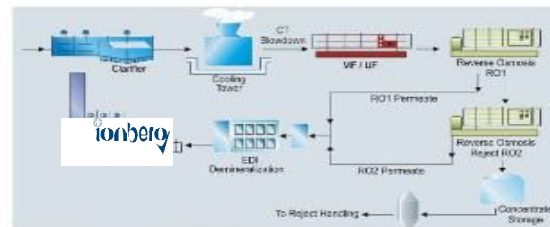
## WASTEWATER TREATMENT-ERS / ZLD

There is a "right" treatment process for your application. Our solutions aren't limited to "end-of-pipe" treatment. We have the knowledge and experience to offer the one that's best for your application. In today's regulatory environment, the need for a tertiary treatment step is many times required to meet strict effluent limits. Beyond this, effluent polishing makes economical sense in fresh water stressed situation as the higher quality effluent can be reused in various utility requirements - Industrial & Municipal.

**WORKING  
TOWARDS  
A BETTER  
TOMORROW**



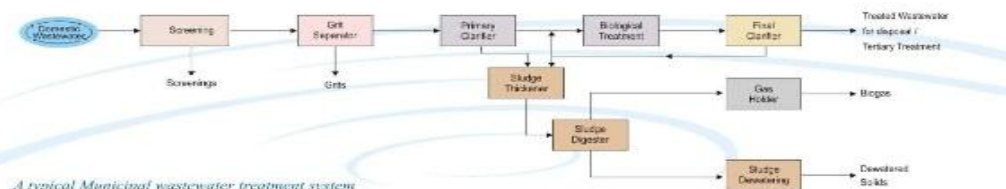
A typical wastewater treatment system for Petrochemical / Oil & Gas industries



A typical integrated power plant ZLD system

## Wastewater Reclaim & Reuse

Availability of the most comprehensive range of technologies with us, provide excellent platform to address treatment, reclaim & reuse issues associated with the industries and municipalities. We can provide combination of processes - be it physical, chemical, biological - aerobic or anaerobic, adsorption, ion exchange, membrane filtration - to produce water quality fit for either human or industrial consumption - right upto ultra purity level.



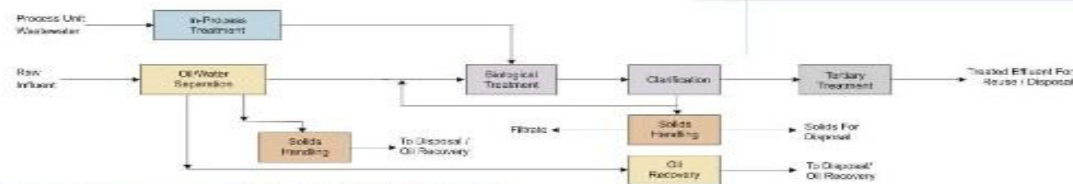
A typical Municipal wastewater treatment system



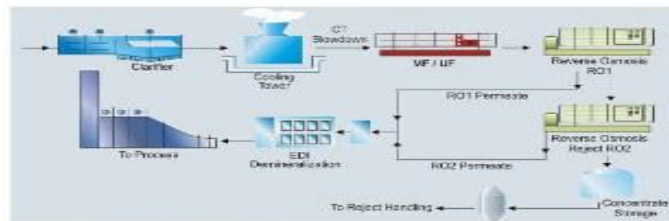
## WASTEWATER TREATMENT-ERS / ZLD

There is a "right" treatment process for your application. Our solutions aren't limited to "end-of-pipe" treatment. ionberg has the knowledge and experience to offer the one that's best for your application. In today's regulatory environment, the need for a tertiary treatment step is many times required to meet strict effluent limits. Beyond this, effluent polishing makes economical sense in fresh water stressed situation as the higher quality effluent can be reused in various utility requirements - Industrial & Municipal.

**WORKING  
TOWARDS  
A BETTER  
TOMORROW**



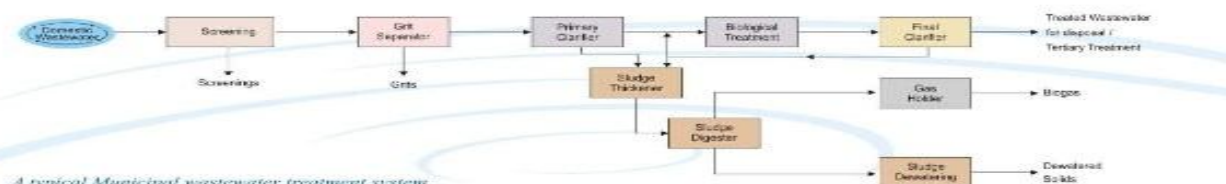
*A typical wastewater treatment system for Petrochemical / Oil & Gas industries*



*A typical integrated power plant ZLD system*

## Wastewater Reclaim & Reuse

Availability of the most comprehensive range of technologies with us, provide excellent platform to address treatment, reclaim & reuse issues associated with the industries and municipalities. We can provide combination of processes - be it physical, chemical, biological - aerobic or anaerobic, adsorption, ion exchange, membrane filtration - to produce water quality fit for either human or industrial consumption - right upto ultra purity level.



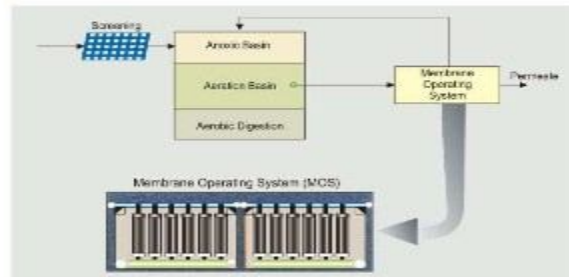
*A typical Municipal wastewater treatment system*

## ionberg IMMERSED MEMBRANE BIOREACTOR SYSTEM

- INDUSTRIAL WASTEWATER TREATMENT
- SULFIDATION PREVENTION
- REGENERATION / REFINING
- SEWAGE TREATMENT
- WATER / WASTE REUSE
- WASTE MANAGEMENT
- SYSTEM INTEGRATION & CONTROL
- OPERATION

ionberg Membrane Bio Reactor (MBR) is a unique wastewater treatment process designed for municipal and industrial applications.

MBR provides higher rejection of organic constituents, solids & microorganism. With the increased cost of wastewater treatment and stricter environmental regulations, the MBR is a viable solution for current and future wastewater treatment needs for producing high quality treated effluent. MBR operates at higher level of MLSS (8000-15000 Mg/l), thus requiring smaller footprint for the total process.



Typical Membrane Bio Reactor system

### MBR Permeate

Turbidity	< 0.2 NTU
BOD	< 5 Mg/L
TSS	< 1 Mg/L
Nutrient removal	< 5.0 Mg/L 'N' & < 0.5 Mg/L 'P'

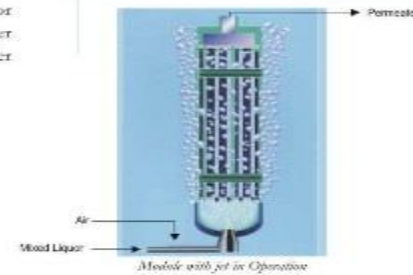


Footprint area- MBR vs Conventional



Solids concentration gradient ... with jets

## ADVANCED MEMBRANE TECHNOLOGY- FOR TODAY & TOMORROW



### Key Features

- Fewer process steps to achieve high quality effluent, suitable for reuse
- Uniform distribution of flow and solids by unique "Fluid Renewal Systems"
- Cross-flow dynamics to minimize energy consumption & to avoid sludge dehydration
- Eliminates sludge bulking
- Consistent low effluent turbidity
- Reduced sludge yield
- Energy efficient design
- Improved shock load resistance
- Separate MOS for easy CIP
- Smaller footprint
- Modular construction & easy for retrofitting
- Automated membrane cleaning process



Solids concentration gradient ... without jets



**PROCESS EQUIPMENT FOR WATER & WASTEWATER TREATMENT**

**Biological Treatment**

- Low speed surface aerator - Fixed / floating
- Fine bubble membrane diffuser - Disc / tube
- Trickling filter / Bio - tower - Rectangular / tubular arms
- Orbital aeration
- Vertical loop reactor



*Orbital Disc Aerator*



*Tube Diffuser*

**COMMITTED TO  
A CLEANER  
ENVIRONMENT**



*Disc Diffuser*



*Belt Filter Press*

**Sludge Handling**

- Gravity thickener - Without rake lift or manual / motorized rake lift
- Dissolved air flotation thickener
- Belt filter press
- Rotary vacuum drum filter
- Digester mixer - Mechanical / Gas / Hydraulic mixing



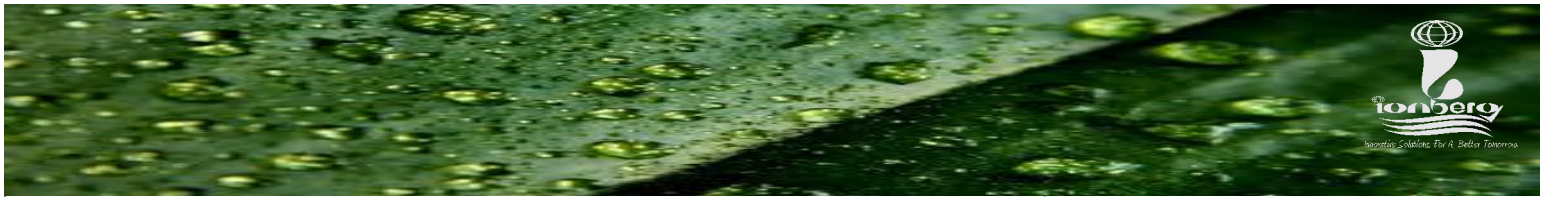
*API Separator*

**Skimming**

- API Separator - Chain & Scraper mechanism in steel / non-metallic construction
- Dissolved Air Flotation Separator - Rectangular / Circular
- Oil Skimmer - Slotted pipe / Pivoted Flight / Roll / Floating / Belt



*Dissolved Air Flotation Separator*



### HIGH PURITY SYSTEM - HPS

ionberg offers high purity water systems for Boiler feed water, Pharmaceutical, Bio-lifescience, Microelectronics & Semi conductor. We offer comprehensive solutions with Membrane filtration and Electro De-ionization (EDI) technologies. This eliminates extensive chemical regeneration needs associated with resin based technology & thus improved environment & safety conditions.

ionberg provides HPS including ....

- Small footprint & modular design
- Maintaining product integrity
- Microbiological control
- USP / WFI Purified water system
- Improving process uptime
- Environmental compliance



### EDI SYSTEM

ionberg offers Electro De-ionization unit (EDI) for producing high purity water combining ion exchange membranes and resin. This process produces a consistent, predictable water quality, greater than 99% TDS removal with feed water conductivity (FCE) of < 40 micro siemens/cm.

#### Benefits

- Maximizing profits by improving process uptime
- Maintaining product quality, uniformity & integrity
- Improving environment and safety performance
- Driving down production costs by saving energy
- Continuous performance monitoring

#### Applications

- Power industry
- Semiconductor & Microelectronics
- Pharma & Bio-lifescience & many others....

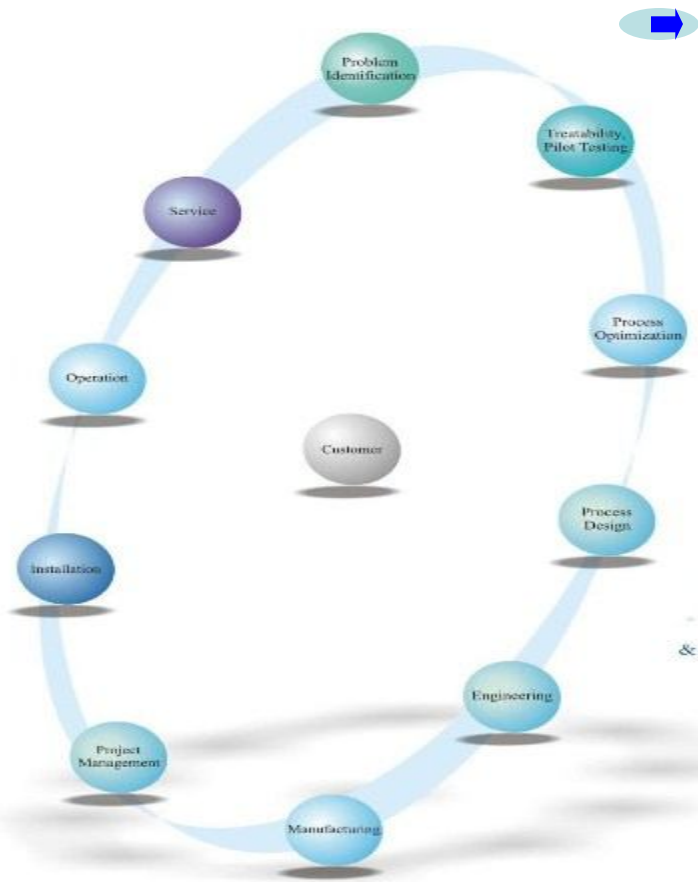
#### Key Features

- Safe operations
- No effluent generation thus no ETP load
- Less ancillary equipment
- Excellent permeate water quality in terms of conductivity, silica, TOC, etc.



Ultra Filtration System





➡ **Markets served by ionberg**

- Semiconductor & Microelectronics
- Pharmaceutical & Bio-Life Science
- Municipal Wastewater Treatment
- Chemical & Petrochemical
- Municipal Drinking Water
- Ferrous & Non-Ferrous
- Industrial Wastewater
- ERS / TTP / ZLD
- Food & Beverages
- Sugar & Distillery
- Textile Industry
- Bottled Water
- Infrastructure
- Pulp & Paper
- Automotive
- Oil & Gas
- Power
- & many others ...



...you are in safe hands