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Gone Green

Workboat Innovators Plan Today for Tomorrow

BARGES
Minimal Carbon Footprint

FleetWeek
Workboats Aid the Navy

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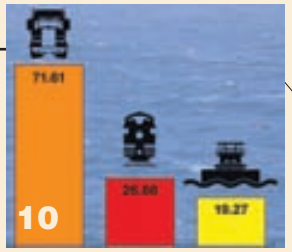

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editorial

I met Pat Bray, co-owner of Vancouver-based Bray Yacht Design & Research, at the first SeaFuture show in La Spezia, Italy. Despite the international flavor of the event, I came away with some great insights on North American vessel design. Bray was kind enough to sit down with me and talk naval architecture over some to-die-for Italian gelato. He likens the evolution of his fuel efficient hull design to that of the internal combustion engine. He pointed out that one of the first engines was a 1.1 liter model capable of just four hp at 900 rpm. Modern engines of the same size now produce over 68 hp at 6,000 rpm using what Bray calls "bolt-on" parts: turbo chargers, header exhaust, fuel injection, etc. In the same way, Bray found that bolt-on appendages added to a hull, like bulbous bows, bi-foil skegs and midship and stern bulbs, improve a vessel's fuel efficiency dramatically. See this month's feature "Green Vessel Design: Hybrid propulsion and fuel efficient hulls," page 34.

At that same show in La Spezia, I also met Joe Hudspeth of All American Marine. The shipyard highlighted their ultra-low wake ferry which is featured in the Boat of the Month section on page 14. This is an example of how environmentally sensitive vessel designs continue to be built despite trying economic times. Low-wake technology has also been applied in the case of the San Francisco Bay Area Water Emergency Transit Authority's (WETA) newest ferry, Pisces, and her sister vessel Gemini. In addition, both ferries run on a blend of bio-fuels resulting in dramatically reduced emissions.

While discussing green vessel design with Ken Harford of Robert Allan Ltd and John Stratton of Aspin Kemp & Associates (AKA), both commented on a continuing market for things like hybrid design.

"I think that the demand for this sort of solution is growing because even as economic pressures increase on operators they're looking for ways to save money on fuel and maintenance costs," Stratton told me.

Harford agreed and pointed to his company's projects exploring hybrid options for the Canadian Coast Guard. "I think that the emphasis on reducing the carbon footprint, particularly in the government sector, is going to continue to push this interest through our economic malaise at the moment," he said.

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boat of the month

Seattle Area's Ultra-Low Wake Ferry

Last April the commissioners of Kitsap Transit unanimously approved $5.3m for the purchase of a 77-ft ultra-low wake Teknicraft catamaran to be built at All American Marine (AAM) of Bellingham, Wa. The high speed passenger catamaran will carry 118 passengers and operate between Bremerton and Seattle, Wa., at speeds of 29 to 38 knots. Kitsap Transit has been searching for an economically feasible solution to bring fast and environmentally safe passenger-only ferry service back to the Kitsap Peninsula since Washington State Ferries was forced to terminate their service in 2003. Through a series of federally funded wake wash studies, the wake signature of a hydrofoil-assisted Teknicraft Design catamaran produced the least amount of wake wash energy within its tested vessel class. Kitsap Transit contracted with Pacific International Engineering of Edmonds, Wa., to spearhead the ongoing research efforts in conjunction with AAM and Teknicraft Design to further enhance and optimize the vessel's design. Teknicraft Design principal naval architect, Nic de Waal, of Auckland, New Zealand worked with hydrodynamicists from the University of Iowa's IIHR-Hydroscience and Engineering Research Center as well as naval architects from INSEAN in Rome, Italy to model an ultra-low wake hull. Coastal specialists from Golder Associates of Redmond, Wa., also evaluated the proposed vessel's performance in terms of wake generation and resistance. AAM has begun construction on the passenger ferry by combining an aluminum catamaran hull with a light weight composite cabin. Using composites will be a first for the company which has been building aluminum vessels for over 20 years. The latest composite technology will be used to create high strength structures at a lower weight than that of an aluminum equivalent. Composites also possess superior sound and insulation properties. AAM will outsource all composite components initially. In conjunction with Bellingham's Marine Innovation Zone program, AAM and Western Washington University will create the vessel's adjustable hydrofoil system using composites. All American Marine will fabricate the Teknicraft Design aluminum catamaran hull using 5383 Sealium aluminum alloy. Welded 5383 alloys are nearly 20 percent stronger than conventional marine grade aluminum with similar plate thickness. Using stronger aluminum will require less material to be used, thereby decreasing overall weight and controlling wake wash height and energy. The copyrighted hull design's premise is to create lift for the vessel by means of the hull shape and hydrofoil working together to displace nearly one-half of the vessel's weight. The net result is reduced resistance, reduced fuel consumption, reduced wake and increased speed. The hydrofoil system and wake mitigating interceptors will be adjustable and controlled by GPS, automatically making adjustments so the vessel will produce the lowest wake energy in the most sensitive coastal areas. The new passenger ferry is scheduled to be delivered by March 2010.

Specifications

Length, o.a. . . . . .82.7 ft
Beam (molded) . . . . . .28 ft
Cruising speed . . . . . .34 - 37 knots (full load)
Main engines . . . . . .4 x Caterpillar C18 ACERT
Propulsion . .4 x Hamilton Jet HJ 403 water jets
Generator . .1 x Northern Lights M944W 30 kW
Steering system . . . . . .Hamilton Jet MECS
Electronics . . . . . .Radar Marine RadarsFuruno FR-1934 C/NT, Furuno 2117 BB/DC
Depth sounder . . . . . .Furuno FCV620
GPS . . . . . .Furuno GP32 12 channel
AIS . . . . . .Furuno FA150
Paints . .Awlgrip topcoat, Intersleek 900 bottom
Liferafts . . . . . .2 x DBC 50 man IBA