

INTERPLASTIC

CASE

history

A Sawyer seal strip is installed on a suction roll.



Put It On Paper

Papermaking is one of the most corrosive applications for composites. Those who find a successful

composite breathe a huge sigh of relief but keep looking for the next improvement. Bill Sawyer, Jr., President, Sawyer Plastics and his father, Bill Sr., found themselves in that familiar scramble back in the 1980's when one of their customers asked for suction roll packing. The customer's part had been made with asbestos and not only was it a hazardous material, it also was too abrasive.

"We'd never built suction roll packing but we had some polyethylene in the shop and got right on it. It worked pretty well but we needed something more durable," explains Sawyer. "We knew vinyl esters had very good osmotic resistance and that they were tough, so we started experimenting with various reinforcements and vinyl esters."

Eventually Sawyer Plastics chose Interplastic Corporation's CoREZYN® vinyl ester and Twaron®, an aramid polymer developed with high strength, high abrasion and high chemical resistance properties.

"We've been very pleased with the CoREZYN vinyl ester and have not found any other resin that works as well. The vinyl ester/Twaron combination brings durability not only in use but also in handling as sometimes the finished parts are 'walked' through a building to be installed," says Sawyer. "They may bend, bounce and bump numerous times along the way but breakage is very rare."

Building the Composite Squeegee

Typically Sawyer Plastics manufactures parts using hand lay-up, approximately 20 inches-wide x 15- to 35 feet-long x 0.5 to 3 inches-thick (508 mm-wide x 5- to 11m-long x 13- to 76 mm-thick). The mold is first covered with Mylar. This is fast, easy and eliminates the need for a mold release product.

The Twaron fabric, cut to length, is laid in the mold next.

Powdered graphite is added to the CoREZYN vinyl ester resin to reduce the coefficient of friction of the finished part on the paper press. Then a designed promoter package is incorporated and the mix is initiated to achieve a long gel time and a low exotherm. Sawyer needs the longer gel time to

attain the part thicknesses they want. The low exotherm reduces shrinking and cracking in the finished part. The promoted and catalyzed resin mix is then poured into an open mold to saturate the fabric.

The saturated fabric is rolled out to eliminate any voids or bubbles. Fabric and resin are alternated and rolled out between layers until the desired thickness is reached.

The part is capped with Mylar and then the mold is closed and left to cure.

The cured piece is ripped in strips, machined to the final part dimensions and is ready for shipping.

At Work

Papermaking is primarily a de-watering process. The Sawyer suction rolls act like squeegees on the papermaking press by forming a contact between a rotating mandrel and a thick stationary box contained inside the mandrel. There may be a million holes drilled into the rotating mandrel, according to Sawyer. The stationary box inside is

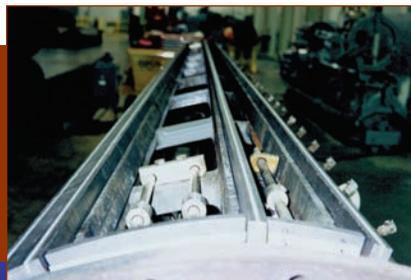
open at the top and a vacuum is pulled on the box to remove the water from the wet sheet of paper being made. The suction roll also holds the paper against the roll as it changes direction to form the sheet.

After the sheet is formed, it has to be dried. It is run against a pick-up felt and that transfers the sheet to paper presses. The paper is pressed a few times against the felt to squeeze more water out of it. The paper then goes to the dryer. The felt is de-watered by running it across a suction roll.

"Sometimes a sheet of paper is more than 400 inches wide (10.16 m) and will be traveling 6,000 ft/min (1830m/min). (5,000 ft/min is nearly 60 mph!) The presses may run for months or years without stopping, which means our parts have to reliably withstand the friction and constant exposure to water," relates Sawyer. "Our record run is 866 days straight at 4,000 ft/min (1219 m/min) at a West Coast paper mill. We compete against materials that are compacted rubber graphite and we beat them hands down. The CoREZYN vinyl ester and Twaron combination has given us a very good reputation in the paper mill industry."

The pulp and paper industry is a very active composites application for Interplastic vinyl ester products. On our Web site, www.interplastic.com, you may read case histories about tanks, pipes, ducting and scrubbers successfully using CoREZYN vinyl ester resins.

To learn more about the powerful corrosion and water resistant capabilities of CoREZYN vinyl ester resins, visit our Web site and click on technical papers. There you will find two important award winning studies on the performance of vinyl esters after 15 years of immersion in water.



A Sawyer seal strip on the suction roll.



The suction roll seal is created by this strip of Sawyer Polytron® K-2 material.



The PolyPV Kit™ is made with vinyl ester resin to handle the high heat application without premature wear.



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