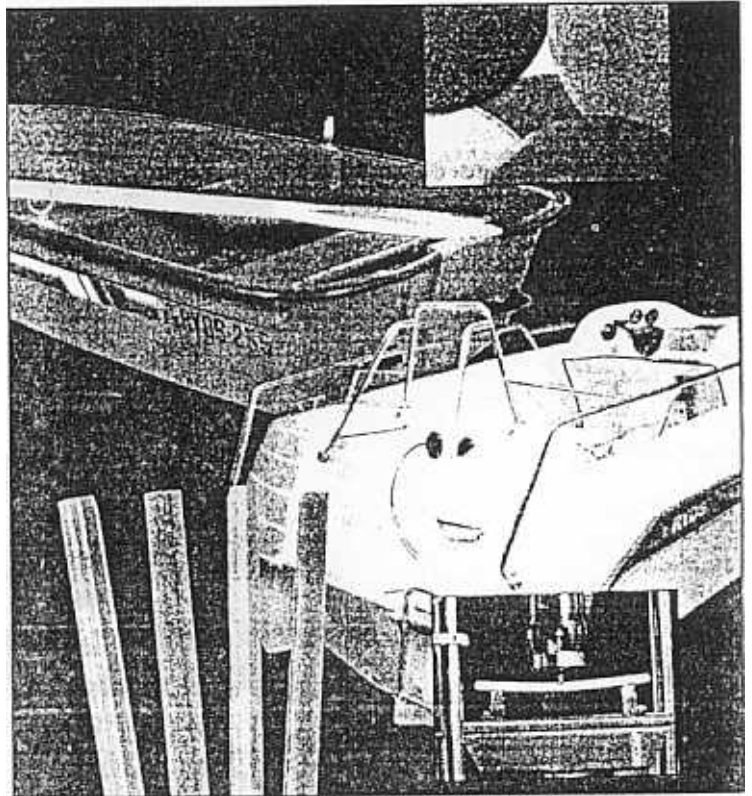




Ryds, Sweden's largest small-boat builder, is using Floridian Wolfgang Unger's technology for recycled fiberglass to build dinghies.

*[recycling] is a savings no matter how little you pay and landfill costs keep going up. "*

Wolfgang Unger



The Swedes are testing a mix of recycled fiberglass and microspheres as a core material in sandwich construction of boat transoms and decks. A U.S. company, Seawolf Industries, developed the technology.

## Fiberglass recycling makes dollars and sense

By Jim Flannery  
Staff Writer

Boatbuilder Steve Dougherty has 20,000 pounds of scrap fiberglass heaped in a pile at his plant for recycling. "That's 20,000 bucks sitting there right now," says Dougherty, senior vice president of Dougherty Marine of Edgewater, Fla.

Dougherty builds fiberglass outboard boats — three a day. Every piece of fiberglass he lays must be cut and trimmed. His plant, though still relatively small, fills a dumpster a week with scrap fiberglass. Dougherty calculates its worth to be at least the price of the glass and resin used to make it — \$1.20 a pound and rising.

The cost of materials plus labor bring the value of a dumpster full of scrap fiberglass to \$3,000. Add the \$175 cost of dumping it in the landfill and Dougherty has incentive to recycle.

Using the patented technology of Wolfgang Unger, a New Smyrna Beach, Fla., marine engineer, Dougherty is grinding up the fiberglass, mixing it with syntactic foam — a polyester resin laced with tiny plastic bubbles called microspheres — and using the mix to cast transoms that are stronger than plywood and don't rot.

Dougherty says he uses about 20 pounds of recycled fiberglass to cast transoms of smaller boats and 40 pounds on larger ones.

"We have what we think is the best transom in the industry and we make it at lower cost," Dougherty says. Unger claims transoms made from recycled fiberglass are at least 10 per cent less costly than ones made of virgin fiberglass with plywood cores. Determined to recycle more of his \$20,000 pile of scrap fiberglass, Dougherty wants to extend his use of ground-up glass to the fabrication of

stringers that stiffen the hull.

Dougherty is helping pioneer fiberglass recycling in an industry that still is not convinced that it is necessary or beneficial.

"It is moving at a snail's pace, though we are getting more and more interest," says Unger, 63. "I have three boat companies coming in this week and next to see what we're doing."

Their main interest: possible cost savings through recycling.

Unger, a native of Germany and vice president of engineering for Seawolf Industries Inc., a firm specializing in fiberglass spray-up, trim and vacuum forming systems, is the technical genius behind the recycling technology. He developed the syntactic foam in the 1970s to build bathtubs at a manufacturing plant he ran. Later he invented a machine to grind fiberglass without destroying the fibers and used the ground-

up glass in the foam as a filler.

Unger's recycling process is making some inroads in Europe, where the incentives to recycle are greater. Swedish boatbuilder Ryds, which builds about 4,000 boats a year including a Swan 40, is fabricating a dinghy from recycled fiberglass using Unger's technology, making stringers with it on some larger boats and testing its use as a core material in fiberglass boat decks. The Swedish Institute of Composites has licensed the technology from Unger and with the Nordic Industrial Fund is helping fund structural tests by Ryds and Finnish polyester maker Neste.

Unger says the recycled material doesn't have as much tensile — or longitudinal — strength as virgin fiberglass, so it may not be good by itself for large hulls, but in sandwich

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Wolfgang Unger

## *Recycling*

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construction it is stronger than fiberglass and alone it is more resilient, more impact resistant and less likely to develop spider cracks. He says Swedish tests show it to be much stronger than plywood.

Though it seems worthwhile, Unger says, fiberglass recycling is slow to catch on because boatbuilders are very conservative about adopting new materials. They know from trial and error how much virgin fiberglass they need to stiffen various parts of the boat but it is hard for them to translate their strength requirements from virgin to recycled material. Mistakes can be costly.

Right now Unger sells recycling as a way to save on use of virgin fiberglass and eliminate transom rot. He says his casting process also is faster