Water Roundtable

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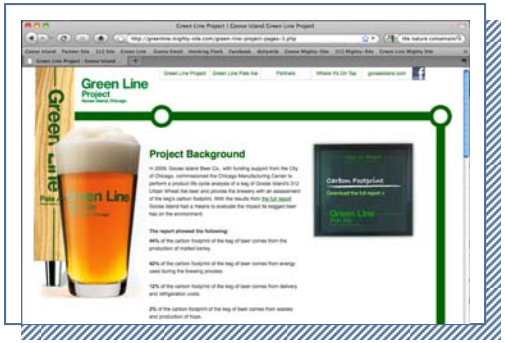
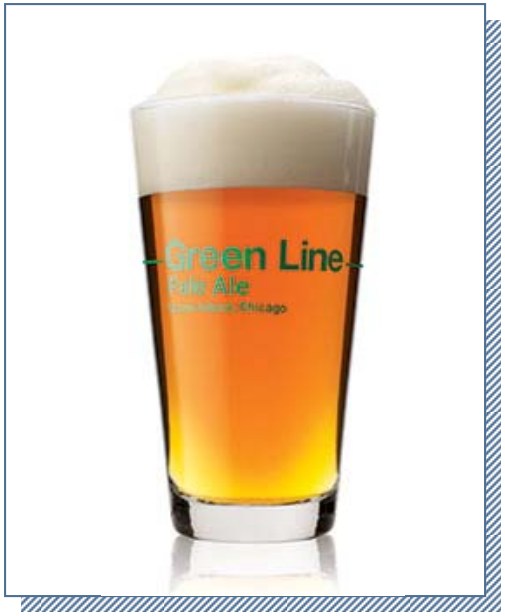
— CHICAGO'S CRAFT BEER —

The Green Line Project

- Foundation for Goose Island's sustainability initiatives
- Focused on reducing environmental impact of brewery operations and increasing employee awareness.
- In 2010:
  - Produced15% more beer than in 2009.
  - Reduced waste water by 1 million gal.
  - Reduced gas consumption by 15%.
  - Reduced electrical consumption by 5%.
- Recycling program results in 96% of brewery's solid wastes being either reduced, re-used or recycled.
- Green Line Pale Ale created to raise consumer awareness of the benefits of drinking locally made draft beer.
  - Draft only, Chicago only
- Green Line as draft only beer saved 825,000 bottles, caps and labels, 137,500 six packs and 34,375 cases boxes in 2010.





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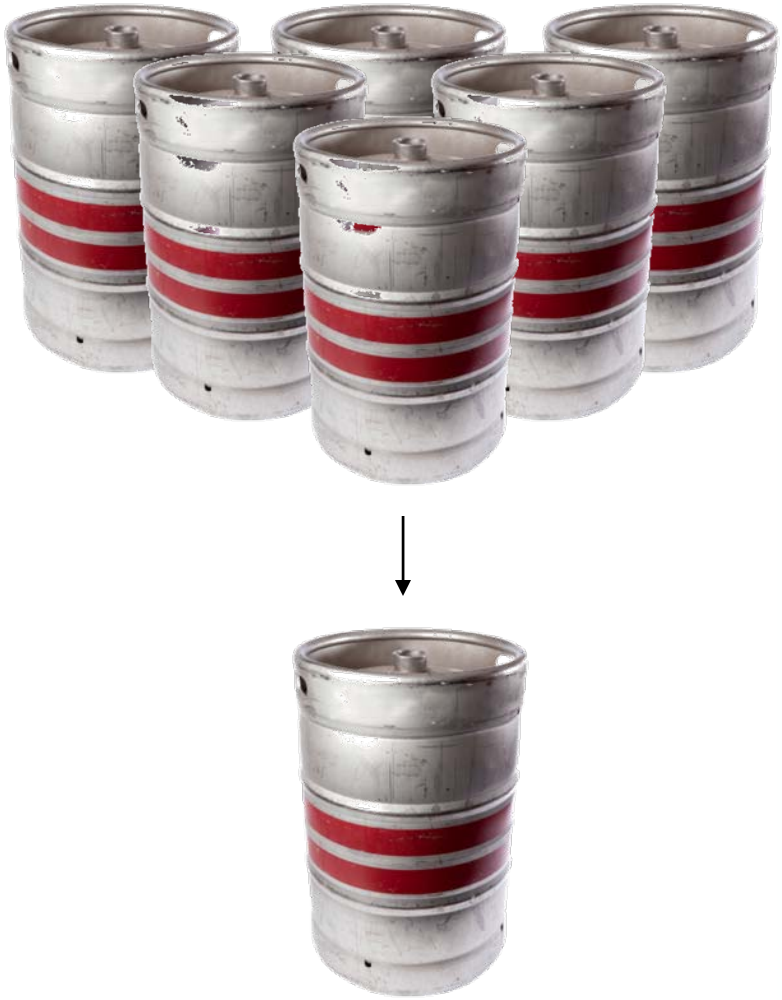
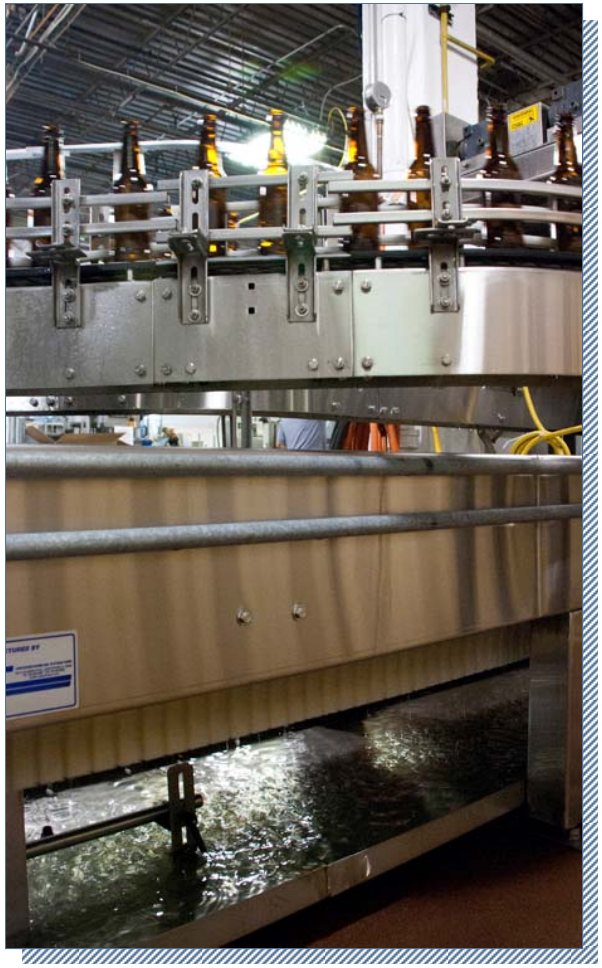
Brewing Industry

- A water intensive industry
- Best in class for US non-craft brewery
  - 3 bbls water to 1 bbls beer
  - AB Inbev
- Best in class for US craft brewery
  - 4 to 1
  - New Belgium
- Goose Island target for 2011
  - 5 to 1
- So what has Goose Island been doing to reduce its water usage?
  - Equipment upgrades
  - Process improvements
  - Packaging choices



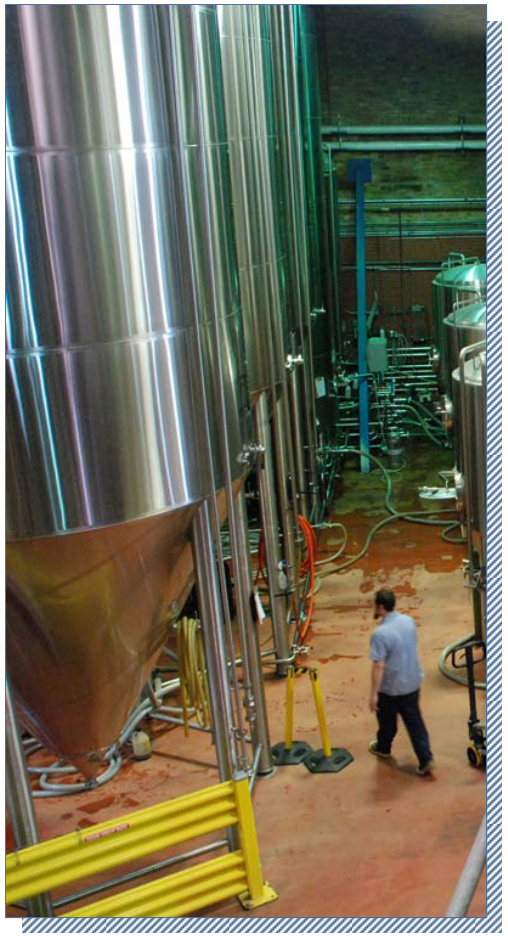
Bottle Rinser

- Example of a small change that had a big impact
  - Reduced spray nozzle orifice size by half
- Water use over 2,000 operational hours:
  - Before upgrade - 1,700,000 gallons
  - After upgrade - 700,000 gallons
- Total water savings per year - 1 million gallons
- Additional benefit - more effective cleaning pressure/power with smaller nozzles



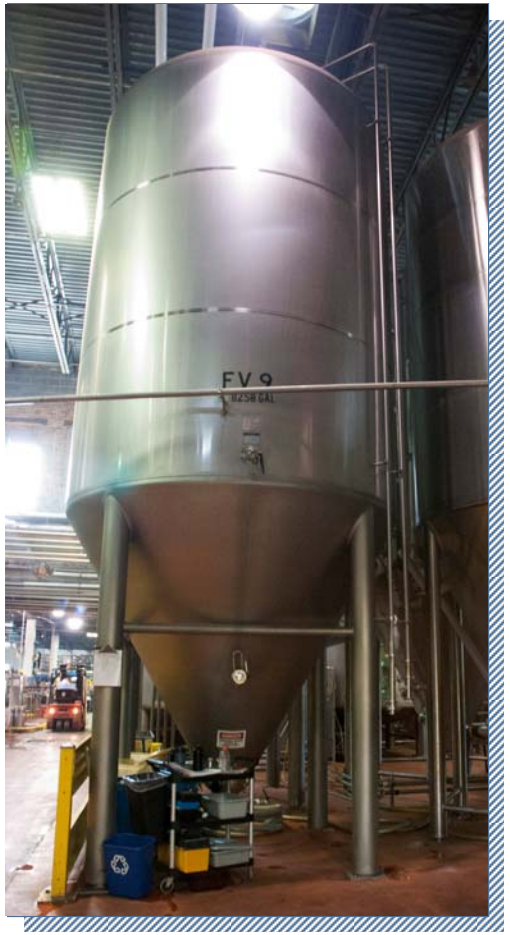
CIP Procedures

- Clean In Place (CIP) system
  - Sterilizes tanks between fermentations
- Reclamation/reuse of caustic cleaning solution:
  - Previously dumped 150 gals of solution, 2 to 3 times daily
  - Same solution now used 3 days in a row
  - Saves 10-17 refills
  - Total savings with new procedure:
    - 1,500-2,550 gallons/week
    - 78,000-132,600 gallons/year



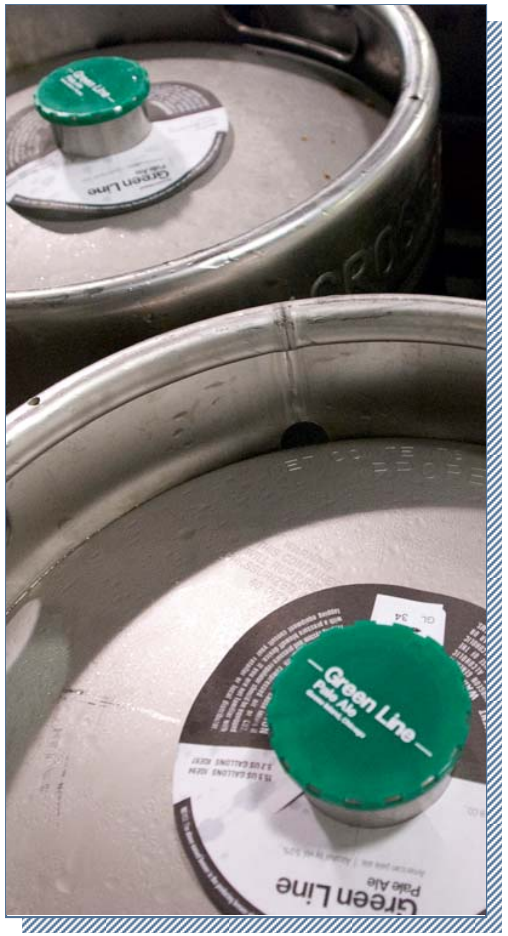
CIP Procedures (cont.)

- Reclamation/reuse of final rinse water:
  - Previously dumped 250 gals of final rinse water, 2-3 times daily, 7 days per week
  - Final rinse water was found to be clean enough for reuse
  - Now final rinse reclaimed and used again for initial rinse on the next tank CIP cycle
  - Total savings with new procedure:
    - 3,500-5,250 gallons/week
    - 182,000-273,000 gallons/year



Green Line Draft vs Bottle

- 6,050 bbls of Green Line produced
- Bottling line requires 25 gpm more water than the kegging line
- 19.1 more gallons of water are used when bottling the equivalent volume of a ½ bbl keg
- By choosing to make Green Line Pale Ale a draft only beer we have saved 231,110 gallons of water over our production runs of 6,050 bbls.



Cost Benefits

- Water efficiency projects result in water savings of 1,260,000 - 1,405,600 gallons per year
- Total cost savings based on $2.01 charge per 1000 gallons:
  - $2,532.60 to $2,825.26 per year saved on water charges.
  - PLUS City of Chicago 86% sewer charge of $2,178.04 to $2,429.72
  - **TOTAL cost savings = $4,710.64 to $5,254.98**
- 4.9% to 5.4% cost savings for 2010 water expenses
- Does not include cost savings associated with reduced waste water effluent volume
  - Variable based on BOD and suspended solids concentrations
  - Total MWRD waste water charges in 2010 = $275,000+

Future Projects

- Additional bottling line water
  - 20 gpm of rinse and cooling water from empty bottle rinse, filler rinse, and vacuum pump cooling water during bottling line operation
  - Currently goes down the drain
  - Relatively clean water
- Blow off buckets
  - 20 gpm used 24 hours a day
  - Reduces foaming spray from fermentation and maintains clean cellar
  - Looking into collection of bottling line water and reusing more efficiently as blow off bucket water

Long Term

- A new, state of the art Goose Island brewery in Chicago