HARBEC WATER NEUTRAL PROJECT
BEYOND FLOW RESTRICTORS
U.S. DOE

2016 Better Building / Better Plants Conference
Who is HARBECE?

- Founded in 1977
- Located in Ontario, NY near Rochester
- Precision plastics and metal manufacturer
- Early adopter of advanced technology
  - Sustainable manufacturing pioneer
  - +160 team members (and growing)
- 33 electric injection molding presses;
  - 44 CNC machining centers
Why Water?...2 Events That Heightened HARBECE Water Awareness

- 9/11 = Catastrophic insurance losses
  - Many NY businesses got surprise payment increases

- B9 Plastics, Inc.
  - NFP sister company exposed us to world water dilemmas
Alternative to Water Needs for Sprinklers

- 250k Gallon Storage Tank Requires
  - chemicals and servicing to insure safely balanced water
  vs.

- 900k Gallon Pond
  - Naturally balanced with cattail remediation
  - Rooftops and parking lot provide 1.2MM (+/-10%) gallons of rain water per year
Thermal Transfer Opportunity in Summer

- 900k gallons of potable city water not evaporated
Free Process Water Cooling in Winter

- Dual feed plate and frame heat exchanger allows for thermal cooling from pond water which is needed for the process water loop.
- This engineering change resulted in an annual savings of 250,000 gallons of water.
What happens to cooling loop water?

- Formations of mineral scale restrict the flow of cooling water, which not only slows production, but increases maintenance expense and stresses process equipment.
- Byproducts of corrosion are difficult to control. We tried several suggested methods of improvement with little or no success.
- Bugs could grow which can make people sick (Legionnaire's Disease)
Pursuit of a Sustainable Water Solution

- Two controlled loop water systems required a water management solution
- HARBECC needed a better way to manage the cooling water that impacted the environment less
- Many years of unsuccessful attempts to find a sustainable operation solution were finally ended by DEC
HARBEC needed an alternative solution that would use sustainable best practices

++ Mass balance of our water system by controlling the pH of water++

Special Thanks to:
Dave Carney and the AQUA-EYE Company
dave@aqua-eye.com
Pond supplied make up water needed by evaporative cooling tower requires:

- Managing the pond’s biological (bacteria) conditions through aeriation
- Using real time sensors to measure conductivity, temperature, pH, etc.
- Using mild acid solution to control the pH that is discharged back to the pond
Future Management and Continuous Reduction Potentials of Potable Water Use in Manufacturing

- Improve the use of rain and gray water for all but drinking and hand washing

Replace standard toilets with water saver types
HARBEC has a fundamental desire:

- To produce products with the least amount of negative environmental impact
- To implement best practices that provide eco-economic positive results
- To assume responsibility for our impact on the environment, the community, our employees and our bottom line
- To constantly strive for neutral impact or ‘footprint’ in required resources such as energy, water and materials, either directly through our efforts or through 3rd party facilitators who provide carbon and water credits
HARBECK ANNUAL WATER USAGE
Energy and water reductions that resulted from the process water upgrade:

+ 50hp (pumps and fans) reduced to 6hp – 88% decrease in energy saved 17000kwh/month
+ 20k gallons reduced to 500 gallons per month – 97% decrease in water consumption by eliminating or reducing evaporation
+ Chiller Tower/Pond utilization – 4k/gallons/day = 120,000 gallons/month saved by ‘free cooling’
+ Total monthly water savings with pond water and new water loop = Over 145,000gal/month
+ Total Water Reduction/year 850,000 gallons or 45% decrease in facility water consumption
HARBEC conviction to Eco-economic Sustainable Manufacturing

At HARBEC we regard Eco-economic Sustainability as absolutely critical to the future of our business, and we believe that our success in the pursuit of it, will improve our competitive advantage by insuring our efficiency.

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Thank You

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