

Project Profile

*Calvert Cliffs Nuclear Power Plant
Lusby, Maryland
Arsenic Treatment System*



Background

AdEdge Technologies Inc. (AdEdge) was selected by Constellation Generation Group LLC to design two full-scale arsenic treatment systems using Granular Ferric Oxide (GFO) adsorption technology. The two systems were installed in the Protected Area (PA) and the Owner Controlled Area (OCA); these are two distinct areas within the nuclear power plant site. In addition to designing the system, AdEdge assisted nuclear power plant personnel in obtaining construction permits from the Maryland Department of the Environment (MDE) for the systems. Supporting documentation on piloting and full-scale performance along with design and construction documents were submitted to Constellation engineers and planners to obtain technology approval and construction permits. MDE issued the approval and the construction permits. AdEdge fabricated the systems concurrently during the permitting period.



Treatment System

The two arsenic treatment systems consist of completely integrated packaged treatment system arsenic removal; both systems are skid-mounted and automated. The PA system accommodates a maximum design flow rate of 30 gpm, and the OCA system accommodates a maximum design flow rate of 100 gpm. The main component in both systems is an arsenic adsorption skid-mounted unit containing GFO media and configured in parallel. Treated water is pumped from the water-supply wells through pre-treatment units and the APU, and into large storage tanks. From the storage tank, groundwater flows through booster pumps, and ultimately into the distribution systems. The 16-inch and 42-inch diameter pressure vessels each contain GFO adsorption media. GFO is a granular ferric oxide media that has been in commercial use since 1999. AdEdge has used GFO media in over 60 small community system applications and in over 1,500 residential applications. GFO is being implemented in several other locations in Maryland.



Performance

The skid-mounted systems are equipped with automatic controls, backwashing features, switches, gauges, flow meters, and sample ports for complete functioning packaged units. A PLC and color touch screen interface allow for simple user access and operation. Since operations began in early December, 2005 treating approximately 20,000 gallons per day, effluent samples have indicated a high efficiency arsenic removal to non-detectable levels, well below the new arsenic treatment standard of 10 ppb.

Total As **	0.014	mg/L As
As(III)		mg/L
Alkalinity	112	mg/L @ CaCO ₃
Hardness **	42	mg/L @ CaCO ₃
Silica **	12.0	mg/L SiO ₂
Phosphate **	0.4	mg/L P ₀₄
Sulfate	<5	mg/L SO ₄
Iron **	<0.05	mg/L Fe
Manganese **	<0.01	mg/L Mn

For More Information Contact

AdEdge Technologies, Inc.
Mr. Greg Gilles, VP
5152 Belle Wood Court, Suite A
Buford, Georgia 30518
678-835-0052 * 678-835-0057 Fax
greg@adedge technologies.com
www.adedge technologies.com

Constellation Energy
Mr. Lennie M. Daniels
Project Manager
1650 Calvert Cliffs Pkway
Lusby, Maryland 20657
410-495-6618 410-495
Lennie.m.daniels@constellation.com

Constellation Nuclear
Mr. Brian K. Kilmt
Project Permitting
1650 Calvert Cliffs Pkway
Lusby, Maryland 20657
-2429