



Proving efficiencies, energy savings and resiliency – a cogeneration solution

Aberdeen Proving Ground (APG) is a \$1 billion U.S. Army research and development facility – and a key player in the nation’s homeland defense and international counterterrorism efforts. The site has more than 2,000 buildings and is one of the largest employers in the state, with more than 21,000 civilian, military and contractor employees.

The Edgewood area of the installation supports crucial Army research, development, testing and evaluation facilities that directly support the warfighter and national security missions.

Johnson Controls is helping the garrison fulfill its commitment to energy resiliency, environmental stewardship and fiscal responsibility through the construction and maintenance of a natural gas/fuel oil cogeneration plant. The new \$36.6 million plant not only supplies a substantial portion of the installation’s heating and power needs, but it is also guaranteed to save \$107 million over the next 18 years.

40-Year Relationship Instills Trust

Johnson Controls equipment, service and solutions have benefited APG energy initiatives and infrastructure for more than 40 years.

In 2012, a local utility announced the decommissioning of an energy plant that had generated a major portion of the site’s steam requirements. Johnson Controls stepped in with a proposal for an innovative replacement: onsite cogeneration, also called combined heat and power (CHP).

Instead of generating just heat or electricity, CHP systems provide both electricity and thermal energy from a single turbine.

Combined Heat & Power Project AT-A-GLANCE:

Location:
Aberdeen Proving Ground
Aberdeen, Maryland, USA

Annual Energy Reduction:
297,469 MBtu

Annual Cost Savings:
\$4.5 Million

Annual Emissions Reduction:
22,571 tons of CO₂

Guaranteed Savings:
\$107 Million over 18 years

Project Cost:
\$36.6 Million

ABERDEEN PROVING GROUND CASE STUDY

Through a contract with the U.S. Army Corps of Engineers, Johnson Controls worked with utilities Baltimore Gas and Electric (BG&E) and City Light & Power, along with APG staff, to develop a solution.

The natural gas generates electricity, then the waste heat from the combustion turbine exhaust is used to create steam. Greenhouse gases and other pollutants are reduced because the CHP consumes less fuel than separate electric and steam plants while producing the same amount of energy. The overall annual energy savings is estimated at 297,469 MBtu, and the emissions reduction is estimated at 22,571 tons of CO₂.

APG and Johnson Controls monitor and operate the CHP from the existing control room to sequence all major equipment, constantly balance system operation and optimize equipment operation to reduce energy usage. The project will supply APG's Edgewood Area with about 80 percent of its steam needs and 50 percent of its electricity needs.

"The real innovation is the long-term and enduring capabilities. I'm excited about the savings and the energy efficiency, but I'm more excited about the opportunities that now exist."

Maj. Gen. Bruce Crawford,
Commander, Army Communications - Electronics Command

Assuring Resiliency

The \$36.6 million project was financed through guaranteed energy savings using an Energy Savings Performance Contract (ESPC) between the U.S. Army Corps of Engineers and Johnson Controls. The customer also is directly benefiting with \$2.5 million in incentives from BG&E.

In addition, Johnson Controls has developed a proactive maintenance program for the newly installed equipment, assuring reliability. The project is helping APG work towards energy independence, a key element of the U.S. Army's Net Zero Energy Initiative.

The venture also supports the intent of Presidential Executive Order 13624, which sets a national goal of deploying 40 gigawatts of new, cost-effective, industrial CHP by 2020 and directs federal agencies to support the goal.

Johnson Controls has helped APG reduce its environmental impact and operational costs since 2007 through multiple ESPCs, utility monitoring and control systems, and new construction projects. In total, these initiatives will help APG benefit from more than \$371 million in guaranteed cost savings.

Contact us to learn more:

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