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BlueStream™ Hybrid Cooling System from Johnson Controls helps customers address water, energy challenges

Industry-leading solution reduces cooling tower system water consumption by 25-80 percent compared to all-evaporative heat rejection systems

MILWAUKEE – (Jan. 10, 2017) – [Johnson Controls](#) has developed a unique, innovative and industry-leading solution – the [BlueStream™ Hybrid Cooling System](#) – to help customers address water and energy challenges in facilities through more efficient cooling tower operations. The solution will be featured at the [2017 Air-Conditioning Heating and Refrigeration \(AHR\) Expo](#) in Las Vegas (booth C3124).

BlueStream features a groundbreaking technology – thermosyphon hybrid cooling – to reduce water consumption in traditional cooling tower systems by 25 to 80 percent compared to all-evaporative heat rejection systems. It also maintains peak process output and energy efficiency on the hottest summer days.

Like fanning away sweat on a hot day, open cooling towers reduce the temperature of water heated in chillers, industrial processes, data centers and other high-heat practices. Through a “wet” process, the warm water is sprayed over the fill in a cooling tower to increase the contact area, and the heat is removed through evaporation.

A constant supply of water is needed to replace the water evaporated from the cooling tower, but in many regions, continuing droughts and increasing competition for this essential resource limit water availability. Additionally, some water is continuously bled from the system to reduce the buildup of undissolved solids as water is evaporated. This generates a large wastewater stream, often containing many additional water treatment chemicals.

Used in conjunction with a traditional cooling tower, the BlueStream system offers “dry” cooling through a thermosyphon process in which refrigerant circulates naturally, with no need for a pump or compressor. Intelligent, web-connected controls coordinate the operation of both the wet and dry system components and adjust in all weather and thermal load conditions for optimum efficiency, utilizing “wet” cooling when it’s hot and “dry” cooling when it’s not.

“Johnson Controls is concerned about the world’s water resources and how energy and water – the energy-water nexus – are closely linked,” said Clay Nesler, vice president, global energy and sustainability, Johnson Controls. “Water costs are becoming an increasingly larger component of a heat rejection system’s total operating cost. Drought and water availability can pose a risk for plant and process operations. BlueStream offers a cost-effective way to reduce water use while simultaneously reducing operating costs in heat rejection systems.”

To develop BlueStream, Johnson Controls combined the best technologies in the heat rejection industry. The company worked with the [Electric Power Research Institute](#) to evaluate BlueStream in a wide range of cooling conditions in thermoelectric power plants. The project demonstrated Blue Stream’s ability to significantly reduce annual water use in plants while still maintaining peak plant output on the hottest summer days.

In addition, Johnson Controls tested two prototypes – the [Energy Department’s National Renewable Energy Laboratory](#) (NREL) in Golden, Colorado, and the [Water Research Center](#) in Cartersville, Georgia – to validate the dramatic reduction in water consumption provided by BlueStream. Johnson Controls partnered with NREL and Sandia National Laboratories to install BlueStream at NREL’s 1 MW data center, where it is projected to save a million gallons of water each year.

“Our high-performance computing data center is one of the most energy efficient in the world; however, it is the single largest source of water demand on the NREL campus – so dramatically reducing water use while continuing efficient data center operations is of significant interest,” said David Sickinger, the NREL lead on this project.

BlueStream is an ideal technology for process cooling, data centers, power generation and year-round, base-loaded HVAC applications with water-cooled chillers. Initial analyses indicate a payback period of as low as 2.5 years, depending on the facility's geographic location, utility costs and operating conditions.

For more information about the BlueStream Hybrid Cooling System, please visit www.johnsoncontrols.com/bluestream.

About Johnson Controls

Johnson Controls is a global diversified technology and multi industrial leader serving a wide range of customers in more than 150 countries. Our 130,000 employees create intelligent buildings, efficient energy solutions, integrated infrastructure and next generation transportation systems that work seamlessly together to deliver on the promise of smart cities and communities. Our commitment to sustainability dates back to our roots in 1885, with the invention of the first electric room thermostat. We are committed to helping our customers win and creating greater value for all of our stakeholders through strategic focus on our buildings and energy growth platforms. For additional information, please visit <http://www.johnsoncontrols.com> or follow us @johnsoncontrols on Twitter. <http://www.johnsoncontrols.com/bluestream>

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Photo Caption:

The BlueStream™ Hybrid Cooling System from Johnson Controls helps customers address water and energy challenges in their facilities.

