

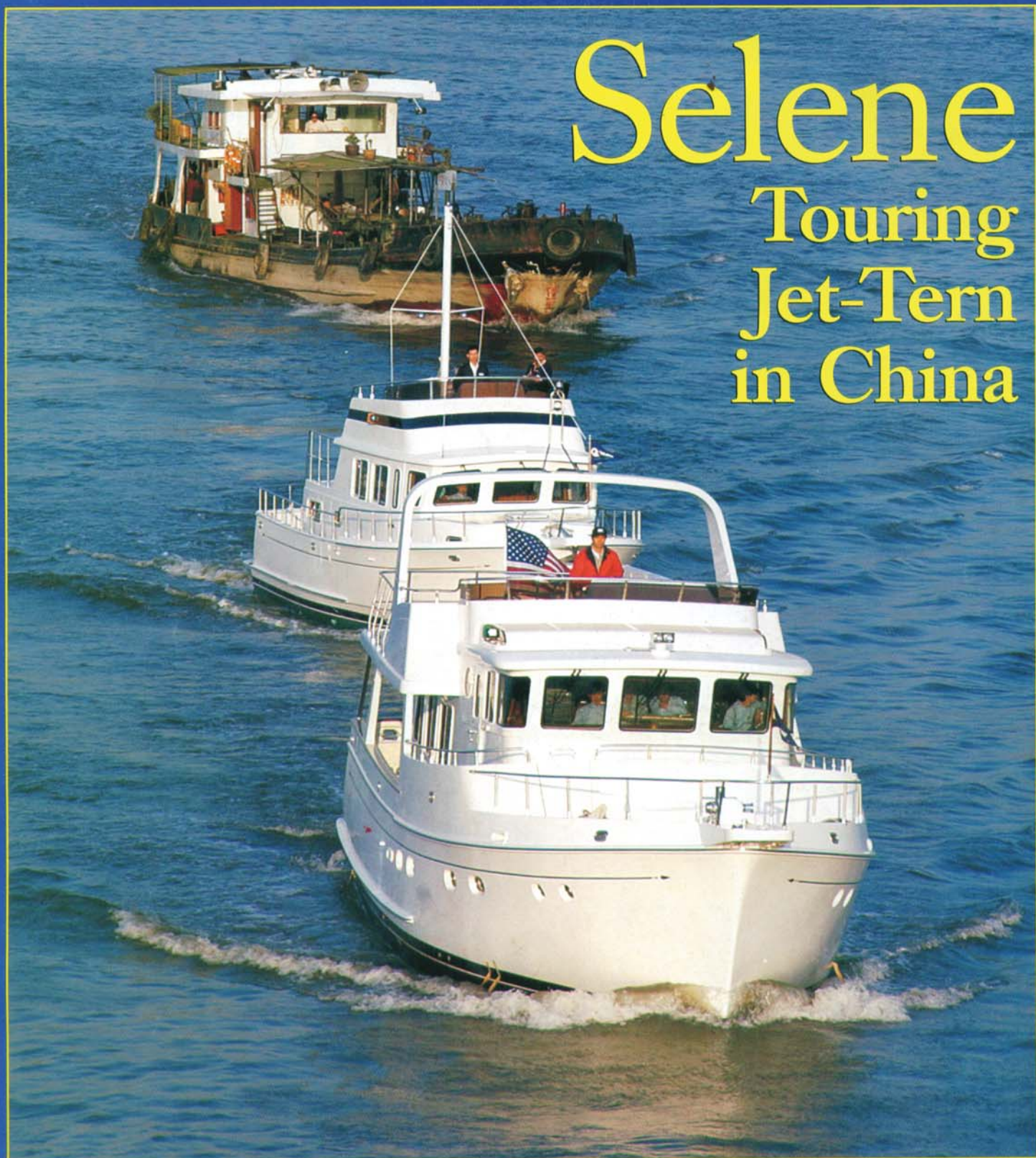
The Trawler & Ocean Motorboat Magazine

# PassageMaker

Since 1995

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## Selene Touring Jet-Tern in China







This story is the longest in-progress feature in *PMM*'s history, but it's time to bring it to you. When I first did the boat tour on the Solo 43 (see *PMM* April '00), it was clearly a ground-up business venture from a new yard in China. The early boats were evidence of a new effort from a new yard and, as I reported, the workers were still learning the finer points of boatbuilding. From applying hardwood finishes to dressing electrical panels, such details highlighted areas of improvement.

But what amazed me even then was the enthusiasm everyone involved in the project had to make the boats better, accepting the reality that a learning curve was a natural part of the process. So in the years since, we've seen major strides in quality and attention to detail in the developing Selene line ("Selene" replaced the Solo name after the first several boats). The original 43-footer was extended into a 47, and then more models of competent trawler yachts joined the fleet. The Taiwan builder, Jet-Tern Marine, gathered momentum, and the Chinese workers developed experience in yacht construction.

I first met Jet-Tern's Howard Chen at the Seattle show in 2001 and was impressed by the naval architect's vitality and passion. He is from Taiwan, but his family owns and operates several manufacturing facilities in China. One company is Jet-Tern Tableware, which employs 4,500 people and is the largest tableware manufacturer in the world, supplying IKEA and many big-name household accessory stores around the U.S. While tableware may seem somewhat unrelated to yacht construction, my recent trip to the Jet-Tern dynasty brought to light many similarities in terms of production efficiency, quality control and value.

Howard set up Jet-Tern Marine in 1998 as one of the first yards in China, located in close proximity to the other family facilities in Houjie, a two-hour bus ride from Hong Kong. Jet-Tern Marine employs 500 people in two facilities, a 216,000-square-foot shipyard and a 108,000-square-foot fiberglass shop. A new, state-of-the-art waterfront yard is also under construction in Zhuhai, and the 1.3 million-square-foot shipyard will begin partial operation in the summer of 2004.

Howard Chen is a trained naval architect with a good eye for boats. Howard is also a talented and organized manager, critical qualities for running a successful boatbuilding operation, especially in China.

What is unusual about the Selene story is that it involves several key American players who have had a strong impact on the developing line of pagemakers, and the people are as significant to the project as Howard Chen. On the West Coast, the folks at Friday Harbor Yacht Sales in Friday Harbor, Washington, are experienced brokers of the cruising dream. Over the years they have represented several lines of trawler-style cruisers,

outfitting owners with boats well suited for cruising Alaska, Mexico and beyond. The liveaboard lifestyle of the Pacific Northwest has proven to be a perfect training ground for trawler cruising, and many world cruisers begin their adventures there.

Friday Harbor's Brian Calvert and Dan and Jan Fogle know what works on a boat and what doesn't, and their expertise in real-world cruising has had a strong impact on the boats built by Howard Chen's Jet-Tern Marine. This team has successfully brought the Selene line to a higher level of quality, comfort and capability.



Top: A new hull moves into the assembly building.

Above: The Houjie yard is in the top red rectangle; the new Zhuhai yard, in the lower rectangle.







But some East Coast folks are just as enthusiastic about the project. Ted Hood and his Portsmouth Marine are no strangers to yacht design and offshore voyaging. Skipper of *Courageous* in the 1974 defense of the America's Cup against *Southern Cross*, Ted Hood is one of the pre-eminent sail and yacht designers of our time, with a background that spans decades and hundreds of boats, both power and sail, multihull and monohull. It is hard to imagine a yachtsman with more experience, and Ted is also heavily involved in the Selene project. Working with Portsmouth Marine's capable John Clayman, the two men have also had considerable impact on where the boats are now and where they are headed.

With over two years invested in the ever-changing Selene story, it seemed time to check on its progress, but to do it justice I would need to see Jet-Tern at its source... in China. I have been watching these boats develop over the years, and the current Selene yachts are really something. And when I add the dynamics brought by such talented people, the story gets even more interesting.

It was time for a road trip.



Top: Workers inspect a new exhaust elbow. Middle left: Uniformed guards add a military look to the Jet-Tern facility. Middle right: Owner Bob Combs stands by his new Selene 53. Above: John Clayman and Ted Hood inspect the new bulbous bow on a Selene 53 coming to New England.

## TO THE LAND IN THE MIDDLE

Twenty-six hours after I left Annapolis, I was standing in my hotel room in the Jia Hua Grand Hotel in Houjie, Dongguan, Guangdong, China. My travels included a two-hour flight to Chicago and then a 16-hour flight to Hong Kong, which took us over Russia and the Arctic. Once in Hong Kong we took several buses through customs checkpoints and immigration stations as we worked our way inside the communist country. But the communist influence is decidedly low-profile these days, as the nation explodes with industrial capitalism.

The "we" on this trip included Ted Hood and John Clayman, as well as Alex Marcus of ESI. Howard engaged Alex to review the fuel delivery/maintenance systems on all of the Selenes and to train Jet-Tern's technicians on how to improve system installations. To round out the party, Friday Harbor's Brian Calvert would meet us at the yard, flying to China from Vancouver with Bob Combs, owner of a new Selene 53, and Brad

Pilz of Sterling Yacht Center, which commissions the boats for Friday Harbor Yacht Sales. Timing is





A new Selene 53 and a 36-foot Archer are readied for sea trials alongside the local yacht club's floating dock on the East River.

everything, so it was great that these people would be on hand as we checked progress at the yard and sea-trialed some new boats on the East River.

A uniformed guard snapped to attention and saluted us as we drove into the gated compound. There were 23 boats in various stages of construction at Jet-Tern Marine at the time of my visit, and teams of uniformed workers were on most of them. Howard introduced us to his managers and staff in the design and engineering offices. Some of these managers came to Jet-Tern from Little Harbor Yachts, a Ted Hood company that produced exceptional sailing yachts in Taiwan some years ago.

I quickly noted the distinction that Jet-Tern Marine is a Taiwan operation in China, and the top four managers have 15 to 20 years' experience building boats in Taiwan. They are responsible for carpentry, fiberglass tooling, electrical and mechanical systems and all aspects of yacht construction. With two engineers on staff as well as two naval architects, the management team seems a healthy mix of hands-on shipwrights and trained engineers.

Another fact I picked up is that Jet-Tern Marine is a global effort, with U.S.-sourced materials and

equipment, design input from Friday Harbor and Portsmouth Marine, and Taiwan management and control in a yard in China. And instead of relying on local suppliers of important materials, \$300,000 of material is shipped from Taiwan every month. Jet-Tern maintains a Taiwan office to handle the purchasing and accounting of the shipyard.

Walking around the yard felt similar to being on a military base, with uniformed workers color coded by rank, each station orderly and controlled. The Chinese work force is young: The average age of a Jet-Tern employee is just 27 years old. The lure of opportunity is strong here, and a worker can make more in one month than he or she could expect in a year on a farm.

Interestingly, part of the deal with the Chinese government, which offers an attractive arrangement on land for industrial development, is that Jet-Tern must provide housing for its workers, so dormitories are located on the yard grounds, complete with a company store. The 500 people at Jet-Tern Marine are essentially one big family, living, eating and working together. Even Howard lives at the yard. It's quite fascinating.





Top: Training is a never-ending process at Jet-Tern. Above: After sea trials, hours of discussion about what might be improved.

The Taiwan managers work hard to keep the Chinese workforce focused. The young men and women appear eager to do a good job and eager to learn. Howard said he provides everything to the workers, even clothing. Many of them come from remote agricultural regions around China and view this as a great chance to make something of themselves. Most send earnings to their families.

Training is critical to the success of Jet-Tern, and workers engage in a series of exercises that identify talented individuals who will progress up the ranks. Woodworking apprentices are first trained in Jet-Tern's Wood Box Division, which builds beautiful wood presentation boxes for the family's tableware company. Through Ted Hood's influence, experts from Hinckley Yachts and Little Harbor Yachts have spent time at Jet-Tern to train workers in everything from varnish to wiring to mechanical installations. It is a fine example of how Howard continually strives to raise the quality at the yard.

More than anything else to Mr. Chen, training is the thread that holds Jet-Tern's future. Without it, his dream for world-class passagemakers unravels.

"You can easily hire 200 people a day," Howard told me. "But without good training, there is no chance of making anything of high quality."

"We've come a long way in five years," Ted admits. It is an understatement of major proportions, typical of Hood.

### BIGGER, BETTER, FASTER

I learned that Jet-Tern's new waterfront facility in Zhuhai will allow its production to expand from 40 boats to 100 boats a year, a goal it fully expects to achieve. And the Selene line will soon include models from 36 to 62 feet, covering the full spectrum of the passagemaker market.

As I've been following the Jet-Tern/Selene evolution, I think it is important to make a distinction between such lofty production goals and Jet-Tern's commitment to improving its model line. Most boatbuilders invest a considerable sum in tooling for a new model, and then proceed to build one boat after another. Molds are a huge benefit of fiberglass construction. However, any design issues that appear in the new model simply become a part of the boat's personality, as it is a costly proposition to change tooling or create a new set of molds.

Howard apparently does not buy into that school of thought. As I've seen over the course of the past years, he has no problem cutting up a mold and making a new one that modifies the hull shape if it makes the boat a better, safer or more comfortable sea boat.

For example, Ted Hood urged Howard to add 6 inches to the stern section on the Selene 53 hull, which adds displacement and makes it a better sea boat. So new tooling was created and all Selene 53s now have this changed hull shape in the stern, along with a fuller hull midsection, a cast lead ballast and an optional bulbous bow. The original 53-foot mold is to be significantly altered for use as a new 57-foot Selene model.

Another example of Jet-Tern's ongoing drive for improvement is the recent decision to switch from mild steel fuel tanks to fiberglass tanks. More expensive than steel, using fiberglass tanks means Selene owners won't have rust problems in 20 years, a well-known factor many owners of older trawlers have had to contend with.

These improvements build lasting value in each Selene and highlight the builder's commitment to building a better trawler yacht.





This photo of the underway Selenes passing a traditional workboat says it all. Meet the new world in China.

### THE YIN AND YANG OF EAST AND WEST

All Selene trawlers are full displacement yachts capable of cruising around the world, except the new and affordable Selene 36 Archer, which is a semi-displacement trawler.

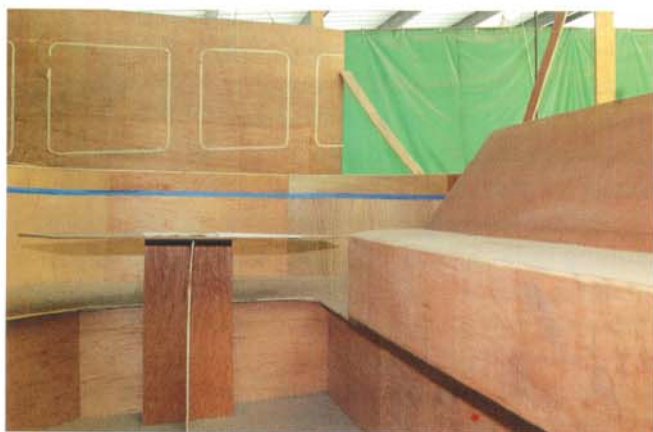
A new Selene 62 will soon be under construction, the hull mold complete and the deckhouse mocked up in plywood. We toured the full-sized plywood deckhouse, and there was much discussion over the many details that didn't show up on a two-dimensional drawing. Actually walking around a plywood interior points out the good, the bad and the unworkable and justifies every penny spent on its construction.

As Brian, Ted, John and Howard walked around the virtual interior with Jet-Tern engineers and CAD designers, all talking about what they saw, scribbling notes and offering suggestions here and there, I noted the significance of this effort. Knowing what will work on a new boat is the hallmark of professionals in this business. It is often a matter of gut feeling based on years of experience and talking to hundreds of boat owners. Right up there with training is developing the right product.

One interesting later discussion was Brian Calvert's outfitting conversation with John Clayman. Brian typically counsels new owners to spend an additional 10 percent to outfit a new Selene for cruising Alaska and getting used to the boat. He thinks owners should plan an outfitting budget of 20 percent if they plan to head offshore for extended cruising. John Clayman, on the other hand, figures an initial budget of up to 40 percent is appropriate to outfit a gold-plated yacht with all the bells and whistles, which is how he usually outfits the Selenes for his customers. It was a fascinating dialogue that highlights the diversity of the cruising lifestyle.

A future project Hood is keen to pursue will be a further extension of the Selene brand. Working with Jet-Tern Marine, he would like to develop a line of expedition yachts that brings mega-yacht quality into boats that can challenge the world. From 50 feet to 80 feet, he hopes these boats will set a new standard for passagemaking vessels, capable of traveling to the far corners of the globe safely and comfortably. While most Selene owners will choose less extreme destinations, this expedition series may take the genre to a new standard.





Top: A plywood mockup of the new Selene 62 takes shape among other boats under construction.  
 Above: The new boat's pilothouse explores interior alternatives.  
 Left: Signs around Jet-Tern remind workers to stay safe. What does this one warn?

One afternoon I walked up to the roof of one of the buildings to take some photos of several boats being readied for shipment to the U.S., and I brought a handheld GPS with me. The fix at Jet-Tern Marine put us at 22 degrees 55.852 minutes north, 113 degrees 37.970 minutes east, some 8,120 miles from Annapolis. Far, far away from home!

Working at a boatyard, living at a boatyard, eating at a mess hall at the boatyard, what is there to do for fun? Apparently this is a common question for the numerous Taiwanese and foreign entrepreneurs working and living in China, and I learned that their escape is a swinging nightlife. The many hotel complexes in the Houjie area, which is the furniture-making center of China, cater to a bustling nightclub business, and Brian told us to treat ourselves to a specialty of the Dongguan region... foot massage therapy. How wonderful!

After a couple of days I gathered my initial thoughts about being in China. The communist presence is visible mostly in the red flags flying from boats and buildings, but not much else makes one aware of it. And even though they wear uniforms of Jet-Tern Marine, all of the women





fashionably distinguish themselves with brightly colored shoes.

China is a land of industry and opportunity... and reproduction. One morning I had coffee at the hotel café before the rest of the group joined me for breakfast. Sitting quietly alone, I sipped my coffee while listening to Andrea Bocelli and Sarah Brightman singing to me over the café's ceiling speakers. As I looked closer I saw the familiar Bose logo, but then noticed the logo was similar but not exact and the speaker was obviously a copy. So it is throughout China.

I had the opportunity to go aboard the new Selene 36 Archer, as well as the latest Selene 47 and 53. The new 36-footer is a solid cruising boat for a couple. With double cabins and standard Cummins 210 diesel, it sells for under \$300,000. Among its many features is an engine room that allows standing headroom at the front of the engine, much like the Krogen 39. I think the reverse rake of the house windows looks very shippy, and I'm sure this boat will prove popular for those interested in a good coastal boat of this size. Ted, Brian and Howard were generally happy with the boat's



Top: The huge mold of the Selene 62 polished for hull construction.

Above: Workers ready a deck mold for lamination. Right: Every Selene moves through the process with an identification plaque like this. Very orderly.







Above: The carpentry shop is a beehive of activity, and all work is supervised by experienced managers. Left: The new paint shop was a major investment for Jet-Tern but promises superior results.

performance but want to try a bigger engine (maybe 450hp) in a future hull to see if it will make 15 knots, for a realistic 12-knot cruise speed.

The 36-footer is a single engine boat and finished in quality teak joinerwork. Certain elements of the first boat are already tagged for change in the next boats, and it seemed everyone had their list, which we later reviewed in a group discussion. Howard was genuinely curious what I thought about his boats, and it was a very positive experience to discuss collective ideas in a team environment.

The most popular model in the current Jet-Tern lineup is the Selene 53, an all-around capable boat that is large enough for bluewater and liveaboard comfort. I've been on several of these 53-footers, and the boat feels good to me. It has wide decks, comfortable accommodations and the right amount of attitude. Available with single or twin engines, the full displacement 53-footer is loaded with features that accommodate extended living aboard, such as midships master stateroom, roomy raised pilothouse with inside access to flybridge, cedar-





Above: Workers assemble to resume work after their lunch break. Such military organization is typical of Chinese industry. Right: Helen Gui is responsible for CAD drawings and represents the youthful enthusiasm of the Jet-Tern staff.

lined hanging lockers, dozens and dozens of locking drawers and cabinets (even in the lazarette), prewired speaker systems throughout the boat, and hardwood interiors in either cherry or teak. All of these boats are outfitted with top-shelf equipment, such as Naiad stabilizers, Grunert freezers, Northern Lights or Westerbeke gensets, and Cummins diesels, as well as bow and stern thrusters. Gunkholing Alaska or cruising the Caribbean, the Selene 53 does it with ease. And it has the long legs to cross oceans.

The steady flow of river traffic made running the boats together interesting, as we dodged ships and smaller craft headed in all directions. We were in the East River just off the Pearl River, and the number of ships showed just how much the Chinese rely on their commercial waterways.

### AN EXAMPLE OF SOLID ENGINEERING

Alex Marcus spent three days evaluating the work done at the yard, then presented Howard with his recommendations. Just as Hinckley and Little Harbor



specialists helped Jet-Tern develop better construction practices, Alex focused on fuel related issues.

I happened to be there during his readout, and I think his recommendations are worth repeating here, as they are a good example of the technical expertise being sought at this yard.

All Selenes will get ESI's Clean Fuel System to provide fuel polishing and maintenance capability. In addition, a strategy was developed to reduce the number of fittings in the fuel delivery system, thus minimizing potential leaks (both air and fuel).

He made a strong case to stop the practice of using copper tubing for fuel lines, replacing it with U.S. Coast Guard-approved, fire-rated hose. This hose is





safer than copper tube, which oxidizes diesel fuel, can get brittle over time and, when bent sharply, reduces flow. And copper tube is not fire-rated, an important safety element.

He further suggested eliminating low quality, unreinforced hose. Hose clamps on pipe barbs easily cut cheap hose, and unreinforced construction isn't good for fuel line suction. Vacuum-rated pressure hose that is fire-rated to U.S. Coast Guard standards is a much better choice, and using CG-approved, hydraulic JIC swivel-end fittings makes for leak-proof connections.

Fiberglass fuel tank design was reviewed to make sure the pickups and returns for both delivery and polishing are placed at optimum locations and eliminate trapped contaminants behind baffles and corners. And much of the hardware was moved around to centralize all fuel management plumbing for better access, including manifolds, filters and polishing system controls.

Alex's final

recommendation was to eliminate all pipefittings from the fuel system, which is a common practice on many boats in our niche. Pipefittings simply do not belong on a boat, as they are tapered, seal through thread deformation (so are not reusable) and are not positionable, which is especially troublesome on manifolds where one wants all fittings facing a



Top: Evidence of goods shipped to America and the world.

Middle: In front of a new Selene 53, from left to right: Alex Marcus, John Clayman, Ted Hood, the author, Howard Chen, Brian Calvert, Bob Combs, Brad Pilz.

Bottom: Traditional ways of life endure.

certain direction. Hydraulic fittings that seal by O-ring or metal contact are much better for this application. The age-old question of how tight is tight enough simply goes away when employing proper hydraulic fittings.

If Jet-Tern follows these recommendations to the letter, I would argue that the Selene will have the best fuel system of any boat in the world. It simply doesn't get any better when solid engineering practices are followed.

Howard Chen isn't finished yet. But what he has achieved is admirable, and he's on track, with the combined assistance from his dealers in America.

## MADE BY TAIWAN IN CHINA

Ted, Alex and I began our journey home with a high-speed catamaran ferry from Humen to Hong Kong. Howard drove us around this fashion center, and I saw more of the China I had expected, thousands of commuters criss-crossing city streets on motor scooters, some with four adults and/or

children aboard. Some scooters and ancient motorcycles carried tanks of propane, cages of chicken, drums of fish, rolls of carpeting and all sorts of unlikely items around the city. I never saw this kind of traffic in Houjie—not surprising, as so many of those residents live on company grounds and don't commute to their workplaces.





At breakfast, we explored some possibilities for the time when Jet-Tern's new yard is fully operational. Since so many of the world's products are now built, assembled, cast or crafted in China, perhaps this could be used to advantage for new Selene owners.

When a couple buys a boat, perhaps they could arrange a visit to the yard during construction. Then the couple could shop (with the help of a Jet-Tern guide) many accessory companies in the area to outfit the new trawler with top-quality furnishings, from furniture to counters, from faucets to curtains. Heck, I even know a good Bose-like speaker system.

It could be an all-encompassing boat ownership experience, given the purchasing-rich environment that is today's China.

As I left on the long trip home, I reflected on the convergence between the old and the new in this land. In one week it was not possible to really learn China, but I sense there's no going back, as young people experience the world through business, from technology to manufacturing to the latest in European fashions at affordable prices.


And with a Taiwan company like Jet-Tern Marine harnessing the horsepower of China's resources, we



Top: Ships anchored at sunset are typical of watercraft plying these waters. Above: The Chinese version of the soccer mom running errands. Where's her cell phone?

of the trawler lifestyle benefit from having world-class passagemakers built to order.

Howard Chen is focused on building the best trawler yachts in the world, to the highest standards, and his American connection is helping him realize this goal. He wants Jet-Tern Marine to be Top Gun.

The gauntlet has been thrown. 



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