

NEXT GENERATION

Grand Banks redefines the trawler genre by bundling express and coastal traits into one package

BY JOHN LOVE / CONTRIBUTING WRITER

No engine-mounted transmissions or transmission coolers, no inclined shafts, no shaft logs, no stuffing boxes, no cutless bearings, no struts, no through-hulls, no exhaust risers or mufflers, no thrusters, no rudders, no hydraulic steering lines and pumps. But lower fuel consumption, higher speed, enhanced maneuverability and precision docking, less noise and vibration, no visible exhaust or diesel smell and more room. Sound like a dream? It's a reality on boats fitted with pod-drive systems from Volvo Penta (Inboard Performance System) or Cummins MerCruiser (Zeus).

Recreational trawlers

Recreational trawlers fall into two categories: offshore and coastal. The offshore trawler yacht like the Nordhavn is a displacement hull, slow-speed, single-engine, relatively deep-draft, large-displacement vessel capable of long range on the open ocean. The coastal trawler yacht like the Nordic Tug has a more powerful single engine and a semidisplacement hull with good seakeeping qualities. It is capable of long-range coastal cruising at displacement speeds, as well as higher speeds with a greatly increased fuel burn.

In recent years the venerable Grand Banks Heritage Class has become what is known as an "express" or "fast trawler," which is essentially a semidisplacement coastal trawler hull fitted with high horsepower twin engines for planing speeds. The express trawler is very popular with well-heeled yachtsmen but isn't what the sailor-turned-trawlerman with visions of long-range, economical cruising has in mind.

Enter the new Grand Banks 41 Heritage Europa with twin Cummins MerCruiser Zeus 3500 pods (www.grandbanks.com). In my opinion, this twin-engine, modified-vee, planing-hull yacht has the magic mousetrap — pod drives — that enables it to bridge the coastal and express trawler and be both in one vessel.

The shaft drive

My 2002 Grand Banks 42, Maramor, is a rare late-model, single-engine Heritage Classic, displacing about 40,000 pounds with full fuel and water. My family thoroughly enjoys Maramor for cruises to Maine, Lake Champlain, Buzzards Bay, Long Island Sound, wherever we can get to and back in a week and two weekends at displacement speed. At her full rated rpm of 2,800 she is capable of 13 to 14 knots, but at great expense for fuel. At 8.5 knots and 5 gallons per hour, the cost of

fuel hasn't impacted cruising decisions.

Thanks to her deep skeg and stainless shoe connecting the skeg and rudder, we've never fouled the propeller and enjoy anxiety-free night passages in lobster pot-infested waters. With one engine in an engine room large enough to accommodate two, all machinery and

couldn't be fitted on a 42 Classic because the pod drive engine room would be partially occupied by the main sleeping accommodations aft.

The pod drive

This isn't the case with the Europa design, where the pod drives and engines

cooler, seawater ball valve, through-hub exhaust and trim tabs also are integrated into the pod drives for an incredibly compact and efficient propulsion system. The time needed to install the complete system is greatly reduced, and builders are expecting this technology to make their boats more affordable.



The torpedo of each drive is at the same depth as the keel, and the counter-rotating propellers are protected by a skeg.

systems are easily accessible, so maintenance and repair doesn't require time-consuming and painful gymnastics. The 2-inch-diameter, 17.6-foot Aqualoy stainless steel shaft drives a 28-inch-diameter, 25-inch-pitch propeller with a 2.47-to-1 gear ratio. The shaft is supported in the shaft log by three cutless bearings and sealed by a Lasdrop shaft seal.

The layout

A GB42 Classic has two staterooms, one forward and one aft, each with its own head and shower. The master stateroom aft has a queen-size berth, a desk and enough storage to satisfy the most fastidious better half. This is an ideal arrangement when cruising with another couple or with children and grandchildren. A 41EU, on the other hand, has two adjoining staterooms forward that share one head and shower. The main attraction of the Europa, aside from subjective notions of taste, is a large covered deck aft, accessed by a sliding door from the saloon.

However, on the Classic the engine room is forward of the master stateroom, under the saloon, requiring long shafting and exhaust piping. Pod drives

can be fitted all the way aft under the covered deck. This has many advantages. The covered deck has a soft patch that can be lifted for relatively easy engine and pod drive removal without disturbing the hull or superstructure. All sides of both engines are accessible for maintenance. Noise, vibration and heat from the power plants are moved aft from under the saloon. Outboard of the soft patch are hatches to fender compartments.

The footprint required by the pod drive is much smaller than for a shaft drive. The large space under the saloon vacated by the shaft drives is now available for other purposes, such as a washer/dryer, watermaker, workbench, scuba gear, etc. The transmission is integral to the pod drive, which is set on a large rubber grommet. There is a short, 18-inch universal joint connection between the pod and the diesel, obviating the need for precise shaft alignment. Since the engine isn't loaded with the thrust from the counter-rotating propellers, it has softer, more resilient mounts than a shaft drive, further reducing noise and vibration.

Cooling-water intake, transmission oil

The 41EU is steered by directing the propeller thrust. The pods rotate 60 degrees: 45 degrees outboard and 15 degrees inboard. The boat competently steers when run on one engine without the need to secure the propeller. The counter-rotating props balance outside forces. The thrust from the pod drive is horizontal, without a wasteful upward component, and the hydrodynamic shape of the pods produces much less drag than an inclined shaft, strut and rudder.

When docking, the helmsman switches from the wheel to the single-joystick system, which directs the full force of each pod's thrust independently for close-quarter maneuvering, sideways tracking into a berth, and spinning in place.

Fuel consumption

People are sometimes skeptical of the low fuel consumption on shaft-driven Maramor. A GB42 Classic has a plumb bow and a waterline length of 41 feet, 1 inch. Her single 420-bhp 3126B Caterpillar electronic diesel drives a 28-inch-diameter, 25-inch-pitch propeller with a 2.47-to-1 gear ratio. This efficient ar-

range requires only 1,800 rpm with an indicated load of 28 percent and an estimated 120 bhp to drive Maramor at her maximum hull speed of 9 knots.

Her electronic engine can be run continuously at low load without ill effects for long-range cruising. It is a real advantage to be able to take a heavy-displacement, well-appointed motor-yacht to Maine from Long Island Sound for a couple of weeks of cruising and back at 8.5 knots without needing to fuel. But increase speed beyond 9 knots, and fuel consumption increases dramatically — three times — for a maximum cruising speed of 12 knots.

The 41EU is an entirely different boat. Her main advantage is she can be operated continuously at 8 to 10 knots for efficient long-range cruising (coastal trawler mode), and she is a fast planing boat (express trawler mode). How is this achieved?

The Cummins MerCruiser QSB5.9

At press time the horsepower options for the Zeus 3500 weren't certain. The metric horsepower ratings (for bhp, multiply by 98.6 percent) listed on the Cummins MerCruiser Web site (www.cmdmarine.com) are 480 (3,400 rpm), 425 (3,000 rpm) and 380 (3,000 rpm). The engine for all horsepower ratings is the common rail QSB5.9. The 425-mhp rating has a larger heat exchanger and a wastegated turbocharger. There are indications that the 41EU may be offered with the QSB5.9 rated at 355 mhp (2,800 rpm) and 330 mhp (2,800 rpm).

The 41EU is a yacht of the old school,

with a full-loaded displacement of about 39,000 pounds. Classic teak joiner work throughout, granite counter tops, cedar-lined lockers, you name it. She is built for comfort and is a thing of beauty that will last for generations. Her construction, however, will not be traditional. Her hull will be optimized by being laid up using the vacuum infusion process.

With the QSB5.9 engines rated for 425 mhp each, she is expected to achieve 26 knots at full-rated rpm (3,000). With the QSB5.9 engines rated for 330 mhp each, she is predicted to achieve 22 knots at full-rated rpm (2,800). At 8 knots both arrangements are predicted to output only 64 shaft hp, which is only 32 shaft hp per engine.

Specific fuel consumption — i.e., pounds of fuel burned per bhp per hour (in metric, grams per bkW-h) — increases as the load decreases from the engine's optimum design point. This means that a higher load during slow-speed cruising translates to more efficient combustion. If you anticipate cruising at displacement speed and only occasionally running at planing speed, then the 41EU fitted with the QSB5.9 engine rated for the lowest horsepower offered is the boat for you.

The false premise

"Order the highest horsepower offered. You don't have to use it, but it is there if you need it." The flaw in this reasoning is that a mechanical diesel is very inefficient at low loads, smoking and smelling of incomplete combustion, which is both extremely wasteful and damaging to the engine. Electronic

control of diesels to a large extent solved this problem by adjusting injection timing, duration and pressure to suit the load. However, for maximum efficiency I recommend you match your anticipated cruising speed to at least a 20 percent load on the engines.

For twin QSB5.9s rated at 330 mhp each, 20 percent load is 132 mhp, which is predicted to drive the 41EU between 9 and 10 knots. You can safely disregard objections that you can damage a common rail engine by operating at such a low load because of cold lube oil. The lube oil cooler is on the freshwater, thermostatically controlled side of the cooling system.

The preliminary speed/power curves for the 41EU predict a speed of about 10 knots at a power takeout of about 162 shaft hp and 12 knots at 282 shaft hp. If long-range, economical coastal cruising is what you have in mind, less is better. Climb above 10 knots, and the power takeout and fuel consumption are what you would expect of a planing boat, albeit the performance is remarkably improved over shaft-driven boats due to inherent efficiencies of the pod drives.

Single-engine operation

The 41EU has no rudders and uses directed thrust to steer. In a turn, one pod rotates inboard up to 15 degrees and one rotates outboard up to 45 degrees. With one engine secured and the pod on the operating engine rotated inboard, the thrust is in the same direction as the turning force occasioned by the offset of the operating engine from centerline.

Conversely, rotate the operating pod outboard, and the thrust is overcoming the turning force occasioned by the pod offset. The net effect is that on one engine the boat will steer equally well to port or starboard and will hold a course.

An experienced captain with hundreds of hours on Zeus-equipped boats tells me performance on one engine is remarkably good. Both engines must be online during docking with the joystick.

Resale

It may seem odd to talk resale about a boat that won't be in full production until later this year, but there are two interesting features of the 41EU with respect to resale that aren't obvious.

QSB5.9 engines with different horsepower ratings up to 380 mhp all have the same components. This means that the horsepower rating can be changed without hardware modifications to the engine. A technician changes the programming, and you fit appropriate propellers to match. Thus, you have bought a boat that can be inexpensively modified to suit your changing need or the needs of a potential buyer.

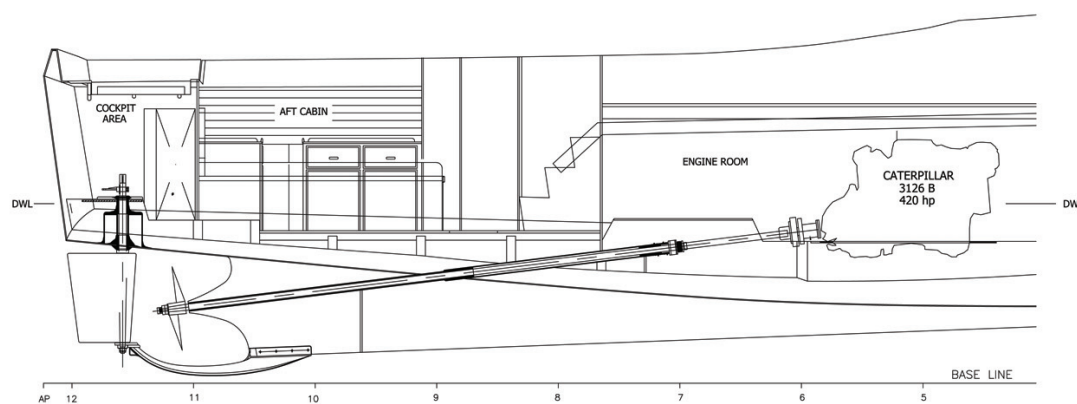
It is no secret among engine manufacturers and technicians that many boats are run hard and way out of the operating specifications of the maker, which shortens considerably the time between major and very expensive condition-driven overhauls. One of the reasons major overhauls or repowering are so expensive is because of the difficulty of working in very tight spaces. The soft patch on the 41EU provides complete, easy access and gives the owner or buyer the option of quickly and relatively inexpensively removing an engine or pod for a factory overhaul or replacement.

Conclusion

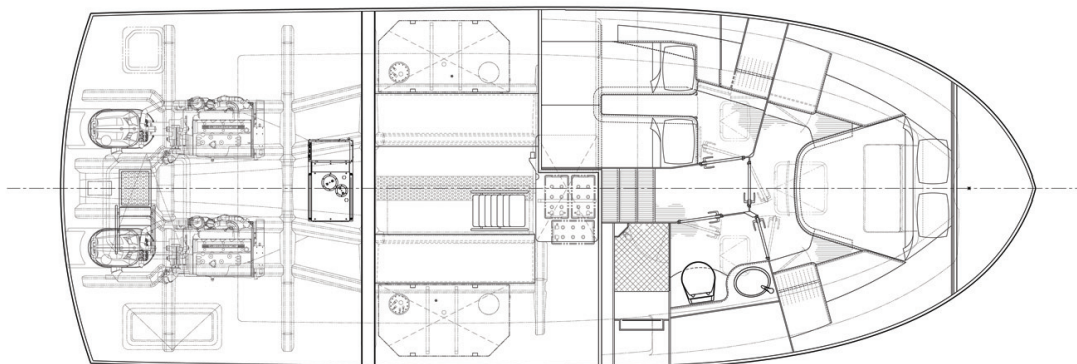
Designing a boat involves a series of tradeoffs. My family would rather have a GB Classic than a Europa. I would rather have pod drives than shaft drives. The 41EU is a Europa with pod drives. Which way would I go?

The performance of pod drives is truly a quantum leap over shaft drives. The smaller footprint of the propulsion machinery and its design enable optimizing its isolation from the accommodations and improving access. And did I mention that the autopilot is built into the control system? A new utility room/storage space accessible through a large hatch and stairs from the saloon opens up new possibilities. I wouldn't hesitate in choosing the 41EU.

The North American market has demanded high horsepower. I get the impression that Cummins MerCruiser is not convinced that even today's high fuel prices and concerns about profligate use of natural resources are enough to influence buyers to be more discerning. You, the trawlerman, will decide the issue. I, for one, am prepared to order a 41EU on the strength of the tank test data and drawings I have seen — if I can get it with QSB5.9 engines rated for 330 mhp. ■



GB42 traditional single-engine shaft drive. Note the excellent protection from fouling and damage for the propeller.



41EU with twin Zeus 3500 rear-facing tunnel-mounted pod drives. The spacious compartment under the saloon vacated by the shaft drives is open for all manner of uses.