Continuing decades of success in design competitions by Westlawn students and alumni, Gerry Douglas, president and chief naval architect of Catalina Yachts and Rodger Martin, of Rodger Martin Design, both had designs selected for 2010 awards by *Cruising World* magazine.

**The Catalina 355**

Designed and produced under Douglas’s watchful eye, the Catalina 355, was recognized by *Cruising World* judges, in a category where all boats were designed to be comfortable and easy to sail.

“...the kind of boat that people who love sailing will enjoy.”

The judges spent much time debating all the boats entered, but, when it came time to pick the one that stood above the rest, it was the Catalina 355. In 9- to 11-knots wind, boat speed was in the 5-knot range. The judges found the vessel’s handling forgiving and responsive, with predictable upwind tacking and a nice extra turn of speed off the wind using the cruising gennaker tacked to the removable bowsprit.

The integrity of the construction also impressed the judges, and they felt that Douglas did an excellent job of creating an interior space that seems bigger than found on most 35-footers, including a large galley with excellent storage and even a powered adjustable bunk in the main cabin forward, which tilts up to make it more comfortable to read in bed.

**Continued on Page 5**
More than 5000 marine professionals came to Louisville Kentucky to experience IBEX 2010.

The exhibit hall was filled with the leading OEM and aftermarket manufacturers and suppliers, exhibiting thousands of new products. There were workshops where workshop demonstrations using the most advance boatbuilding tools and technologies. 69 seminars were presented by leading experts in design and engineering, composite materials and methods, survey and repair, boatbuilding, onboard systems, marine electrical systems boatyard and marine operations, education and training, manufacturing management, and new dealer development.

For three days the marine industry “owned Louisville”. Every restaurant and hotel was packed with boating industry people presenting excellent opportunities for networking. Sightseeing included tours of Churchill Downs race track and museum, the Louisville Slugger factory (manufacturer of major league baseball bats, riverboat cruises on the Ohio River, and the downtown Louisville experience.

We enjoyed chatting with the many Westlawn students and alumni who stopped by our booth. It is always great to hear about their aspirations and successes.
Just six weeks after IBEX, the METS (Marine Equipment Trade Show) in Amsterdam boasted a record 1,320 exhibitors and an increase in attendance, totaling over 18,800! Westlawn attended for the first time at the ABYC booth.

METS provided a chance to meet with some of our many European students, who can’t easily get to IBEX or to the annual Westlawn student meet. Nearly a dozen current students stopped by, as did even more alumni, who are based in Europe.

Westlawn student Ries Plevier, whose boatbuilding company is based near Utrect, took Dave Gerr and his wife on a tour of Ries’s very successful mini-tug yacht, with a wonderful dinner as an added treat. Paul Cohen, president of Dan Composites, in Denmark, which recently hired a Westlawn student, was another old friend who was able to renew contact over dinner in Amsterdam.

Westlawn and ABYC had an exceptionally positive show, with the opportunity to see so many new products and companies as well as connecting with European students. Both AYBC and Westlawn are looking forward to being at the next METS in 2011.
**ABYC Foundation Donor Challenges Industry with Matching Funds**

**November 3, 2010:** This year’s ABYC Foundation’s annual fund raising drive could raise more than $30,000 with the announcement of a guaranteed matching gift for reaching the $15,000 goal in donations. Today, the Foundation’s Chair, Joe Charles of Charles Industries, issued the industry-wide challenge in order to infuse the Foundation with much needed funds.

“Many in our industry don’t realize how important a role the ABYC Foundation plays in funding boating safety research, special programs and technical education and training,” expressed Charles in a statement. “I believe lives have been saved, boating safety issues resolved, as well as opportunities to educate, train and certify industry personnel fulfilled because of existence of the ABYC Foundation. The Foundation now needs industry support and I am both proud and fortunate to be able to issue this matching challenge,’ Charles concluded.

Upon announcing this challenge to ABYC’s general membership, Skip Burdon, the Foundation’s current Secretary and President of ABYC remains upbeat about industry coming together in support of the Foundation.

“During these challenging economic times, the ABYC Foundation has been hit hard and at present has sufficient operating funds to sustain it for only a few more years, Burdon stated. “While we realize that these are difficult times for many in our industry, even the smallest of donations can produce big results when all of us reach out and give what our means will allow,” stated Burdon. A donation of $20 by 5,000 individuals throughout industry could raise $100,000 – that’s the real power of the small donations. And, of course the bigger donations are also important because they can ensure we meet our year-end goal and match faster,” concluded Burdon.

Donations to the ABYC Foundation are tax deductible and each donation will be acknowledged by either an email response or letter. Donations over $250 will be acknowledged at the ABYC website for all of 2011 starting February 1, 2011. Donations can be made by calling ABYC at 410 990-4460, extension 32, 43 or 26. Donations can also be made at the ABYC Website by clicking on the ‘ABYC Foundation’ icon button on the left side of the site. Lastly, 2010 donations can be made by mail at ABYC Foundation, Attn: Secretary, 613 Third Street, Suite 10, Annapolis, Maryland, 21403.

The ABYC Foundation is a not-for-profit 501(c) 3 organization that was established in 1988 to raise funds and provide support for special projects, education and training programs, scholarships and other initiatives being undertaken by the American Boat & Yacht Council (ABYC). Our mission is to support ABYC in the development of standards, education, information, and awareness initiatives; and special projects that are designed to promote and foster boating safety. In other words...we exist to favorably impact boating safety and workforce education related issues that directly affect both YOU and the boating public!
Winning details included: Superior quality construction; innovative well-thought-out design details; good performance under sail, and “a lot of boat for the buck.”

Catalina Yachts
21200 Victory Boulevard
Woodland Hills, California 91367
Tel: 818 884-7700
Catalina Yachts Florida
7200 Bryan Dairy Rd
Largo, FL 33777
Phone 727-544-668
www.catalinayachts.com

The Presto 30
Featured in the September 2010 issue of The Masthead, Rodger Martin’s Presto 30 was selected by the Cruising World judges for the 2010 Cruising Spirit Award. The judges asked:

“No, and the judges, at their own discretion, responded by giving the Presto 30 the Cruising Spirit Award for being a boat unlike any other that also has the potential to attract a whole new group of sailors to a different way of doing things.

With its cat-ketch rig, unstayed carbon masts and wishbone booms, the Presto 30, is quite distinctive. Add in extremely shoal draft, beachability, and easy trailering, and you have a cruising boat that encourages adventure, and at a reasonable budget.

Not only were the judges impressed with how easy the split rig made wing-and-wing downwind sailing, but:

“Above all else, they felt the boat produced the visceral joy of sailing that embodies all the reasons we set off for a journey or a daysail.”

Winning details included: The centerboard and kick-up rudder that make the boat easy to launch from a trailer and extremely shoal-water friendly; under sail, the boat was light, responsive and sneaky quick; the interior isn’t fancy, but it does have all the cruising comfort you’d need to head out on any adventure.

Rodger Martin Design
Box 242
1 Washington Street
Newport, RI 02840
Tel: 401-849-9850
info@rodgermartindesign.com
www.rodgermartindesign.com
A new design on our drawing board is this 13.8 meter performance sailing yacht to be built in China. The design is collaboration effort with Robert Perry Yacht Design office from Seattle, USA, and is based on well proven 10-meter and 7.5-meter models. The boat features modern racing hull and carbon fiber rig, as well as accommodation that can sleep 8. It is built light using sandwich construction with the infusion process for hull and deck. The interior is minimalistic but comfortable and is designed to save weight. This boat is built to high standard with affordable price. Flying Tiger Boats in China is the builder.

LOA 44’ 0” 13.41 m  LWL 41’ 0” 12.52 m
Beam 12’ 0” 3.65 m  Draft 9’ 0” 2.74 m
Know It All Contest Solution to the Sept. 2010 Question

On Seacock Corrosion

By Dave Gerr, © 2010 Dave Gerr

This time, Westlawn student and engineer Jay Jeffries and marine surveyor Kevin Ennis both demonstrated that they are probably too smart for their own good as they each submitted the correct answer to the September 2010 question. Naturally, Know It All certificates, Westlawn tee shirts and caps are winging their way to each of them. Our winners should henceforth be addressed with the honorific of “Know It All,” with all the rights and privileges pertaining thereto. The full answer and explanation to the question is:

And the Solution Is:

Hodge Podge is a strongly built 52-foot fiberglass motorsailer. A well-designed ocean voyager, Podge is fully fitted out with extensive systems, including hydraulic bow thruster, watermaker, A/C, even a small Jacuzzi. During a recent haul-out the owner noticed that one of the bronze seacocks for engine intake was severely corroded and discolored and in danger of failing. With easy access inside the engine compartment, changing the seacock out isn’t a big job, but the owner rightly wants to know if this is likely to happen again. What is the probable cause of Hodge Podge’s seacock corrosion problem?

A positive wire from the DC system, likely from a bilge pump or similar equipment, is almost certainly making contact with the bronze seacock driving it negative/anodic on the galvanic scale (confusing—appears backwards) and so making the seacock into an anode. The bronze seacock will thus corrode badly. This wire doesn't even have to make direct contact. It can be sitting in bilgewater, which then makes contact with bronze fitting. The indirect electrical contact through bilgewater will be less effective at conducting damaging current than direct contact with the wire, but will still lead to much faster and more serious problems than natural galvanic corrosion.

This is stray-current corrosion (electrolytic corrosion), which is caused by external electric current artificially making different metals into an anode and a cathode. Because the current is external, it can reverse the usual polarity (potential or direction of flow). You could, in some instances, have a zinc driven to be cathodic to a bronze fitting. Worse, the external current can be much, much larger than natural galvanic corrosion. This is because the potential between naturally occurring anodes and cathodes is measured in millivolts (mV). By contrast, the potential difference imposed on two different metal parts (they can even be of the same alloy) might be measured in volts (100 times more on average for 12-volt system than natural galvanic corrosion). The result is both very serious corrosion and corrosion that can do major damage in days rather than over weeks, months, or years. None of this stray current corrosion has anything specifically to do with the alloys involved (zinc or otherwise).

Stray current (electrolytic corrosion) is not galvanic corrosion. Stray current is not dezincification. Dezincification is plain old standard galvanic corrosion—nothing more. In this case, you have copper and zinc mixed together in a single alloy (brass). In an electrolyte (seawater for boats) the anode (the zinc) is eaten away as it gives off excess electrons to the more noble copper. Galvanic corrosions doesn't have to involve zinc. A bronze fitting can cause corrosion in an aluminum or steel hull—serious corrosion (see page 16).

The corrosion for this problem wouldn’t have been caused by an AC (alternating-current) leak. The fact is that AC virtually never produces corrosion in metals on boats. There is a bit of controversy about this as a few recent experiments have shown some corrosion from high AC voltage in laboratory conditions. In 99% of situations on boats in the real world this won’t be the case. Indeed, unless the AC current density is very high (say over 80 amps/sq.meter—dangerous! — but any AC leak is dangerous), nothing much happens with regard to corrosion. Even at these high current densities, corrosion from AC virtually only occurs in aluminum, not in bronze, brass, steel, or stainless. Could there be rare (very rare) exceptions? Possibly, but we haven't seen it at Westlawn or ABYC.

See the New December 2010 Question on Page 27
Spitfire 30
Designed By Westlawn Alumnus Martin S. Silverman
Of Silverman Yacht Designs, LLC

As a 'Spirit of Tradition' yacht Spitfire blends modern sailing characteristics with aesthetics influenced by the early days of the six-meter class. In Spitfire's case, the very manageable size of this yacht allows her owners to sail her on a whim when the afternoon breeze fills in, without the need for a large or weighty crew. This is a low hassle factor yacht, intended to inspire spontaneity. To a significant degree, the success of this design is determined by the extent to which the yacht compels her owners to sail her.

While her large sail area and thoroughly modern power-to-weight ratio provide good light air performance, Spitfire's fractionally rigged sail plan with non-overlapping jib make it easy to change gears as conditions warrant. At the same time, her moderate displacement and low center of gravity, attributable to her deep draft, bulb keel, and high ballast displacement ratio, allow her to stand up to her sail in a solid breeze with grace and ease. With her rigid hull construction, she has a decidedly less dinghy-like feel than many modern race boats. Her well-balanced helm, agility, quick acceleration out of a tack and excellent pointing ability make her a fine tactical racer. Control lines include adjustable backstay, traveler, vang, and cunningham. All appendages are faired to NACA foil sections.

<table>
<thead>
<tr>
<th>LOA</th>
<th>30'0&quot;</th>
</tr>
</thead>
<tbody>
<tr>
<td>LWL</td>
<td>20' 0&quot;</td>
</tr>
<tr>
<td>Beam</td>
<td>6' 9&quot;</td>
</tr>
<tr>
<td>Draft</td>
<td>5' 6&quot;</td>
</tr>
<tr>
<td>Displ</td>
<td>3149 lbs.</td>
</tr>
<tr>
<td>Sail Area</td>
<td>320 SF</td>
</tr>
<tr>
<td>Main</td>
<td>197</td>
</tr>
<tr>
<td>Jib</td>
<td>123</td>
</tr>
<tr>
<td>Spin</td>
<td>180</td>
</tr>
</tbody>
</table>

Ballast 1495 lbs (w/715 lb bulb)  
D/L 176  
B/D 0.47  
SA/D 24  
Cp 0.53  

Hull construction: Cedar strip planking & cold molded veneers. Epoxy coated & vacuum bagged over laminated ring frames.

Designer
Martin S. Silverman  
Silverman Yacht Design, LLC  
15 Columbia Key, Bellevue WA 98006  
425 283 6012

Builder
French & Web inc.  
21 Front Street, Belfast, ME 04915  
207 338 6706, info@frenchwebb.com  
www.frenchwebb.com
Offshore Skiff  
A 28-Foot Plywood Skiff  
By Westlawn Director, Dave Gerr

Not a sea skiff, the Offshore Skiff, is a modified dory. Its hull is a cross between the semi-dory and the flatiron dory skiff. These are fast, comfortable boats, with shoal draft, that are easy to build. Offshore Skiffs have been used for everything from lake and river pleasure craft, to pound-net fishing boats off of Cape Cod, to a fleet of six engaged in seaweed aquaculture in the Pacific Ocean.

Bruce Chinery built his River Horse—the most recently launched Offshore Skiff, pictured here—for his own use. He certainly did a fine job. The epoxy-chine plywood construction lends itself to easy home building, with many Offshore Skiffs having been brought to life this way over the years. Others have been constructed at professional yards.

The Offshore Skiff’s cabin arrangement is shown below. Though easily trailerable, the boat has full standing headroom, a full galley, and an enclosed head. There’s also an open, center-console version—an excellent utility and workboat.

LOA: 28 ft. - 3 in.  
DWL: 24 ft. - 0 in.  
Beam: 8 ft. - 0 in.  
Draft (hull): 0 ft. - 11 in.  
Draft (outboard): 26”  
Disp: 5,400 lb.  
Speed: 18 knots with 75 hp  
23 knots with 150 hp

Contact:  
Dave Gerr  
Gerr Marine, Inc.  
838 West End Ave., Suite BB  
New York, NY 10025 USA  
Tel: 212-864-7030  
Fax: 212-932-0872  
Email: dave@gerrmarine.com  
Web: www.gerrmarine.com
My first career after college was somewhat of a detour. Though my degree was in Mechanical Engineering, I stumbled into a good connection with a gentleman in real estate and spent about ten years with him. It was a good experience and I gained a great education in business, but I found myself getting restless and looking for a better fit. Taking a year to carefully audit my interests and skills, I found two prime motivators: engineering and a love for artistic endeavors. With a long family background in water sports, I gravitated in that direction and found that yacht design appeared to be a great blend for me. Nevada was home during that period so correspondence training seemed like a logical step and discovering Westlawn soon followed. During a visit with family in the Seattle area I called Bob Perry out of the blue and talked him into having lunch. I peppered him with questions about Yacht Design and specifically about Westlawn. He gave the school high marks, warned that they’d work my butt off and graciously answered my other miscellaneous questions. I was hooked.

Two years later I was nearing completion with the Westlawn program. One day as I spoke with my instructor, he mentioned that US Marine had an opening for a design engineer and encouraged me to contact them. I did. They had dreams of someone with experience but over the next couple months I wore them down with my persistence and was offered a job.

That job was the first of a long string of very fortunate events in my career. There wasn’t any strategy on my part in seeking that position but looking back I can’t think of a better place to begin than with a large production boatbuilder. The exposure you get in that environment is amazing. You’re surrounded by a large group of talented specialists covering every aspect of the industry: sales, marketing, warrantee, industrial design, drive trains, electrical, ship’s systems, cabinetry, upholstery, structural analysis, hull design, mock-ups, trailers, you name it and it’s there. In addition, you are up front and center for the entire life cycle of the products. Amazing.

One of the specific good fortunes of being there at that time was that US Marine’s management had had the foresight to recognize the value of CAD and invested heavily in the best software available. When I joined them in the mid 90’s full sized computer plots were still a luxury, and on my first boat project a crazy guy by the name of Janicki approached them with the idea of milling plugs on a 5 axis router he had built. They said “yes” as an experiment, one of my parts was used, Janicki turned out to be brilliant, and within two years the industry was changed. It was an exciting time.
When it was time for me to leave US Marine I was once again the lucky guy. Demand was high for the new process of milling tooling but very few people had the skills or software capable of creating 3D computer models with the level of detail and high degree of fair surfaces to take advantage of the technology. Today we think of how great it is to have parts milled so precisely but back then that was often a bad thing. Parts regularly needed intense hand work to correct poorly modeled surfaces. So I went up to Janicki Machine Design for a visit and began doing contract CAD work for them. After a short time we discovered that they dreamt of having clients who arrived with high quality files and I dreamt of having a yacht design office. Perfect! Pugh Yacht Design was born and they generously directed some very good clients my way.

So there I was, a guy with reasonable skills, absolutely no reputation, but on the right side of a terrific funnel that brought me in contact with some of the legendary leaders in our industry. Several years went by with a wide variety of projects from 130-foot megayachts to 22-foot fishing boats but the core niche that I ended up in was with small productions builders who didn’t need or want a full time design/engineering department. All was well until one of my clients, Glacier Bay Catamarans, grew to the point of adding a full time engineering department. I was offered the chance to experience senior management as VP of engineering and couldn’t resist. I mothballed Pugh Yacht and made the switch.

Glacier Bay was a great company. More years went by, management was a good experience but not more fun than designing boats, the economy tanked, the founder left the company and they were in serious downsizing mode. The picture was not good but amazingly enough good fortune stuck its head up again. An old client called to see if I could do some design work for them. One thing lead to another, I re-opened Pugh Yacht, continued transitional contract work with Glacier Bay as they shut down my old position, and got the contract with my previous client. That was 2007 and I’ve been busy ever since. In today’s economy I can’t explain it but somehow I’ve ended up with two clients, Ranger Tugs and Aspen Power Catamarans, who are defying our recession by doing well. The projects I’ve had with them have been my favorites of the last 15 years, so I don’t blame the public for lining up and pulling out their semi-light wallets.

As that brings my story up to the present, I’ll close with a word of appreciation to Westlawn. You guys equipped me well for what has turned out to be a grand adventure. Dave and Norman, I keep your texts on my shelf and still pull them out from time to time to refresh my aging brain on topics that don’t get regular exercise. So thank you and keep up the good work!
MetalCraft Marine was awarded the prestigious "Boat of the Year" from WorkBoat Magazine at the International Work-Boat Show, in New Orleans, on December 1, 2010, for the design and craftsmanship of their FireStorm 70 fireboat, built for Jacksonville Fire/Rescue.

A principle member of the design team was Westlawn alumnus Ryan Hunter, who had an important role in the development of the 2009 version of this vessel, the first Firestorm 69 (also recognized as a “Great Boat of the Year” by Marine News Magazine in 2009). In 2010, the MetalCraft design team modified this to the Firestorm 70, with Ryan Hunter overseeing Westlawn Elements of Technical Boat Design graduate, Rami Laitila, who made the necessary changes for the new project.

Attaining full-load speeds of 35 knots, the aluminum fireboat employs MetalCraft’s proprietary, high-efficiency Kingston hull form. It features a delta-pad center planing flat, which provides the additional lift required to provide a low trim angle through the pre-planing zone, “the hump.”

Fireboats are typically 25% heavier than equivalent conventional patrol boats because they carry so much extra fire and rescue gear. This can cause the planing surface area to be very marginal or even too low to plane at all. A heavy boat with a small water plane causes exaggerated bow-high planing angles and heavy loads on engines reducing longevity.

The high efficiency of the Kingston hull form offsets the Firestorm’s greater weight and yields higher speeds and better fuel economy.
The monitor location is central and close to the center of buoyancy of the vessel. This permits the helmsman to pivot the boat around the thrust load at low rpm, not unlike a towboat. Operators are amazed at the boat’s control under full streaming at any angle. The boat’s head never blows off its course.

The Firestorm 69/70 provides more speed, maneuverability and pumping capacity than other high speed fireboats in the market today. Fitted with quad Hale pumps, it is expected to produce flow-meter results of 12,000 GPM.

High pump numbers are due to unique MetalCraft Marine proprietary designed sea chests. These sea chests have an intake three times the cross-sectional area of the main, can be inspected and cleaned while underway and provide a positive head to the pump, as well as pump redundancy. This sea chest, with an intake as large as a firefighter himself, provides a filtered water source to the pump while self draining with the boat on plane.

There are many options to rescue systems offered by MetalCraft Marine, the ones chosen by the Tampa Fire/Rescue are as follows;

- Starting at the bow, she had a crumple zone push knee box, that provides additional flotation and lift for those very large seas, the push knees have heavy duty extruded rubber fenders, with a built in bow ladder to provide access to and from the boat when beaching.
- She has a gas sprung opening front windshield with roller and safety guides for bringing a stokes basket into the cabin via the front windshield. This helps greatly if running short crew, or the boat is rolling too heavily in rough seas.
- Hinged main patient berth allows two medics to maintain the patient. Piped oxygen is piped to four patient berths, three in the forecabin and the main.
Main berths have retractable seatbelt restraints to hold patients in.

The boat has climate controlled HVAC to maintain temperature.

There are two outside backboard locations aboard the air vent seat boxes.

The wide aft recovery deck is low to the water to aid divers and survivors to climb aboard. There are also rescue handrails around the perimeter of the deck.

The wide aft deck steps, permit the crew to keep heart or hypothermic patients level while moving them into the cabin.

**Typical Specs:**

<table>
<thead>
<tr>
<th></th>
<th>Speed</th>
<th>35 knots fully loaded</th>
</tr>
</thead>
<tbody>
<tr>
<td>L.O.A.</td>
<td>70' - 10&quot;</td>
<td></td>
</tr>
<tr>
<td>L.W.L.</td>
<td>56' - 8-5/8&quot;</td>
<td></td>
</tr>
<tr>
<td>B.O.A.</td>
<td>22' - 1-5/8&quot;</td>
<td></td>
</tr>
<tr>
<td>Draft</td>
<td>36&quot;</td>
<td></td>
</tr>
<tr>
<td>Engines</td>
<td>(4) Iveco C-13, 825 HP each @ 2,400 RPM</td>
<td></td>
</tr>
<tr>
<td>Jets</td>
<td>(4) Hamilton 364</td>
<td></td>
</tr>
<tr>
<td>Pump</td>
<td>(2) Hale RME’s and 2x 8 FKF pumps producing 12,000 GPM</td>
<td></td>
</tr>
<tr>
<td>Monitors</td>
<td>(1) Remote Stang, (2) remote Elkharts and (2) manual Elkharts</td>
<td></td>
</tr>
</tbody>
</table>
Lucintel Analyzes Global Boating Industry Outlook for 2010 and Beyond: Market to Bottom Out in 2010
Economic recovery holds the key to global boating industry regaining a positive growth trajectory. There were dramatic changes in the boat market during 2009 and 2010 with prominent regions such as North America suffering double-digit decline in 2009 due to economic downturn and credit crunch. The European boat market started feeling the brunt of the economic downturn towards the end of 2008 and dropped significantly in 2009. The year 2010 is projected to remain almost flat on a global basis as economy is recovering from the recessionary trends. Lucintel expects the global boat market to see a positive growth during forecast years as market recovers from the slump of 2008 and 2009.

Lucintel, a leading global management consulting and market research firm with over 1000 clients worldwide has analyzed the global recreational boating industry to develop a comprehensive research report entitled "Global Recreational Boating Industry Analysis and Forecast 2010-2015".

According to Lucintel, the global demand for recreational boats is projected to reach $27.8 billion in annual sales by 2015. On a global basis, North America represents the largest region in terms of unit shipments. Lucintel’s research reveals that Europe saw the highest relative growth during last 5 years (2004-2009) as European-based boat makers gained market share in large sized boats.

This 263-page report provides a detailed assessment of the demand for the production of recreational boats including inboard boats, outboard boats, stern drive boats, personal watercrafts, sail boats, as well as other types on a global and regional basis. In terms of specific boat building industry trends, there is an ongoing shift in product mix toward larger and more expensive boats. According to Lucintel, Azimut-Benetti ranked number 1 in the global recreational boat market, followed by Groupe Beneteau, Ferreti, and Brunswick. This market intelligence report provides the ranking of the top 10 global leaders with their respective market shares.

This detailed research report includes demand trends and forecasts, market size estimates by boat types, regional analysis, and profile of leading companies, competitive analysis and much additional critical business information.

For a detailed table of contents and pricing information on this timely and insightful report, please contact Helpdesk at +1-972-636-5056 or via email at helpdesk@lucintel.com. Lucintel provides cutting edge support to help you make critical decisions with greater speed, insight and cost-efficiency. To find out more, visit www.lucintel.com

New Base for Marine Lending Seen During National Marine Bankers Annual Conference
CHICAGO – November 17, 2010 – With a 20 percent increase over last year to about 100 participants at the 31st National Marine Bankers Association Annual Conference in San Diego November 7 – 9, members were suggesting that stability is working its way back to the boat-loan sector. They also acknowledged that the number of funding sources remains historically low and that firms helping lenders work out troubled loans continue prospering.

“The number of marine funding institutions, including major national banks, has settled in around a half-dozen, reflecting what’s found in the broad financial market,” notes NMBA President Karen Trostle of Sterling Acceptance Corp. “Financial service firms, which act as agents for the funders, have seen some attrition in the past year, but still serve most active boating markets across the U.S. Our conference had continued steady support from remarketers, maritime attorneys, surveyors and others who are helping resolve the inventory overhang and overbought market conditions. And, we see some hopeful signs of new boat loan and refinance activity, especially resulting from the fall boat shows.”

Trostle shared results of a recent anecdotal “how’s business” survey comparing this year’s fall boat show season with last year’s. She cautioned that the percentage swings reflect a particularly low base for 2009. NMBA plans to repeat this survey quarterly over the next year. A roughly equal mix of 50 dealers and manufacturers, and financial services/banks were contacted. Results include:

**New Boat Sales:**
Northeast: Up 25 percent
Mid-Atlantic: Up 30 percent
Southern California: No change
Northwest: Up 10 percent
Southeast: Up 10 percent

**Refinances:** Up 22 percent overall

**Forecast for 2011:** Up for 86 percent of those surveyed

**Boat Buyers Paying with Cash:** 90 percent for purchases 40’ and above

**Used Boat Sales:** Up 35 percent

**Retail Sales for Boat Show Vendors:** Up 30 percent

Economist Gina Martin, Senior Institutional Equity Strategist for Wells Fargo Securities, LLC, told those at the conference that the excesses of the U.S. consumer over the past 30 years are being worked out, but not as quickly as hoped. Though painful, when the issues are resolved, it should result in a prolonged and very stable period of economic growth for the country. Short term positives include expected extended tax cuts and unemployment claims for individuals and tax credits for small business. Strong headwinds will buffet the economy for the short term and Martin expects 2011 to be much like 2010: bumpy and with slow growth running 2.5 percent for the year.

**Media Contact:**
Karen Trostle
800-525-0554
karen@sterlingacceptance.com

Continued on Pg. 17
The Potential for Corrosion
Now, when you connect two different metals together electrically and through an electrolyte (in our case seawater), the electrons from the less-noble (anodic) metal will try to tumble towards the more-noble (cathodic) metal. This flow of electrons generates a real measurable force, exactly as you could measure the force in a stream of water flowing through a pipe, from, say, a tank with a high water level (the anode) to one with a low water level (the cathode). Where electrons are concerned, the force of flow is measured not in pounds, but in volts, and is often referred to as potential. (It’s called potential because it measures how great a potential there is for a flow to occur—flow or current in amps.)

The Galvanic Series
Of course, potential is relative. Mild steel holds onto its electrons only somewhat more strongly than does marine aluminum. If these two materials were in contact in seawater, the aluminum would corrode (too fast by half), but not nearly as fast as if the aluminum were in direct contact with, say, silicon bronze. Silicon bronze—relatively speaking—holds more tightly to its electrons than does mild steel, and much more tightly still than does marine aluminum.

The key word here is "relative," and the best way to keep tabs on these relative potentials is by listing the voltages of all materials with reference to a single test metal (electrode), in the electrolyte that you’re concerned about—seawater for our purposes. (The most stable and sensitive electrode material for this use is silver/silver-chloride—Ag/AgCl). The list of relative potentials generated this way makes up the galvanic series, see next page. (Electrical activity increases with temperature, so this is specified as well. Standard galvanic tables usually give voltages at 77°F.)

Corrosion Misnomers
Or
What’s in a Name
There’s considerable confusion about the proper name for galvanic corrosion—the only correct term. Frequently it’s called electrolysis, or electrolytic corrosion. Both are misnomers. Electrolysis is the corrosion or chemical breakdown of the electrolyte—the fluid medium that transfers ions between metals. Obviously, in our case, electrolysis would be breakdown of seawater itself—not much of a concern. Electrolytic corrosion is the corrosion produced by externally generated electric currents. It’s also known as stray-current corrosion. Stray-current corrosion can be very serious. It’s a vast subject in itself, however, and will have to wait for a future article.

Anodes Protect by Flooding with Electrons
There’s a nice feature about anodic metals—if you use them wisely—as long as they’re losing electrons, all the other more-noble (more-cathodic) metals they’re connected to are protected from corrosion. Say, for instance, your Dry Roller had a stainless-steel shaft, with a manganese-bronze propeller. Its bronze prop's electrons would be tumbling toward the more-noble stainless. Roller’s prop would waste away. If a zinc anode were attached to the shaft, its electrons would—roughly speaking—tumble toward both the stainless and the bronze (it’s far more anodic than both). It would flood the system with zinc electrons—again, roughly speaking. (Other

Selecting Fittings Using the Galvanic Series
There are two critically important uses for the galvanic series. First, you should refer to it when installing hardware. Try to make sure the voltage difference between any two metals, in direct contact in seawater, is less than 0.20 volts or 200 millivolts (mV). Metals that are less that 200 mV apart corrode each other fairly slowly and need little additional protection. If you must use two metals in contact, further apart than 200 mV, you need to take steps to protect them, either by insulation (so they're not really in contact) or by using anodes.

Anodes Protect by Flooding with Electrons
There’s a nice feature about anodic metals—if you use them wisely—as long as they’re losing electrons, all the other more-noble (more-cathodic) metals they’re connected to are protected from corrosion. Say, for instance, your Dry Roller had a stainless-steel shaft, with a manganese-bronze propeller. Its bronze prop's electrons would be tumbling toward the more-noble stainless. Roller’s prop would waste away. If a zinc anode were attached to the shaft, its electrons would—roughly speaking—tumble toward both the stainless and the bronze (it's far more anodic than both). It would flood the system with zinc electrons—again, roughly speaking. (Other
### The Galvanic Series

<table>
<thead>
<tr>
<th>ANODIC OR LEAST NOBLE END (Active)</th>
<th>Millivolts (mV)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Magnesium (Mg)</td>
<td>-1730</td>
</tr>
<tr>
<td>Magnesium (2% Manganese (Mn))</td>
<td>-1670</td>
</tr>
<tr>
<td>Magnesium (9% Aluminum (Al), 1% Mn, 1.5% Zinc (An))</td>
<td>-1580</td>
</tr>
<tr>
<td>Galvanized Iron (hot dipped)</td>
<td>-1140</td>
</tr>
<tr>
<td>Zinc Electroplating</td>
<td>-1130</td>
</tr>
<tr>
<td>Cadmium (Cd) Zinc Solder (71%/29%)</td>
<td>-1120</td>
</tr>
<tr>
<td>Zinc (Zn)</td>
<td>-1050</td>
</tr>
<tr>
<td>Cadmium (Cd)</td>
<td>-860</td>
</tr>
<tr>
<td>Cadmium Plated Steel (Cd 0.001 in.)</td>
<td>-860</td>
</tr>
<tr>
<td>Aluminum (Marine Alloys 5086, 5083, 6061)</td>
<td>-820</td>
</tr>
<tr>
<td>Mild or Structural Steel(A36)</td>
<td>-790</td>
</tr>
<tr>
<td>Alloy Steel</td>
<td>-740</td>
</tr>
<tr>
<td>Aluminum (forged alloy)</td>
<td>-730</td>
</tr>
<tr>
<td>Stainless Steel (316,317,321,347,302,304 — active, oxygen starved)</td>
<td>-550</td>
</tr>
<tr>
<td>Tin (Sn)</td>
<td>-500</td>
</tr>
<tr>
<td>Manganese Bronze, CA-464 Naval Brass (58%Cu,39%Zn,1%Alum,0.25%Mg)</td>
<td>-450</td>
</tr>
<tr>
<td>Naval Brass (60% Copper, 39% Zinc)</td>
<td>-450</td>
</tr>
<tr>
<td>Yellow Brass</td>
<td>-450</td>
</tr>
<tr>
<td>Admiralty Brass (70% Copper, 29% Zinc)</td>
<td>-360</td>
</tr>
<tr>
<td>Copper CA-110 (Cu)</td>
<td>-340</td>
</tr>
<tr>
<td>Brass (60% copper, 40% zinc)</td>
<td>-330</td>
</tr>
<tr>
<td>Gunmetal (88% Copper, +Tin)</td>
<td>-310</td>
</tr>
<tr>
<td>Silicon Bronze (96% Copper, 1.5% Silicon)</td>
<td>-260</td>
</tr>
<tr>
<td>Tin Bronze</td>
<td>-260</td>
</tr>
<tr>
<td>Lead (Pb)</td>
<td>-240</td>
</tr>
<tr>
<td>Copper/Nickel (CA-715 - 70% Cu, 30%Ni)</td>
<td>-200</td>
</tr>
<tr>
<td>Aluminum Bronze (90% Copper, 10% aluminum)</td>
<td>-150</td>
</tr>
<tr>
<td>Stainless Steel (316,317,321,347,302,304 — passive, oxygenated)</td>
<td>-150</td>
</tr>
<tr>
<td>Monel 400 &amp; 500</td>
<td>-110</td>
</tr>
<tr>
<td>Titanium (Ti)</td>
<td>-100</td>
</tr>
<tr>
<td>Silver (Ag)</td>
<td>-80</td>
</tr>
<tr>
<td>Graphite and Carbon Fiber (C)</td>
<td>(+250)</td>
</tr>
<tr>
<td>Platinum (Pt)</td>
<td>(+260)</td>
</tr>
</tbody>
</table>

**CATHODIC OR MOST NOBLE END (Passive)**

- All measurements taken relative to a silver/silver chloride (Ag/AgCl) electrode, at 77 °F.
- The sign of potential applies with the negative (black) probe of the voltmeter connected to the reference electrode, and positive (red) terminal connected to the fitting being tested.
- If using a zinc reference electrode, add 100 mV to the potential. For instance, silicon bronze is -260mV, then +100 mV = -160 mV.
- Average variability of potential is ±40 mV for alloys with iron and/or nickel. ±20 mV for copper-based alloys without nickel.
- Readings 200 to 400 mV more negative (more anodic) than given indicate the material is protected.
- Readings at or near those given, up to 200 mV above those given, indicate the material is unprotected and freely corroding.
- Readings over 400 mV more negative than given indicate overprotection.
- Stray current corrosion is indicated by metals reading more cathodic (more positive) than indicated on the table.
anodic metals such as magnesium and aluminum, are occasionally used as anodes. Zinc, however, offers the best trade-off between cost, reliability and ease of manufacture. It's the standard marine-anode material for use in seawater.)

**Passive & Active**  
**The Mysterious Behavior of Stainless Steel**  
Stainless steel appears in two locations on the galvanic scale—one quite noble, and the other fairly anodic. The key to this mystery is oxygen. Most corrosion-resistant marine alloys protect themselves—to varying degrees—by forming a thin surface-layer oxide film. This is produced by interaction with the oxygen dissolved in seawater. Bronze, Monel, copper and copper-nickel will corrode slightly faster if they loose this film, but will still remain highly corrosion resistant.

Stainless steels, on the other hand, rely chiefly on this oxide film to protect them from corrosion. When stainless is in clean flowing water containing plenty of oxygen it has no difficulty generating and retaining the oxide film. In this condition it's highly cathodic (noble)—a state that's also called passive. Should stainless be deprived of a regular supply of oxygen, however—for instance, pressed for a long time, immobile, against a cutlass bearing; smothered by barnacles; or enclosed in a stern tube—it can lose its protective oxide film. In these conditions stainless becomes nearly as anodic as mild steel. Stainless is called active in this state, and can suffer severely from pitting corrosion.

This process is called polarization. It's a change in potential that can be measured using a portable voltmeter. As long as the measured voltage increase is between -200 to -400 mV (-0.20 to -0.40 volts) above the indicated "normal" voltage or potential shown on the galvanic series, the metal has been polarized enough to be protected from corrosion. Using this information, you can spend an afternoon going 'round your Dry Roller testing potentials (polarization or voltages) of various fittings and components to see if they're protected (potential raised -200 to -400 mV) or freely corroding (potential less that -200 mV above the voltage indicated on the galvanic series). It's a good idea to schedule such a test once or twice a year as part of Dry Roller's routine maintenance, along with engine overhauls and bottom cleaning.

Using a Voltmeter (Multimeter) to Test for Polarization

The procedure is as follows: You need is a quality voltmeter (really a multimeter) with a scale that can be set to read with a maximum of 1200 to 1500 millivolts (mV, or 1.2 to 1.5 volts); a silver:silver-chloride electrode; and long wire to connect it to the voltmeter. Aboard Dry

**Self Destructing Metals**

It's not always necessary to have two different metals in contact to get corrosion. Some alloys actually have corrosion potential built in. The ever-popular manganese bronze is a case in point. It's 58% copper and 38% zinc—not really a bronze at all but a brass! Brasses are bad news for use below the waterline because the zinc in all brass is eaten away by the more noble copper. This process is called dezincification. Manganese bronze's popularity is due to its ease of manufacture, relatively low cost, and moderately good strength. The dezincification (really internal galvanic corrosion) can be controlled with anodes. Many other alloys suffer from similar problems. Aircraft-grade aluminum alloys, some high-strength steels and all the brasses have alloy combinations which add up to trouble in saltwater.

**Checking Potential (Voltage) to Detect Corrosion**

This brings us to the second critical use of the galvanic series. As long as zinc electrons are flooding the other metals, it effectively stuffs them with excess electrons. Rather than lose their own electrons and corrode, the excess zinc electrons are lost first, to be replaced with still more zinc electrons, for as long as there's zinc available. These extra electrons change the charge or potential of the protected metals. And—since electrons have negative charge—the protected metals become more negative. (Metals that are anodic have more excess or easily freed electrons than cathodic metals. Anodic metal thus read more negative than cathodic metals on the galvanic series.)
**Wayward Electron/Galvanic Corrosion Continued . . .**

*Roller,* chuck the electrode (connected to the voltmeter, of course) overboard and go below with the meter, touching the free probe end to the fittings you want to test. Make a table listing *Dry Roller*'s equipment and fittings and their locations, or make a schematic drawing, labeling the metal fittings to be tested. Note the measured voltages next to each fitting. If you touch the probe to, say, *Dry Roller*'s manganese bronze stuffing box and it reads -655 millivolts, it’s well protected. On the other hand, if its stainless prop shaft reads -162, it freely corroding away (it’s certainly not connected to any zins.)

Two sources for test meters, electrodes, and information on corrosion are:

**Electro-Guard, Inc.**  
P.O. Box 1719  
Mount Shasta, CA 96067  
Telephone: (530) 926-4000  
e-mail: information@boatcorrosion.com, techsupport@boatcorrosion.com

**Sterling Power Products Ltd**  
Site 8 Wassage Ways  
Hampton Lovett Industrial Estate  
Droitwich England WR9 0NX  
Telephone: 01905 771 771  
Fax: 01905 779 434  
www.sterling-power.com

**Overprotection**

It is possible to have too much of a good thing. While you’re testing, you should also note whether the potentials have been raised more than -400 millivolts over their "natural" state. Such high potentials mean overprotection. If you touch the probe to, say, *Dry Roller*'s silicon bronze rudder shaft and get a reading of -807 millivolts, you’re showing well over the recommended increased potential. Though generally not as serious as uncontrolled galvanic corrosion, overprotection should be eliminated as quickly as possible.

On traditional wood-hull vessels in particular, overprotection can create alkaline byproducts that literally destroy the lignin holding wood fibers together—a condition known as alkali rot. Look for whitish or yellowish foamy, soapy gunk around metal fittings on wood hulls. This is a sure sign of alkali rot. Even on FRP, steel and aluminum hulls overprotection can cause gas bubbles, destroy paint, generate alkaline solutions that actually eat away aluminum, and lead to hydrogen embrittlement of high-strength steels.

**Military Zinc**

Another thing to keep in mind is that all zins are not created equal. Make very certain the zins you buy and install on your *Dry Roller* are intended for marine corrosion protection. There are many common zinc alloys which are useless for this, yet occasionally they end up on the market as zinc anodes. It should say in writing somewhere that the zins you purchase meet military specification, or Mill Spec, Mil-A-18001-J or -K (or higher final letter). If you don’t insist on zins to this Mil Spec, you’re truly buying a pig in a poke. Almost all reputable suppliers will be glad to meet this requirement. In fact, they’ll boast of it in their advertising.

**Characteristics of Mil-Spec Zins**

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Specific Gravity</td>
<td>7</td>
</tr>
<tr>
<td>Density</td>
<td>440 lb./cu.ft.</td>
</tr>
<tr>
<td>Theoretical Ampere-Hours/Pound</td>
<td>372</td>
</tr>
<tr>
<td>Theoretical pounds/Ampere-Year</td>
<td>23.5</td>
</tr>
<tr>
<td>Current efficiency in actual average installations</td>
<td>90%</td>
</tr>
<tr>
<td>Actual Ampere-Hours/Pound</td>
<td>335</td>
</tr>
<tr>
<td>Actual pounds/Ampere-Year</td>
<td>26</td>
</tr>
<tr>
<td>Composition:</td>
<td></td>
</tr>
<tr>
<td>copper</td>
<td>0.005%</td>
</tr>
<tr>
<td>iron</td>
<td>0.005%</td>
</tr>
<tr>
<td>lead</td>
<td>0.006%</td>
</tr>
<tr>
<td>cadmium</td>
<td>0.025 to 0.070%</td>
</tr>
<tr>
<td>aluminum</td>
<td>1 to 5%</td>
</tr>
<tr>
<td>balance zinc</td>
<td></td>
</tr>
</tbody>
</table>

Most marine hardware stores carry Mil-Spec zins, however, three sources for quality Mil-Spec zins are:

**West Marine**  
www.westmarine.com

**W.H. Den Ouden Vetus (USA) Inc.**  
www.vetus.nl

**Defender Industries**  
www.defender.com

Next issue we’ll take a detailed look at determining the amount of zinc you need and at how your anodes should be installed. We’ll also discuss the bonding system and refinements like zinc controllers and monitors. You’ll want to hold onto this issue, as the galvanic series and potential-testing method we discussed here will be useful next issue—and, of course, whenever you plan to check for corrosion.
Westlawn graduate David Martin has spent a lifetime designing all types of boats. His new book, The Book of Dave Marin Designs, is available on CD from Amazon.com. The Masthead will feature excerpts from this fascinating new work over the next few issues.

**70-Ft. and 73-Ft. Ocean Yachts Super Sport**

**A New Hull Form for the New Century**

On this, my first design of the new millennium, I was determined to develop a new hull form that had a much smoother ride than my twentieth-century designs without losing any speed or fuel economy. Three models were made to 1/2" = 1'-0" scale. First a 66-ft. Ocean, many of which were built so that very accurate data was available on speed, power, displacement and sea keeping. The second model was a 73-footer with a hull form derived from the best performing of my designs, as a parent form. The third model was an entirely new radical departure from anything previously done by me. It had considerably more deadrise than the other two models. There were two deep lift strakes with a 33-degree down angle. Both lift strakes were farther apart forward than they were aft.

The new models were designed to 73 feet. It was Ocean’s intention to build the mold to 73 feet then dam it to 70 feet initially, and a few years later, remove the dam and produce a 73 footer. The 70-footer was estimated to be 50% heavier than the 66-footer. It was tested at displacements between 112,000 lb. and 127,000 lb. The Ph.D. Professors operating the model basin test tanks will cringe at what I am about to say. The models were towed from a yoke on an outboard boat at scale speeds using a GPS to measure speed. The 66-footer was towed from a line proportionally inboard from the 73-ft. model due to its lighter displacement. The radical model was fastest at all but two speeds, 29 knots and 40 knots. Probably, this was due to the 66-ft. models higher speed/length ratio as a result of its shorter waterline length.

When the speed tests were complete, we whipped the radical model through the wake and let the tow line slack so the model was on its own, in a gigantic following sea. The radical model was definitely the better boat and amazing in a following sea. Next the radical model was tested against the
**Model of the New Hull Form**

- **SIDE VIEW**
- **BOTTOM VIEW**
- **STERN VIEW**
- **BOW VIEW**
- **PERSPECTIVE VIEW**

*Book of Dave Martin Designs (continued)*
The masthead twentieth-century Martin design. The radical model out performed the twentieth-century model on all counts including speed.

My friend Matt Feinstone spent two weeks cruising on the 73-footer, tested by Power and MotorYacht Magazine. He went to the Virgin Islands and back on her. His report back to me about performance in ten-foot seas confirmed the model tests. He said it was better than anything I previously designed and he has ridden in most of them. At a displacement of 112,000 lb., the model tests predicted a speed of 32 knots. Power and MotorYacht Magazine tested the 70-footer at 34.5 knots with twin 1,400 H.P. CAT diesels on a displacement of 108,952 lb.

With twin 1,800 H.P. Detroit diesels, Boating Magazine tested the 70-footer at 39.2 knots on a displacement of 112,904 lb., and Yachting tested the same boat at 36.9 knots at 112,904 lb. displacement. Not bad for the crude model test made by Dave Martin, Terry Watson, Mike Hartline [another Westlawn grad working at Ocean], and Terrance Watson on a five-degree frigid morning on the Mullica River. I had some concerns that we might have overlooked something due to the near unbearable weather conditions, but we lucked out.

At the 1995 SNAME annual meeting in Washington, I took a course in "Early Stage Ship Design." One of the instructors, Bob Scott, put the fear of God in us about leaving a margin of displacement for unforeseen weights that owners and builders will inevitably install. In conference with a client, he stressed the importance of getting the stern low enough for fisherman. At the same conference, he stressed the importance of offering extra fuel, bigger engines, etc. If I design a low stern for the standard boat, the installation of the extras he desires may put the cockpit scuppers below water. Also, the cockpit depth would be compromised with the result that somebody will probably fall overboard. IT AIN’T EASY BEING ME. Calculations will just have to be made showing my client the fully loaded waterline, and another calculation showing the standard boat with half fuel.

All captains reported the 70- and 73-footers were much better sea boats than my twentieth-century designs. They particularly like the fact that these boats get up on a plane at a very low R.P.M. compared to competitive boats. Some captains reported that these boats could be tabbed down farther than most boats to pierce through heavy head seas.

The first 73-footer made 40.25 knots on her engine start up trials with twin 2,000 H.P. M.T.U. diesels. In the summer of 2000, I made a comparison of the 70-ft. Power and MotorYacht test compared to other tests by Power and MotorYacht and Boating Magazine as follows.

### Nautical Miles per Gallon of Fuel per Long Ton at 29.7 Knots:

- Ocean Yachts 70 ft. Super Sport: 13.619
- Four Boat Average: 11.042
- Ocean Advantage: 23.3%

A ton of Ocean 70 goes 23.3% further per gallon at 29.7 knots.

### Nautical Miles per Gallon of Fuel per Long Ton at 20.8 Knots:

- Ocean Yachts 70 ft. Super Sport: 17.5104
- Four Boat Average: 13.79
- Ocean Advantage: 26.9%

A ton of Ocean 70 goes 26.9% further per gallon at 20.8 knots.
It appears to me that the angled-down large lift strakes being further apart forward than aft, are ramming water pressure into the suction area aft of amidships.

Back in the Pacemaker days, I wanted to measure the deflection of the fiberglass bottom between the stringers aft of the engines. Pop made me a straight edge with a dial indicator on it measuring in thousandths of an inch. To my surprise when the Captain opened the throttles, the bottom instead of deflecting upward sucked down.

Lindsey Lord writes in the Naval Architecture of Planing Hulls, that a constant section of deadrise will relieve this suction. I disagree. The theory is that the twisting of the water under a boat as it travels aft, absorbs power. I believe the water does not travel aft parallel to the centerline, but fans outboard toward the chines. The downward-slanting large lift strakes keep lots of the water traveling parallel to the centerline, thus relieving the suction. Why else would this design have such a large percentage of resistance reduction compared to conventional designs? Take a look at the plot of these boats on George Crouch’s chart. [See page 26 of the September 2010 Issue of The Masthead.]

Tunnels combined with bubbles and a larger than usual shaft angle allow these conventional drive engines to be located farther aft than most competitive installations. This extra for-and-aft room allows a large master stateroom and a utility room under the house floor. Both boats are available with either an enclosed bridge or an open bridge. There is a stairway in the house up to the enclosed bridge.

When we first went with the enclosed bridge, none of us at Ocean realized how popular it would be. Everybody loves the quietness of the enclosed bridge and the fact that it is air-conditioned. I would love to have the go-ahead to stretch the 73 to 80 feet. The superstructure and layout could remain the same. The entire eight feet could be put into a longer balcony. The engines could move far enough aft to come out hatches in the balcony. The additional eight feet of length below decks could be designed to house a belly full of tanks. This would give the range to go from Bermuda to the Azores. After that she would have the range to penetrate well into the Mediterranean.

It would have a new, but similar layout that would fit between watertight bulkheads with watertight doors. The crew’s quarters would be aft of the master stateroom, accessible from a stairway from the house, which would also access the master stateroom. The whole design would adhere to the Coast-Guard requirements for an L vessel taking passengers for hire, including conformity with requirement for surviving flooded compartments and damaged stability. These were to be backed up by calculations that would need approval by Coast-Guard plan review. There should be an adequate 110-volt generator aft of the bridge bulkhead for emergencies. Her engines should perhaps be naturally aspirated crew-boat rated engines, which would reduce strain on moving parts.

She should have a dry-stack exhaust so that if she should have a flooded compartment, the water could not get into the engine as it would with a stern exhaust several feet underwater in the damaged condition.

In 1910 my father was head of machinery for the South Jersey Yacht Building Company, in Atlantic City. He installed and serviced the engines in the 40-ft. Tom Bowe’s design Dream. The Dream won the Atlantic City to Bermuda race in 1911, 1912, and 1913. How many boats today, 95 years later, have engines as dependable as those he installed and maintained in the Dream?

CLICK HERE to purchase the complete Book of Dave Martin Designs on CD, from Amazon.com.

“'I've never been able to understand why so many builders and designers use stainless underwater fittings, fasteners, and hardware. The pitting corrosion problem seems forgotten or unknown but can be very serious.”

Dave Gerr
Want to know how to prevent this problem? See Metal Corrosion in Boats page 25.
SEE AND HEAR DAVE GERR’S INTERVIEW WITH MAD MARINER MAGAZINE

Mad Mariner, the online daily boating magazine, interviewed Westlawn director Dave Gerr on July 20, 2010. In this wide-ranging, half-hour radio show, Gerr discusses almost all aspects of Westlawn, including history, operation, student and alumni successes, costs, and more. Click on the links below to listen to the full interview and watch the accompanying slide show of over a hundred boats designed by Westlawn alumni.

Click Here to watch on Windows PC
Click Here to watch on Macintosh
Click Here to watch on an iPhone
Click Here to watch on an Android phone

Book Sale !!!

Interior Design Methods for Yacht Design and the Boat Building Industry
By Lisa Hix

This unique book is the only reference of its kind, covering all aspects of boat interior design and human-factors engineering (ergonomics). It is the closest thing there is to an Architectural Graphic Standards for boat interior design.

Sale Price of $69.95 plus shipping. (Regular price $89.95.)
ABYC Members: $62.95 plus shipping

Sale Extended! Order Until January 15, 2010

The Nature of Boats
Insights and Esoterica for the Nautically Obsessed
By Dave Gerr

If you love boats and would love to know how they work, then this is the book for you. It is not the usual heavy tomb on Naval architecture. However, it contains a wealth of interesting and useful material on yacht and boat design and small craft naval architecture, all at just the right depth for the interested novice or even the engineer who would like an introduction to the subject.

Sale Price of $17.95 plus shipping. (Regular price $21.95)
ABYC Members: $16.00 plus shipping

SAVE MORE
Buy them both for $84.95
ABYC Members $74.95

To order call 410-990-4460 or email: info@westlawn.edu
Essential Continuing Education
For Marine Surveyors, Boatbuilders, and Small-Craft Designers

METAL CORROSION IN BOATS
(Course No: TT500)

This comprehensive distance-learning course will provide you with a firm foundation in the causes of metal corrosion and the current practices in its prevention, reduction and cure.

Topics include: galvanic corrosion, electrolytic corrosion, wastage, pitting, velocity effects, and cathodic protection. The causes and mitigation of corrosion of stainless steel, copper and nickel based alloy, aluminum, iron, and steel are studied. Special consideration is given to problem areas underwater, on deck and aloft, and in engine and fuel systems.

CLICK HERE for a detailed syllabus
CLICK HERE for more details and enrollment information on this and other Westlawn essential continuing education courses

Advanced Fuel Systems in Boats (Course No. TT501)

This comprehensive distance-learning course provides instruction in safe, reliable, and practical fuel systems for both diesel- and gasoline-engine boats.

Topics include: Applicable standards; fuel-system piping and filter requirements; fuel-piping manifolds; anti-siphoning protection; access and fastening requirements; diesel-specific fuel piping considerations and day-tank piping; fuel-transfer pumps; return-oil coolers; fuel-line valves; calculating fuel consumption; calculating tank capacity and weight; specifying fuel hoses, hose clamps, and piping; tank fastening; considerations in tank location; protection against corrosion; restrictions and recommendations for location of openings in fuel tanks; tank-vent requirements and installation; fuel fills; fuel take-offs; common problems related to spills at vents and fills; tank construction; choice and selection of tank materials; requirements and recommendations for baffles and baffle openings; fuel-tank labels; tank pressure tests; flexible bladder tanks.

CLICK HERE for a detailed syllabus
CLICK HERE for more details and enrollment information on this and other Westlawn essential continuing education courses

ABYC Courses and Schedule for 2011

The ABYC education department has been providing industry certifications, training, high school and college curriculum, and industry seminars for over twenty years. They are providing the marine industry with the skilled workers required to build and maintain modern small craft of all types.

ABYC is currently scheduling on-site factory training for 2011. Please call ABYC for custom tailored, flat rate, instruction by top industry trainers at your facility (410-990-4460, Ext. 31).

The Marine Technician Certification Program developed by ABYC with “NOCTI Certification”* has proven to be the industry standard. ABYC continues to provide the highest quality marine education and training throughout the country and throughout the year.
For course dates and descriptions Click Here or see listing next page

*NOCTI (National Occupational Competency Testing Institute) is a regular provider of the assessments on which many certifying bodies depend for measures of applicants’ standards-based knowledge and skills. Certificates benefit employers by showing that applicants have acquired specific skills. The status of having a certified staff can lead to higher sales and customer satisfaction.
### Current In-Class ABYC Training Courses

For a course description or to register, [CLICK HERE](#).

<table>
<thead>
<tr>
<th>DATE</th>
<th>EVENT NAME</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dec 01, 10 - Dec 31, 10</td>
<td>--WEBINAR-- The Fundamentals of Electrical Grounding, Bonding, and Stray Current</td>
</tr>
<tr>
<td>Dec 07, 10 - Dec 09, 10</td>
<td>SC400 - ABYC Standards Certification, Jacksonville, FL CLASS FULL!</td>
</tr>
<tr>
<td>Dec 14, 10 - Dec 17, 10</td>
<td><strong>MMTA</strong> GE400 - Gasoline Engine &amp; Support Systems Certification, Thomaston, ME</td>
</tr>
<tr>
<td>Dec 14, 10 - Dec 16, 10</td>
<td>EL200 - Basic Marine Electrical, Annapolis, Maryland</td>
</tr>
<tr>
<td>Dec 14, 10 - Dec 17, 10</td>
<td>EL400 - Electrical Certification Course, Tampa FL</td>
</tr>
<tr>
<td>Dec 14, 10 - Dec 17, 10</td>
<td>MS400 - Marine Systems Certification, Mystic Seaport</td>
</tr>
<tr>
<td>Dec 15, 10</td>
<td>--WEBINAR-- A Logical Approach to Troubleshooting</td>
</tr>
<tr>
<td>Dec 20, 10 - Dec 22, 10</td>
<td>SC400 - ABYC Standards Certification, ABYC Offices, Annapolis, MD</td>
</tr>
<tr>
<td>Jan 11, 11 - Jan 14, 11</td>
<td>MS400 - Marine Systems Certification, Annapolis, MD</td>
</tr>
<tr>
<td>Jan 18, 11 - Jan 20, 11</td>
<td>EL200 - Basic Marine Electrical, Miramar FL</td>
</tr>
<tr>
<td>Jan 25, 11 - Jan 28, 11</td>
<td>MC400 - Marine Corrosion Certification, Tampa, FL</td>
</tr>
<tr>
<td>Feb 01, 11 - Feb 03, 11</td>
<td>AC400 - AC and Refrigeration Certification, Miramar, FL</td>
</tr>
<tr>
<td>Feb 01, 11 - Feb 03, 11</td>
<td>SC400 - ABYC Standards Certification, Mystic CT</td>
</tr>
<tr>
<td>Feb 04, 11</td>
<td>EP200 - EPA Refrigerant Certification, Miramar FL</td>
</tr>
<tr>
<td>Feb 15, 11 - Feb 18, 11</td>
<td>EL400 - Electrical Certification Course, Annapolis, MD</td>
</tr>
<tr>
<td>Feb 22, 11 - Feb 25, 11</td>
<td>MS400 - Marine Systems Certification, Jacksonville, Florida</td>
</tr>
<tr>
<td>Mar 01, 11 - Mar 03, 11</td>
<td>SC400 - ABYC Standards Certification, Philadelphia, PA</td>
</tr>
<tr>
<td>Mar 01, 11 - Mar 03, 11</td>
<td>SC400 - ABYC Standards Certification, Miramar Florida</td>
</tr>
<tr>
<td>Mar 08, 11 - Mar 10, 11</td>
<td>EL200 - Basic Marine Electrical, Costa Mesa, CA</td>
</tr>
</tbody>
</table>

---

### 2011 NMMA Boat shows

#### 106th New York Boat Show
January 19 - 23, 2011  
Jacob Javits Convention Center  
New York, New York  
[www.newyorkboatshow.com](http://www.newyorkboatshow.com)

#### 39th Minneapolis Boat Show
January 20 - 23, 2011  
Minneapolis Convention Center  
Minneapolis, Minnesota  
[www.minneapolisboatshow.com](http://www.minneapolisboatshow.com)

#### 57th Baltimore Boat Show
January 27 - 30, 2011  
Baltimore Convention Center  
Baltimore, Maryland  
[www.baltimoreboatshow.com](http://www.baltimoreboatshow.com)

#### 70th Miami International Boat Show
February 17 - 21, 2011  
Miami Beach Convention Center  
Miami, Florida  
[www.miamiboatshow.com](http://www.miamiboatshow.com)

---

For a Complete listing of NMMA shows [CLICK HERE](#).
2011 Events Program

THE DAMAGED SHIP
26-27 January 2011, London, UK  REGISTER ONLINE
Read More...

DESIGN AND OPERATION OF PASSENGER SHIPS
23-24 February 2011, London, UK  REGISTER ONLINE
Read More...

THE SECOND INTERNATIONAL CONFERENCE ON INNOVATIONS IN HIGH SPEED MARINE VESSELS
REGISTER ONLINE HERE 2-3 March 2011, Fremantle, Australia
Read More...

DEVELOPMENTS IN MARINE CFD
22-23 March 2011, London, UK  REGISTER ONLINE HERE
Read More...

MANAGING RELIABILITY AND MAINTAINABILITY IN THE MARITIME INDUSTRY
7 April 2011, London, UK  FIRST ANNOUNCEMENT
Read More...

DESIGN, CONSTRUCTION & OPERATION OF SUPER & MEGA YACHTS
5-6 May 2011, Genoa, Italy  CALL FOR PAPERS
Read More...

BASIC DRY DOCK TRAINING COURSE
10-13 May 2011, London, UK
Read More...

2ND INTERNATIONAL CONFERENCE ON SHIP MANOEUVRING IN SHALLOW AND CONFINED WATER
18-20 May 2011, Trondheim, Norway  CALL FOR PAPERS
Read More...

HIGH SPEED MARINE VESSELS
26-27 May 2011, Naples, Italy  CALL FOR PAPERS
Read More...

Westlawn students are eligible for student membership and Westlawn graduates are eligible for graduate membership in RINA. CLICK HERE for details.

Who Will Be The Dec. 2010 Know It All Winner?
Email your answer to: nnudelman@westlawn.edu

Want to see how much you know? Want to show everyone else how much you know? The first three people to submit the correct answer to the following question will win a Westlawn tee shirt and cap, and will also receive a Know It All certificate. The answer and winners to be published in the next issue of The Masthead.

To the right is a drawing of the fore-n-aft stays between the foremast and mainmast of a schooner. Can you give the correct names for each of the numbered stays, stays 1, 2 and 3?
Masthead Archive

All back issues of The Masthead are available online. 
CLICK HERE to read the back issues of The Masthead.

Advertise in The Masthead — Reach A Focused Audience of Designers, Surveyors, Boatbuilders, Technicians, and Students

Westlawn institute is a not-for-profit educational institution. All advertising revenue goes to support Westlawn Institute's educational programs.

CLICK HERE for a rate card, information, and instructions.

ATTENTION WESTLAWN ALUMNI ONLY

• You are invited to submit photos and commentary of recently launched boats of your design for publication in The Masthead.

• You are also invited to submit drawings, renderings, and commentary of your designs that are “On The Drawing Board,” for publication in The Masthead.

SUBSCRIBERS

There are over 7,500 subscribers to The Masthead, Westlawn’s quarterly E-Journal.

Our readers are yacht and boat designers, boatbuilders, marine techs, surveyors, boat design students, and members of the boating public.

The Masthead

The Journal of the Westlawn Institute of Marine Technology

Westlawn Institute of Marine Technology
16 Deep Cove Road
Eastport, ME 04631 USA

Phone: 207 853 6600
Fax: 207 853 6605
E-mail:
  Student Services: pschulte@westlawn.edu
  Information: info@westlawn.edu
  The Masthead: Norm Nudelman, Editor
  nnudelman@westlawn.edu

We're on the Web at
www.westlawn.edu

Who We Are

Westlawn is a not-for-profit educational affiliate of the American Boat and Yacht Council (ABYC). Our school is nationally accredited by the Distance Education and Training Council (DETC), and is listed as an accredited school by the U.S. Department of Education and by the Council for Higher Education Accreditation.

Our Mission

Founded in 1930, the mission of the Westlawn Institute of Marine Technology is threefold:

• To provide our students with the skills and knowledge required to build a rewarding career in the profession of yacht and small-craft naval architecture.

• To support continued growth of the recreational and small-craft marine community through the development of well-trained, safety-oriented, boat designers developing better products for the benefit of the boating public.

• To provide continuing education to marine-industry professionals.

ABYC

www.abycinc.org

A Not-For-Profit Corporation