GE Power & Water Water & Process Technologies

Addressing the World's Toughest Water Challenges

Ralph Exton, Chief Marketing Officer Citi Water Conference | June 2013





GE: Technology & Solutions Provider

Engineered Systems







- Ultrafiltration/Membrane Bioreactor
- Mobile Water Solutions
- Water Outsourcing
- Thermal/Zero Liquid Discharge
- Reverse Osmosis/Electrolytic Systems
- Filters & Membranes
- ABMet for selenium removal
- Analytical Instruments

Chemical & Monitoring Solutions



- Cooling Chemistries
- Boiler Chemistries
- Wastewater Chemistries
- Fuel Oil Treatment
- Hydrocarbon Process Chemistries
- Industrial Process Chemistries
- Knowledge Management & Monitoring Solutions

Headquartered in Trevose, PA, USA • 8,000 employees globally 50,000 customers in 130 countries • 45 global manufacturing sites





GE & Desalination Technology

- 50+ years' experience in the design, installation, operation and maintenance of membrane-based water treatment systems
- 250 Seawater Reverse Osmosis (SWRO) installations
- 50+ SWRO sites under long-term operation contracts
- Global Water Intelligence 2012 Desalination Company
 of the Year

"Putting its imagination to work, the company established itself as the dominant technology supplier in two of the fastest growing market niches: industrial wastewater evaporation for the oil and gas market, and containerised modular desalination plants available for rapid deployment."

Global Water Intelligence Market Leading Analysis of the International Water Industry

2012 Global Water Awards: GE is Desalination Company of the Year – May 2012

The Desal Revolution in a Box - March 2012

Let's Drink to the Salt of the Earth – January 2012

"Whether it is lowering the operating pH for its industrial wastewater evaporators, using its UF technology for seawater pretreatment, or investing in proprietary energy recovery systems, GE Water has been quietly pushing the frontiers of technology to meet the needs of its core industrial customers."



Survey Says... Reuse & Recycle Water



of survey respondents would immediately **pay more** on their current water bill to ensure that future generations would be less vulnerable to water shortages, with the Chinese leading the way at **74%**.

††††††††† 9 out of 10

of survey respondents believe the protection of water resources should be a national priority for their countries.



54%



of survey respondents would prefer to purchase products/ services from a company that uses recycled water.



or more survey respondents prefer to use recycled water for water intensive activities like power generation, agricultural irrigation and landscaping.





GE & Reuse Technology

- Broadest portfolio for water reuse including: chemistries, clarifiers/multi-media filters, cartridge filters, membrane technologies (MBR, hollow fiber UF & spiral wound MF, UF, NF, RO), Electrodialysis Reversal, ED, EDI and Evaporation/Crystallization
- 25+ years' membrane bioreactor experience... design, installation, and operation of reuse systems
- 600+ membrane bioreactor installations globally

7<u>0-85% Recovery</u>



Membrane Based Systems & Advanced Chemistries

98% Recovery



Thermal Evap, Crystallization, Bio Polishing

Beneficial use





Waste Water Recovery systems

Recent Technology Innovation

InSight

- Transform data into meaningful information and insight
- Early issue detection
- Increase productivity and engagement
- Analytical analysis
- Asset optimization



IPER

- Integrated Pump and Energy Recovery (IPER) for desalination
- IPER is about 10% more energy efficient than current technologies
- Pumps feed water to a 1000 m³/day desalination plant with options for recoveries from 35% to 45%



GenGard

- Total treatment approach for neutral and alkaline pH cooling waters
- Only halogen stable technology in the world
- Uncompromised performance under stressed conditions



LEAPmbr

- Boosts productivity
 15%
- Reduces MBR footprint by 20%
- Helps reduce membrane aeration equipment and controls by 50%
- Lowers operating costs with 30% in energy savings
- Enables Water Reuse





GE Technology in Key Industries

