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BY SVEN DONALDSON

Nordhavn 56 Motorsailer

A luxurious, super-efficient voyager that's more complement than compromise

PACIFIC ASIAN Enterprises—a California-based firm that's been in the offshore trawler yacht business for 20 years—currently offers 16 models from 40 to 120 feet. All except one are heavy displacement power cruisers—the sole exception being the Nordhavn 56 Motorsailer that recently debuted after more than a decade of planning and development. However, prior to the founding of PAE, the principles of the company had a long history working hand-in-hand with Ta Shing Shipyards of Taiwan on the design, promotion, and production of the well-known Mason line of offshore voyaging sailboats. So in some respects, the advent of the Nordhavn Motorsailer represents a return to PAE's sailing roots, but this time in the context of two decades experience with the trawler genre.

Obviously this is a very unusual yacht—shaped more by functional considerations than conventional aesthetics. Two key aspects of the design are a hydraulically-controlled rig with enough sail area to obtain worthwhile drive and roll stabilization in light winds, and a heavy duty diesel drive train incorporating a sophisticated, variable pitch propeller. Ultimately it's the synergistic combination of these two propulsion systems that gives the Nordhavn 56 its exceptional offshore capabilities, not the least of which is a huge cruising range.

Optimizing for Power and/or Sail

Jeff Leishman, chief designer for PAE, developed a hull form for the 56 Motorsailer with a high prismatic ratio (optimized for the upper end of the displacement speed range) because supplemental engine propulsion can be expected to come into play any time sail alone is unable to deliver at least 6 knots of

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Above The Nordhavn Motorsailer is designed to use supplementary engine power whenever the speed under sail alone drops below 6 knots.

boatspeed. One benefit of the full-ended, high prismatic hull is extra interior volume, allowing for a forward stateroom that's every bit as livable as the midships master stateroom. Flared, trawler-style topsides forward make for very wide walkways and spacious working decks.

Cruising sailors will often keep the sails up when motoring in light winds and sloppy seas to take advantage of the potent roll damping effect the rig produces. Unfortunately, the small steadying sails sometimes set aboard offshore motor yachts are largely ineffectual in this regard because there needs to be enough sail area to heel the hull significantly (typically at least 5 degrees). Nor can a conventional trawler be retrofitted with a larger rig, because without the ballasting of a keelboat the range of positive stability would be too low for safety.

Unlike most modern sailboats, the Nordhavn 56 has a long shallow keel, keeping overall draft to a moderate 6 feet despite a loaded displacement approaching 40 tons. Stability results from 12,500 pounds of ballast in the keel, plus the very substantial weight of the tankage, engine and drive train all nestled down below the turn of the bilges. Moreover, in event of severe knockdown, the buoyancy of the big, full-width pilothouse will come into play, virtually eliminating any risk of capsize.

For enhanced stability, Nordhavn's trawlers also carry some ballast, but much less than the 56 Motorsailer. However, the extra weight is largely offset by the elimination of several systems considered almost essential for transocean powerboats: active anti-roll stabilizers and an auxiliary "get home" engine with separate fuel system (in case of fuel contamina-

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tion). Deleting these items also goes a good ways toward paying for the sailing rig.

Construction reflects PAE's philosophy of delivering "bulletproof" scantlings without raising the overall centre of gravity excessively. The builders at Ta Shing Shipyards use alternating layers of traditional mat and roving to build up a thick, homogeneous fibreglass hull that can shrug off almost any sort of cruising abuse. Longitudinal stringers, engine beds and bulkheads are laminated into place while the hull is still in the mold. Cored sandwich construction is employed in the deck and raised superstructure—areas where weight savings will significantly improve stability, but again, the lay-ups are exceedingly conservative. The hull and deck overlap at the top of a massive bulwark with the bolts hidden under a traditional teak rail cap.

The broad, bluff pilothouse is a clear target for green water impact, so like PAE's trawlers, it's equipped with beefy aluminum sea doors and 1/2-inch tempered marine glazing fabricated in the U.S. by Pacific Coast Marine. Indeed, the majority of onboard equipment is commercial duty gear, sourced from top manufacturers in North America or Europe, and shipped to Taiwan for installation at the Ta Shing yard. All in all, to describe this vessel as "overbuilt" would be more fact than hyperbole.

Parallel Propulsion Systems

In essence, the Nordhavn 56 is a heavy displacement trawler yacht (albeit one that's configured for sailing as well), so the engine and drive gear are quite literally the heart of the beast. The slow-turning Lugger L1066T diesel (165 horsepower at 2,400 rpm) occupies a walk-in engine room amidships. It turns a long, 3-inch shaft via a 3:1 Twin Disc gear. However, the *piece de resistance* for this particular drive train is the 36-inch, four-bladed variable pitch propeller built by Hudested, a Danish company that's been producing this sort of specialized kit since the 1920s. By altering the prop's pitch, engine load (and hence efficiency) can be kept near optimal whether the sails are trimmed to take advantage of 10-knot breeze on the beam, or hammering into the teeth of a 40-knot offshore gale. And

when sailing with the engine shut down, the blades can be fully feathered for minimal drag.

True, these benefits come at a price. At about US$80,000 the Hudested prop costs more than the complete engine, drive train and fuel system of most 50-foot sailboats. On the other hand, this key feature makes the Nordhavn 56 into something special—a "hybrid" yacht that can sustain a cruising speed in the 6–7-knot range for weeks on end in the open ocean while burning a minimal amount of fuel.

Just forward of the pilothouse and directly over the engine room, the test boat has a midships cockpit with a second helm and direct access to all sailing controls. The standard rig incorporates a Forespar "Leasure Furl" hydraulic in-boom furling system for the mainsail and a Reckmann hydraulic jib furler. Both, as well as the vang and principle winches are activated and controlled by a Lewmar Commander hydraulic system, so sail setting and trimming are, quite literally, push button operations. The midships cockpit is an option that can be deleted to gain some extra cabinets in the galley and more headroom over the engine. To date however, all but one buyer have specified it.

Comfort and Convenience

Accommodations aboard the Nordhavn 56 Motorsailer balance the needs of the crew at sea and in port with the spacious pilothouse serving both as principle helm station and the day lounge/entertainment area. The pilothouse opens to a trawler-style, covered aft cockpit.

At the base of the companionway stairs there's a long fore-and-aft passageway along the starboard side that leads past the aluminum engine room door to the full-width forward stateroom with its ensuite head. Cabinets on the outboard side of this passageway house the (optional) washer/dryer and pro-

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Above right The galley, like the rest of the Nordhavn 56, has been designed for use at sea.
Right The master stateroom is positioned over the centre of buoyancy where vessel motion will be minimal.

vide generous storage.

A right-hand turn at the base of the companionway leads to the galley and adjoining dinette—both well designed for use at sea. A bit further aft beneath the pilothouse is the master stateroom, nicely centred over the centre of buoyancy where vessel motion will be minimal.

Lastly, there's a huge lazarette beneath the aft cockpit that's accessed through a door in the master cabin's ensuite head. This space accommodates the massive battery banks, gensets, watermaker, steering gear and other equipment as specified by the purchaser.

First and foremost this is a seagoing interior, so the compartments are relatively confined to maximize stowage and minimize falling risks. Instead of open, airy spaces you get lots of cabinets, lockers and an abundance of sturdy handholds. Woodwork is meticulously executed in premium teak—a trademark of the Ta Shing yard since it first ventured into yacht-building some 40 years ago. Custom interior decor aboard the review boat was the work of noted designer Sylvia Bolton and, suffice to say, it's spectacular.

Above The spacious pilothouse looks more like what you'd find in a trawler than a sailboat, but is comfortable under power, under sail and at dock.

Underway

Seattle's Elliott Bay lived up to its reputation for feeble summertime winds, confirming that under sail alone, the Nordhavn 56 is no light air speedster. Nevertheless, we saw up to 3.4 knots boatspeed beam reaching in a breeze that peaked at about 8 knots, so the company's target of sailing speeds of about 6 knots when the wind is 12–15 true seems generally realistic.

With a high-clewed 100 percent headsail, and the sailing cockpit located amidships, just behind the mast, visibility from the outside helm station is about as good as it gets. It's also more than merely acceptable from the pilothouse, thanks to large windows all around, and there's still a decent view of the jib luff.

With the engine running at just 1,800 rpm, the Nordhavn clipped along at 7.6 knots at times, getting a small boost from the mainsail (but no jib set because the apparent wind stayed too far forward). At this throttle setting I measured 62 dBA in the forward stateroom, and 65 dBA in the dinette and aft stateroom respectively. Heavy construction and extensive soundproofing can be credited with making this one of the quietest yachts I've reviewed. Impressively, in "fast cruise" mode with the engine turning 2,190 rpm, boatspeed climbed to 8.7 knots, but sound levels in the accommodation areas increased only 3 dBA or less.

Back at 1,800 rpm and 7.6 knots, the observed fuel burn was 3.2 gallons per hour or 2.375 nautical miles per gallon. At this speed and consumption rate the cruising range with the entire fuel load of 750 gallons would be 1,780 miles. By slowing to 6 knots, fine-tuning the prop pitch, and utilizing the sailing rig

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for extra thrust when feasible, passages up to 3,000 miles shouldn't pose much of a problem for this long-legged motorsailer. Naturally, care should be taken to utilize available weather routing information because strong headwinds at sea can have a major effect on fuel economy.

Closing Remarks

Not surprisingly, the Nordhavn 56 Motorsailer is an expensive boat as reflected in the high basic build quality, premium equipment and lavish finish. Depending upon owner-specified equipment, it will typically price out between US$1.6 and US$1.9 million delivered and commissioned on the West Coast. However, for those with deep pockets and a dream of long-distance ocean voyaging, there are few other production boats offering comparable attributes.

Interestingly, L.Francis Herishoff embraced a similar design rationale back in 1950s when he drafted his Marco Polo, a 55-foot, three-masted motorsailer intended—like the Nordhavn—to transport a small crew across oceans at a steady, measured pace with relative ease and comfort. Obviously the Nordhavn 56 is a vastly more elaborate and luxurious vessel, but the fundamental benefits of blended motor/sail propulsion will likely never change. Done properly, motor and sail can complement the other, achieving what Herishoff envisioned, not as merely a 50-50 compromise, but something closer to a 70-70 or maybe even a 90-90 blend. And no question, it's reassuring to know you have two completely independent propulsion systems when the nearest land is 1,000 miles away.

THE SPECS

56 MOTORSAILER

LOA	17.50 m	57' 5"
LWL	16.00 m	52' 6"
Beam	5.05 m	16' 7"
Draft	1.83 m	6' 0"
Displ.	32,000 kg	70,410 lbs
Ballast	5,680 kg	12,500 lbs
Sail Area	106.6 sq-m	1,147 sq-ft
SA/D	11.5	
D/L	216	
Fuel	2,839 L	750 gal
Water	946 L	250 gal

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