

# CaseHistory

## High Strength HVAC Ducting

<b>Resin:</b>	Vipel® K022-AAA Fire Retardant Bisphenol A Epoxy Vinyl Ester
<b>Composite Application:</b>	HVAC Ducting Collectors Collector Arms
<b>Manufacturing Process:</b>	Filament Winding
<b>Diameters:</b>	30-, 24- and 14-inch (750-, 600- and 350 millimeter)
<b>Longest Sections:</b>	40 feet (12.2 meters)
<b>Total Length, Primary:</b>	120 lineal feet (37 meters)
<b>Total Collector System:</b>	560 lineal feet (171 meters)
<b>Installed:</b>	2003
<b>Location:</b>	Southern California

Building a dream home on a inspirational point of the Southern California coastline challenged the architect to design ingenious ways to meet basic building needs. For the air return ducting system of the exquisite house, the challenge is met with the help of Vipel K022-AAA high performance vinyl ester resin from AOC.

Ram Fiberglass, Inc. used Vipel K022-AAA resin with continuous glass fibers to filament-wind and factory-fabricate heating/ventilation/air conditioning (HVAC) ducting that satisfies the unusual specifications for the site.



The home's design requires the main head and collector arms for the residential air return to be buried beneath the structure, a situation that puts the ducting under the site's cyclical water table. Ducting was secured below grade with a Manta Ray® stainless steel sea anchoring system from Foresight Products, Commerce City, CO.

When the area near the house becomes flooded during storms or high tide, the duct must withstand the hydraulic forces and corrosive environment of seawater. Design parameters extend to the worst-case scenario of the hypothetical "Hundred-Year Storm." "Because of these stringent standards, the architect wanted something thicker, stronger and more rigid than standard composite ducting," says Stan Capelli of contractor Environmental Heating and Air Conditioning Inc. "We also had to comply with building codes that call for Class 1 [per ASTM E- 84] flame retardant and low smoke properties."

"Choosing a resin for the demanding performance requirements of a job like this is critical," says Patrick Kilcullen, Sales and Marketing for Ram Fiberglass. "Vipel K022-AAA vinyl ester achieves an ASTM E- 84 Class 1 rating with low smoke without the use of a synergist. The inherent flame-retardant chemistry simplifies our inventory and eliminates the need to handle a toxic additive. Combine that with the resin's outstanding strength and corrosion resistance, and we were able to manufacture and fabricate a system that is designed to resist the forces of nature and time."