



## HORNBLLOWER HYBRID FACT SHEET

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**Background:** Alcatraz Cruises took over as the concessioner of ferry services to Alcatraz Island on September 25, 2006. Since that day the company has carried nearly 3 million passengers to the island; upgraded the Alcatraz Landing area to provide a departure and arrival point that is filled with educational and interpretive messages, as well as souvenir photos, food and beverages and merchandise; added the two greenest vessels on San Francisco Bay, the *Alcatraz Clipper* and the *Alcatraz Flyer*, as the two primary vessels for the service; and became the first National Park Service concessioner and the first service company in the United States to be compliant with ISO 9001: 2000(Quality), ISO 14001:2004(Environmental) and OHSAS 18001:1999(Health & Safety).

Alcatraz Cruises is now introducing the Hornblower Hybrid, which will use a combination of diesel-powered Tier 2 generators, electric motors, wind turbines and photovoltaic solar panels to charge batteries that will power all the functions of the vessel, including navigation systems, lighting, monitors and the variable frequency drive that controls the motors. The vessel has an advanced power management system that regulates when and how the different power sources are used. For example, when the vessel is at idle at the dock it can be operated with no diesel engine running. The motors will use energy that has been stored in batteries. The system that allows this flexibility is what allows us to drastically reduce the amount of fuel used and reduce our carbon footprint.

The Hornblower Hybrid vessel is a 64-foot long recycled catamaran, originally built in the Gulf for use as a commercial diving vessel. In early 2008 Alcatraz Cruises purchased the vessel and began a massive overhaul, retrofitting nearly 90% of the vessel's interior machinery and furnishings. Hornblower's in house engineering department did the planning and engineering for this vessel. Two respected naval architects participated in the design and USCG approval process. Many of the technological advancements are visible on the vessel, creating an enhanced educational experience. The vessel was funded entirely by Hornblower. The vessel will enter continuous service to Alcatraz in 2009. Alternative technology demonstrations will be scheduled over the next year.

**Vessel Facts:**

Capacity: 149 passengers

Length: 64 feet

Beam: 30 feet

Draft: 5 feet

Height from water (without turbines): 25 feet

Propulsion system: Two Series 60 MTU Tier 2 diesel engines powering two Marathon 320 KW generators providing power to two Yoskawa variable frequency drives, which control the output of two 400 HP electric motors connected directly to conventional propellers. 380V DC Battery bank allowing zero emission mode.

Wind Turbines: Two 1.2 KW normal output wind turbines (2.0 KW max.)

Solar array: 1.2 KW solar array

Operating speed: 10 knots

**Environmentally-friendly components:**

Carpet – Carpeting contains post consumer recycled materials and is recyclable.

Counter tops – Vetrazzo counter tops throughout the vessel are made from pieces of recycled vodka bottles.

Lights – LED fixtures light the main deck and pilothouse of the vessel. These fixtures require a fraction of the energy of standard bulbs and provide an equal or greater amount of illumination.

Interior signage – A significant portion of the interior signage is printed on Plyboo, a composite material made from sustainable sources and contains no harmful chemicals.

All the interior modifications meet the US Green Building Council LEED criteria for recycled content.