

half full of polypropylene static mixing elements.

Both the inner and outer towers were fabricated by hand lay-up using a 1 1/2-ounce fiberglass mat and DERA KANE 411-45 resin. An interior corrosion liner was used on both vessels, which consists of C-veil, a Nexus® veil and two 1-1/2-ounce mats.

The laminate thickness of the outer tower varies from 1.72" on the bottom to 0.5" thick at the top. The overall height of this vessel is 38'. Searles says the thickness of the shell varies to accommodate head pressures.

The shell of the smaller, interior vessel varies in thickness from 3/4" on the bottom to 3/8" on the top, and its overall height is 22'.

Searles notes that Mesh applied

C-veil on the outside of the 38' tower to seal the fiberglass and provide additional corrosion protection. The interior tower has corrosion liners of C-veil, Nexus veil and fiberglass mat both inside and outside. "Because this tower is inside the first and exposed to

tower will be 165°F. The empty weight of the vessel is 25,000 lbs., and the operating weight is more than 500,000 lbs.

Mutsakis notes, "This tower achieves oxidation in a compact volume with no moving parts and with greater

"Koch specifies DERA KANE 411-45 resin for all oxidation towers because it is best suited for this application."

– Mike Mutsakis, static mixing group manager, Koch Engineering

corrosive materials both inside and out, extra protection was needed on both the interior and exterior of the shell," says Searles.

According to Searles, the actual operating temperature for this

efficiency than conventional aeration equipment." ■

For more information, contact David Searles at Mesh Plastics; 318/477-7238

Dual-Laminate Scrubber Design Provides High-Efficiency Service

American paper mills are entering the decade of the '90s facing stiffer environmental regulations and a highly competitive marketplace.

The challenge, then, for many mills is how to meet federal, state and local standards and be a good industrial neighbor to the surrounding community, while maintaining a cost-efficient operation. To help a large paper company meet this challenge, Caldwell-MacKay Company, Inc. designed a high-efficiency, two-tower scrubber system.

The dual-laminate construction of these scrubber vessels consists of PVC and FRP. Each vessel has an inner lining of 3/16"-thick PVC as the first corrosion barrier. The second corrosion barrier is a 1/4"-thick hand laid-up laminate using DERA KANE 411-45 vinyl ester resin. This laminate consists of a 40-mil Nexus® veil at the PVC/FRP bond interface followed by 210 mils of 1-1/2 ounce chopped strand E-glass mat.

The structural shells of the vessels were filament-wound to a 1/2" thickness using DERA KANE 510C-350 resin. The 1/4" hand lay-up plus 1/2" filament-wound laminate

gave a total FRP wall thickness of 3/4". The towers' flat bottoms were constructed of 1.2" hand laid-up FRP.

The packing support ledges and beam pockets were constructed as an integral part of each vessel, notes John Kidd, president of CPF Dualam, Ltd., Montreal, Quebec, the primary fabricator on the project.

"There was a definite emphasis on corrosion resistance with this system."

– John Kidd, president, CPF Dualam, Ltd.

"Another unusual aspect of this scrubber is the thickness of the second corrosion barrier. This barrier is quite substantial, consisting of a 1/4" laminate using DERA KANE 411-45 resin. Normally, when we build vessels of this type, the corrosion barrier is only 1/8" thick," Kidd states. "There was a definite emphasis on corrosion resistance with this system."

Rick MacKay, vice president of engineering for Caldwell-MacKay, notes that DERA KANE 411-45 resin

was used for its workability and corrosion resistant properties. The use of DERA KANE 510C-350 resin provided additional corrosion resistance, as well as fire retardant¹ properties, to the structural shells of the vessels.

The scrubber system became fully operational in March of 1990, and is reported in excellent condition. MacKay says this system far exceeds EPA and OSHA safety limits for emissions. ■

For more information, contact Rick MacKay at Caldwell-MacKay Co., Inc.; 205/979-4310

¹While DERA KANE vinyl ester resins offer fire retardant properties, all DERA KANE resins are organic materials. Products made with these resins will burn under the right conditions of heat and oxygen supply. Refer to product literature to determine applicability of DERA KANE vinyl ester resins to your particular project.

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