THE SOURCE FOR COMPOSITE SOLUTIONS

Ashland®

Winter 2000

Ashland's Patented F-Cat Technology Offers Composite Fabricators Flexibility In Curing Systems

Ashland has incorporated a unique, leading-edge technology — called F-Cat — into its existing HETRON® epoxy vinyl ester resins. As a result, they now are more versatile. Ashland's HETRON epoxy vinyl ester resins enable composites fabricators to use a wide variety of readily available, fast-curing initiators — without foaming. This allows fabricators to lay up thicker sections, resulting in fewer lay-ups and faster, lower-cost production

F/CAT
Flexible Catalyzation Technology

"Our F-Cat technology allows the use of both traditional initiators and formulations, as well as new fast-curing initiators and formulations," says Simon J Scott, HETRON marketing manager "Each HETRON epoxy vinyl ester resin with F-Cat technology can be used with either curing system. No need for a new line of resins as one resin does both."

F-Cat technology also lengthens shelf life, even for opened drums, which can be important for maintenance activities CPD's technical data sheet for each HETRON epoxy vinyl ester resin provides specific cure formulations and shelf life

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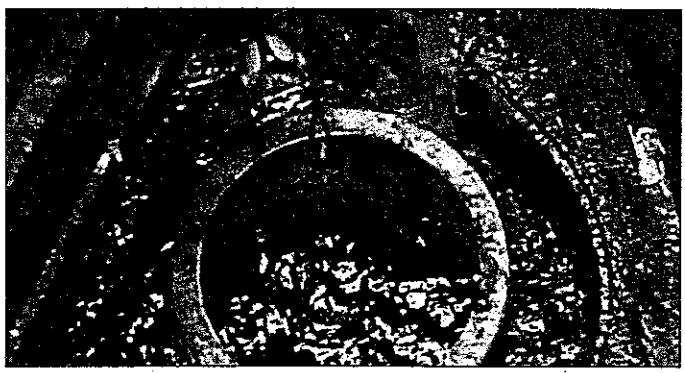
FRP Resins For Corrosion Resistant Composites

HETRONEWS®

Sliplining Composite Pipe Made With HETRON Resin Keeps Wastewater Siphons Flowing

Beetle Plastics Inc., a company in Green Cove Springs, FL, used HETRON resins to provide the Philadelphia Water Department with tunnel sliplining that kept dual wastewater siphons in service during their installation

In wet weather, the 50-year-old twin siphons carry up to 185 million gallons of untreated sewage and wastewater per day under the Schuylkill River to a treatment plant



When city engineers noticed increasingly irregular flow patterns from a pump station serving the treatment plant, they hired divers to inspect the siphons The divers reported that the highly corrosive hydrogen sulfide in the sewage had eaten away sections of the half-inch-thick steel pipes lining the siphons' twin concrete tubes that were 600 feet long and 50 inches in diameter Jagged pieces of loose steel were catching solids and clogging the tubes The city considered several solutions, but rejected them all except for sliplining the tubes

W H Streit Inc , a New Jersey-based contractor, won the bid to install sliplining pipe with divers who could gain access to the tubes through a 60-foot high vertical shaft that extended above the river's surface. The choice of sliplining pipe material was FRP because reinforced fiberglass is stronger

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A three-foot section of filament-wound pipe fabricated by Beetle Plastics is lowered carefully by a crane down a vertical access shaft. A waiting diver turned the section and it was assembled with 400 other sections into a sliplining for twin wastewater siphons in Philadelphia, PA.

Composite Duct Made with HETRON Resin Handles Fumes at Pharmaceutical Plant

In the early 1990s, a pharmaceutical production plant voluntarily constructed a fiberglass reinforced plastic (FRP) chlorinated solvent fume transport system. The system was designed to capture and destroy solvent emissions produced by the pharmaceutical manufacturing process. The fumes are transported from their point of origin to one of two regenerative thermal oxidizers (RTOs) where they are destroyed to acceptable regulatory standards.

The difficulty came when determining the safest, most cost-effective way to transport the fumes to the RTOs. The fumes range from concentrated to dilute mixtures of various chlorinated and non-chlorinated solvents, some of which are highly flammable at low concentrations and are listed as Hazardous Air Pollutants by the federal government's Environmental Protection Agency (EPA).

The plant chose to have the ducts manufactured out of furan and vinyl ester FRP composites to match the corrosive environments in the plant. Areas that contained high concentrations of fumes and/or the potential for condensation were constructed

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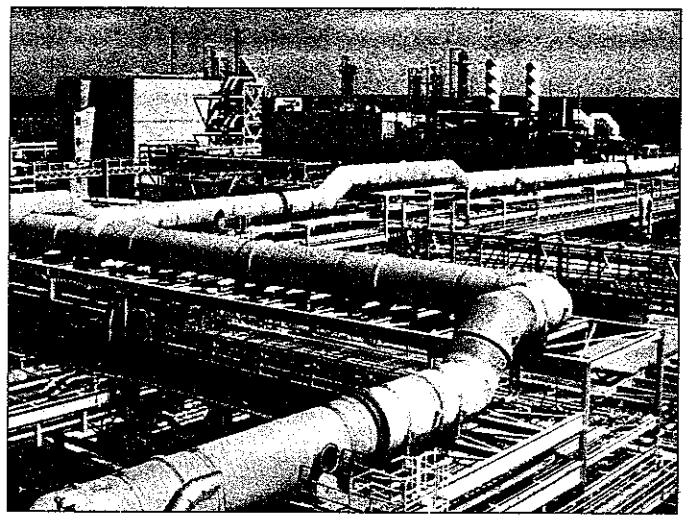

Portions of the ductwork for this FRP Chlorinated Solvent Fume Transport System at a pharmaceutical plant were fabricated from HETRON 800 furan resin and HETRON FR992 vinyl ester resin. The duct system was designed to capture and help destroy solvent emissions generated by the plant's manufacturing process

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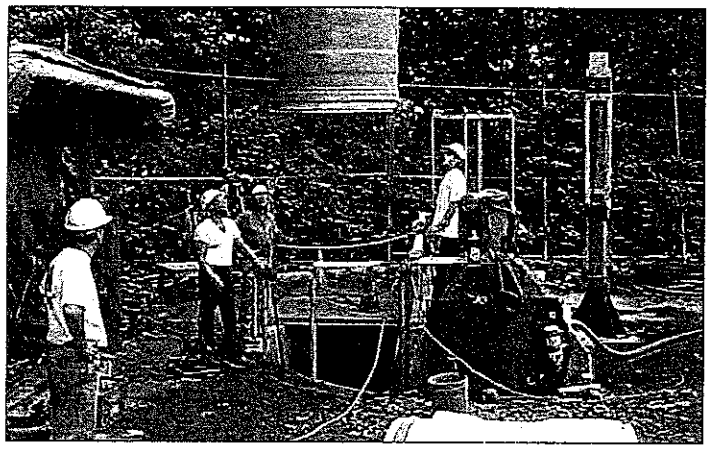
Sliplining Pipe – Continued from page 1

and more durable than steel, and its lighter weight would let divers handle it in tight quarters. and a computer-controlled multiple-angle helical filament winding system. After months



Three-foot sections of filament-wound pipe 42 inches in diameter await shipment from the Beetle Plastics plant in Green Cove Springs, FL, to Philadelphia where they were installed as sliplining in twin wastewater siphons under the Schuylkill River.

Gregg Sparks, Streit's Operations Vice President, turned to Beetle Plastics to fabricate the sliplining pipe. Michael Laprade, Beetle Plant Manager, says, "We were selected by Streit because we had the engineering capability of joint engineering design, a team of Beetle, Streit, and city engineers met at our Florida plant to watch tests on a 42-inch prototype pipe with a proprietary gasketed bell and spigot system. The successful tests resulted in Beetle receiving a contract to build the sliplining pipe for the project.

"We had given Streit's divers test pieces from one-foot to six-feet long, and they found they could not make the turn within the 50-inch diameter where the vertical shaft entered the horizontal tubes with pipe longer than three feet, so we made 402 pieces in that length. Single strand roving was used for the structural walls of the pipes, and we selected HETRON 922 for the interior surface because it would resist the corrosive sewage. Pipe lengths were filament wound. When fabrication was completed, we shipped the pipe sections from our plant in Florida to the job site in Pennsylvania. I visited the site and saw them installing our sliplining pipe, which was quite a process.

"Each finished pipe section was lowered down the vertical shaft to a Streit diver who attached it to a crane-mounted cable that winched it through the tunnel to be fitted into the last section in line," Laprade explains. "This process went on until 200 sections of our FRP pipe lined 600 linear feet in each tube. The space between our pipe sections and the old, deteriorated steel lining was filled with low-density grout. Our proprietary bell and spigot system on the specially designed pipe sections and foam bulkheads to seal tunnel sections enabled the divers to do the sliplining while the siphons continued to have a live load of sewage, and they didn't discharge anything into the river. Overall, it was a terrific team effort, with Beetle Plastics getting lots of input from Streit and the city engineers in the initial design and testing stages."

For more information on Beetle Plastics, contact Thomas Haber. Telephone: 904/284-3003, Fax: 904/284-4361, E-mail: beetlefl@bellsouth.net