Cummins Water Program

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Cummins, Inc.
2015 Revenue: $19.1 billion
55,000 employees, 190+ countries & territories

Engines  Power Generation  Components  Distribution

2015 water consumption: 953 MG global; 494 MG U.S.
Envolve Cummins Priorities

Reducing our carbon footprint.

Focus:
- New product fuel efficiency
- Facility GHG reduction
- Renewable energy
- Products-in-use fuel efficiency
- Logistics
- Remanufacturing

Action Areas:
- Water reduction and neutrality
- Increased recycling
- Zero disposal
- Materials efficiency
- Packaging
- Advanced manufacturing

Using fewer natural resources.

Partnering to solve complex problems.

Focus:
- Supplier and community collaboration
- New technologies
- Metals and water availability
- NGOs
- Governments
Water Stewardship at Cummins

**External Goals**

**Water Conservation**

*2020 Goal:* Reduce water use intensity (normalized to labor hours worked) in our facilities by 33% as compared to a 2010 baseline.

**Community Engagement**

*2020 Goal:* Achieve water neutrality (off-set the water we use) for 15 facilities in water-scarce regions through community water projects.

**Internal Priorities**

**Risk Mitigation**

*Focus* – Determine risks posed by water scarcity and mitigate commensurate with the exposure through business processes.
Make the Complex Simple

Prioritize

Consult

Achieve
Expanding the Champion scope

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<th>Energy Champions</th>
<th>Environmental Champions</th>
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- Holistic approach to environmental sustainability
- Utilize common, proven approaches and tools
**Focus: Cummins Technical Center**

- Opened in 1967
- 88 test cells and labs
  - 500 – 3,000 HP
- 1,100 employees
- 500,000 sq. ft.
- ISO 14001, ISO 50001, Superior Energy Performance – Platinum
- 68.8 million gallons of water consumed, 2015
- 722,000 MMBtu energy consumption, 2015
- 42% Electricity, 37% Diesel, 20% Natural Gas, 1% Other
Cummins Technical Center: Water Profile

**Largest Water Uses:**
- Boilers – 38%
- Sanitary & Laboratories – 28%
- General process water cooling – 23%
- Bedplate washdown / test cell cleaning – 5%
- Chilled water system – 4%
- Other – 2%

**Significant Efforts in Water Conservation:**
- Test cell bedplate washdown
- Cooling tower water cycle improvements
  - From 2 cycles to 7
- Chemical management of process water
- Auditing and awareness
Water Management in a Research Environment

**Leak Repairs and Auditing**
- Maintenance team critical in fixing leaks
- Site communication on water conservation efforts led to a significant increase in employees reporting leaks
- One-pass cooling identified and addressed
- Test cell audits led to improved water valve placement, usage and control

**CTC Energy/Water Deputies**
- Operational team focusing on ground-level improvements
- Comprised of test cell operation experts, facilities engineering, operational and environmental management
- Harness team's technical expertise to implement improvement projects
- Critical in bedplate washdown project and others
- Just-Do-It attitude

**Regenerative Dynamometers**
- Do not require the use of process water to cool the dyno
- Much less water required in test cells
- Increases engine testing technical capabilities
Observations

Corporate Water Audit
- Facilitated conservation momentum
- Offered a different perspective
- Technical expertise

Ground Level Involvement
- Maintenance Team - addressing small leaks adds up
- Vast knowledge of test cell water use and systems from Deputies Team
- Unique expertise from site personnel

Site Awareness
- Leaks and concerns reported and fixed
- Direct communication and awareness with site water users