



Hybrid Propulsion System, Alternative Energy Resources and 'Green' Design Backgrounder

RiverQuest's new "green" passenger boat will feature propulsion technology provided by Siemens Automation that will **cut energy consumption in half per passenger at boat capacity and reduce greenhouse gas and toxic air emissions, including CO₂, SO_x and particulate matter**. The hybrid diesel-electric propulsion system, ELFA™, from Siemens Energy & Automation combines conventional diesel motors with a multi-component Siemens system that converts the engines' power to electricity and uses it to power the boat's systems. **The vessel will operate on its battery banks as well as biodiesel-blended fuel. With its ELFA propulsion system the new boat will be benchmark for the marine industry, while RiverQuest's education programs become a model for green, sustainable energy use.**

At the heart of the 90-foot, 150-passenger vessel is its hybrid propulsion system, which is setting the benchmark for environmentally friendly passenger vessels around the country **with its application of the diesel-electric propulsion system**. Not only will the boat utilize an electric battery bank to help power it, but **RiverQuest's development team, which includes engineers from Alion Science and Technology, designed the boat so that it can accommodate future addition of new power sources, such as fuel cells, solar panels, and micro wind turbines**. Solar panels will be installed shortly after arrival in Pittsburgh through a PADEP Energy Harvest grant. This is all part of a major organizational commitment to demonstrate clean vessel technologies by installing sustainable energy systems that are complementary, further improving the environmental performance of the boat.

At the same time, it's more than just the vessel's propulsion system that is environmentally friendly. From the beginning the goal was to design a boat that showcased how green building design and environmentally friendly procedures can be used on a passenger while still maintaining operating efficiency and reliability. **The new vessel was one of the first in the world to implement in its design the Leadership in Energy and Environmental Design (LEED) standards developed by the U.S. Green Building Council. Many of the boat's subsystems such as HVAC, lighting, interior design and materials, plumbing, windows, and materials and other coatings address the LEED standards for building design.**

The boat is more than just a symbol of environmentally sensitive design: it will be a working laboratory, a dynamic teaching tool for all who come on board, whether for educational or tour programs, charters or special events. In recognition of this **RiverQuest is undertaking a major redesign of its curricula. Along with its partners and consultants in education, RiverQuest has developed energy and sustainability modules to add to its current core programs**. In addition, RiverQuest will create an entirely new series of programming around green engineering, sustainability and energy that will complement the boat's hands-on learning opportunities.