

This presentation premiered at WaterSmart Innovations

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The Environmental and Economic Benefits of Commercial Laundry Water Recycling & Reuse

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Water & Laundry Facts

- **Earth is 80% Water - 1% Drinkable: 97% Salt Water, 2% Glacier**
- **United Nations: Over 5.5 billion Will Not Have Safe Drinking Water by 2025**
- **Today: 1.1 Billion Worldwide do not have safe water.**
- **EPA: 36 States By 2013 – Water Shortages**
- **World Bank: Fresh Water Wars in 21st Century**
- **Avg Household Uses 250,000 Gals/Yr**
- **Laundry Generates the Largest Single Waste Water Source that is sent to the Waste Water Plant**
- **Largest Laundry Operation Uses ½ Billion Gals /Yr**
- **U.S. Laundries use over 150 Billion Gallons per year**
- **Annual Global Laundry Water Consumption is at Least 10 Times that of U.S**

Some Options For Conserving Water Use In The Laundry

- **Do Nothing – Who Cares**
- **Do Less Laundry**
- **Figure out how to do Laundry Without Using Water**
- **Consider Recycling Laundry Waste Water**
(Understanding of course that the total opportunity for Laundry Recycling is 85% of what goes into the wash process, 15% is evaporated in the drying process from the wet items out of the washer)

Goals of Laundry Water Recycling

- **Reduce Fresh Water Consumption**
- **Reduce Wastewater Discharge**
- **Reduce TDS, TSS, BOD and Toxin Discharge / Release associated with Laundry Wastewater**
- **Reduce Energy Consumption**
- **Reduce Greenhouse Gas Release associated with Heating the Laundry Water**
- **Improve Economics**

Current Technologies Available for Laundry Water Recycling

- **Hot Water Reuse** (*Energy, Water Reduction*)
- **Rinse Reuse Systems** (*Water Reduction*)
- **Nano-Filtration / Reverse Osmosis** (*Water Reduction*)
- **Ceramic Membranes** (*Water Reduction, Energy*)
- **Recycle System** (*Energy, Water, Wastewater*)

Hot Water Reuse



- **Used Only for Hot Water Recovery**
 - **Maximum Water Reduction 40%-50%**
 - **No Oil/Grease/Organics/BOD Removal**
 - **No Disinfection Component**

Rinse Reuse System



- **Uses Final Rinse for Reuse on Next Initial Flush in Wash Cycle**
- **Maximum Water & 15%-20%**
- **Fair Water Quality**
- **No Disinfection Component**

Nano-Filtration / Reverse Osmosis



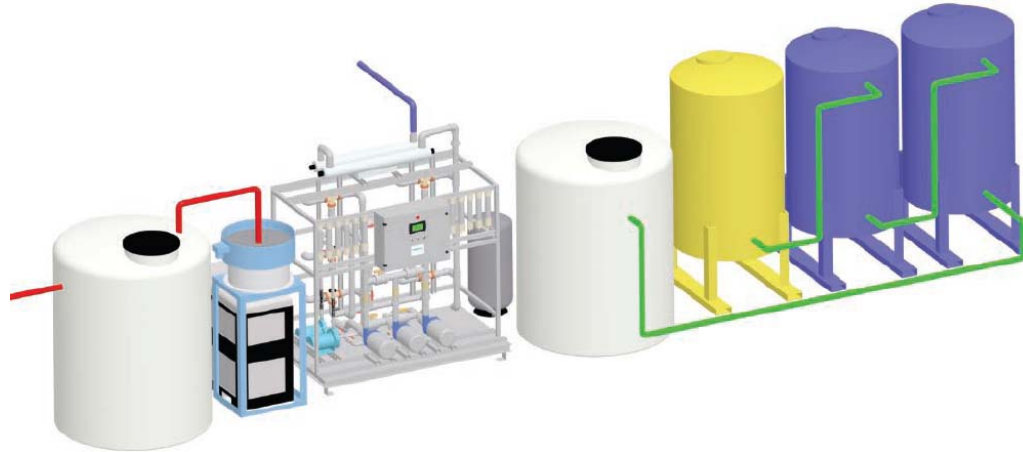
- **Excellent Water Quality**
- **Limited Recycling Capabilities – 60% Max and 40% of flow is a concentrated TSS, BOD, Toxin Laden waste stream discharged to the environment**
- **Operating Costs Significant, High Pressure Pumps Negate Energy Savings**
- **Water Temperature: Must have waste water less than 95 DegF**
- **Regular Membrane Cleaning Required - Replacement Expensive**

Ceramic Membranes



- **Produces Very Clean Water**
- **.5 micron Particle Size Removal**
- **Recycling Capabilities – 65% Max**
- **35% of flow is a concentrated waste stream of TSS and BOD/ Toxins**
- **Operating Costs Significant - High Pressure Pumps Negate Energy Savings**
- **Thermal shock may cause membranes to crack long term**
- **Regular Membrane Cleaning Required - Replacement Expensive**

Complete Capture Recycle System



- **Produces Clean Water**
- **Captures All Waste Water**
- **80% Reduction in Water Consumption and Sewer Discharge**
- **Recycles all Available Laundry Water**
- **Removes all contaminants (oil and grease, chemicals, TSS & BOD)**
- **All water is disinfected with Ozone & UV**
- **Low Pressure Pumps – Low Energy Consumption – Tiny Carbon Footprint**

Laundry Water Recycling

Case History: South Florida Commercial Laundry

- **Annual Pounds Processed: 25 million**
- **Annual Gallons Used: 39,000,000**
- **Maximum Usage: 125,000 Gals / Day**
- **Annual Water & Sewer Costs: \$368,400**

Laundry Water Recycling Case History: South Florida Commercial Laundry

- **Daily Gallons Saved: 100,000**
- **Annual Gallons Saved: 30-32 MM**
- **Dollars Saved:**
 - \$921 / Day
 - \$5,526 / Week
 - \$287,352 / Year
- **Recycle System Cost: \$265,000**
- **Installation Cost: \$45,000**
- ***Payback on Water Alone: 1.08 Yrs***
- **Energy Savings Exceeds \$150,000 per year**



Conclusions

- **Proven Laundry Water Recycle Technologies are available to the Commercial Laundry Industry Today**
- **Such systems can save SUBSTANTIAL amounts of WATER, ENERGY & MONEY for these Laundry Operations**
- **At Present it is estimated that less than .1% of the 1500 Billion Gallons of Commercial Laundry Water generated in the world today is recycled leaving significant opportunity for Recycling**
- **Recycle Technology Choice Depends on the Specific Application, Sustainability and Economic Goals**
- **% Water Recovery, Energy Consumption, Disinfection Components, and Reduced TSS, & BOD / Toxin Discharge are Important Considerations in this Technology Choice**
- **Grants, Rebates and Low Interest Loans are available now to help implement the aforementioned Water & Energy Saving Technologies**

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