techline

Issued on: January 27, 2003

New Recycling Technology to be Tested At Virginia Coal-Fired Power Plant

Universal Aggregates Plans to Turn Coal Combustion Waste Into Useful Products

King George, VA - Each year Mirant's Birchwood Power Facility in King George, VA, pays to have more than 100,000 tons of coal combustion ash disposed of in a municipal landfill. A new Department of Energy project may soon demonstrate that this ash has significantly more value than as the daily cover material for a community's solid waste.

The department recently signed a cooperative agreement with Universal Aggregates, LLC, of Bridgeville, PA, to design, construct and operate a manufacturing plant at the Birchwood Power Facility that will turn the ash into lightweight aggregate that can be used to make a variety of construction materials, from masonry blocks and concrete to asphalt paving material.

Universal Aggregates will build the "ash-to-aggregate" recycling plant in the outlined area adjacent to Mirant's Birchwood Power Facility.

Construction of the plant is expected to start within the next two weeks, and the facility is scheduled to begin operating in 2004. The federal government will provide $7.22 million of the 30-month project's $19.58 million cost. A formal groundbreaking ceremony is planned for early spring.

The project could pave the way for a new type of recycling technology for coal-burning power plants. Ash for Universal Aggregates project is produced as a by-product of the power plant's "spray dryer" scrubber system. Scrubbers are used on many coal-fired power plants in the United States to reduce sulfur pollutants, but currently less than 20 percent of the 28 million tons of residue produced annually by these scrubbers is reused and most of that is from "wet" scrubbers.

As new environmental standards take effect, power companies are expected to install more scrubbers, including the "spray dryer" technology used at the Mirant plant that produces a dry by-product rather than a wet residue. While air quality will improve, scrubber waste tonnage will inevitably increase, placing greater burdens on landfills and adding increasing waste disposal costs to consumers' electric bills.

The Universal Aggregates process is designed to recycle the by-products from either wet or dry scrubbers, thereby lowering the costs of waste disposal while reducing the environmental drawbacks of landfilling.

In the process, ash from the spray dryer and other solid wastes from the power plant are blended in a mixer to produce a uniform granular material. The loose, moist material is then fed to an extruder that further mixes the material, then forces it through the holes of a metal die to form wet "green" pellets. The soft pellets are dried and hardened in a curing vessel specially designed to allow the solids to continue flowing without hanging up.

After curing, the hardened pellets are crushed and screened to specification, then stockpiled for sale as manufactured aggregates. Once in operation, the project will

produce 167,000 tons of aggregate a year. The construction aggregate market in the United States is estimated to be about two billion tons annually.

The Birchwood Power Facility project will be the final step to verify that the aggregate manufacturing process and equipment is ready for future commercial use. Currently there are 21 spray dryer facilities in the United States that produce an adequate amount of by-product to economically justify the installation of similar aggregate manufacturing facilities.

Prior to the current project, the technology was tested at a six-ton per day pilot plant at CONSOL Energy Inc.'s Research and Development Campus in South Park, PA. Universal Aggregates is a joint venture of CONSOL and SynAggs, LLC, a Pittsburgh, PA-based company.

P.J. Dick, Inc., of West Mifflin, PA, will serve as the engineering and construction contractor for the Birchwood Power Facility project.

The project is one of six demonstration projects funded by the Energy Department as part of its "Power Plant Improvement Initiative." Begun in late 2000, the initiative provided federal matching funds to projects that would use innovative technology to enhance the environmental or operating performance of coal-fired power plants. The effort served as the precursor to President Bush's expanded program to develop even more advanced clean coal technologies for the nation's power industry.

The Universal Aggregates project is being managed by the Energy Department's National Energy Technology Laboratory, the major technology arm of the department's Fossil Energy research and development program.

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