

Easy rider

Ship & Boat International trials and reviews Ullman Dynamics' Steering Bar Control System, developed to grant coxswains key advantages over traditional, wheel-based steering solutions

Gunning through the waters of the River Test, Southampton, it struck me as a good idea to stage an impromptu race against a small police launch, conducting its own demonstration outside the Seawork 2015 exhibition. "Best stay away from them," Carl Magnus Ullman, chief executive of Ullman Dynamics warned. "They don't like it when people get too close." It's rare that a sea trial brings out my inner Hell's Angel, but it was difficult to resist the urge to treat this particular test run like a speedway world championship. In my defence, though, I was on board a demonstrator version of Norsafe's latest fast rescue boat type – a modified version of its Magnum 850 class, with top speed boosted from 35knots to just under 50knots. And, as for the wheel...well, there was none.

We had gathered for a demo of the prototype Ullman Steering Bar System, a product which has been developed by Ullman Dynamics – perhaps better known for its range of shock mitigating onboard seating solutions. As the photos reveal, the Steering Bar System resembles motorbike-styled handles, more commonly associated with jet skis, though very much integrated into the helm.

As Carl Ullman tells *Ship & Boat International*, the prototype system is the result of 20 years' worth of research and experimentation, with the intention of developing a steering solution that can effectively "connect the user's brainstem, where the reflex actions originate, directly to actuation of steering, throttles, gears and trim in the simplest and most intuitive way possible". Former and current motorcyclists may enjoy a distinct advantage when using the system, even if it is the first time they have stepped foot on a boat, Ullman adds, in as much as the system has been formulated to "hook up with the reflex paths" of those accustomed to riding motorbikes or bicycles.



The Ullman Steering Bar System, installed on Norsafe's Magnum 850 craft *Harald Bluetooth*; the system enables coxswains to steer, throttle and simply hold on to the bars, simultaneously

With much focus currently placed on the human element aspects of small boat safety (especially non-IMO vessels), this intuitive approach could prove useful in reducing high-speed craft accidents, and has implications for a large range of vessel types; from patrol and rescue boats, where speed, manoeuvrability and control are of the essence, to recreational and sports craft, yachts and pilot boats.

Steering design

The Steering Bar System has four key elements. The first, naturally, is steering, which is easily conducted by turning the bar. As well as being intuitive to the point that it's hard to imagine anyone who *wouldn't* be able to take instant control of the vessel, this method of steering provides other advantages over traditional wheel-based steering systems, Ullman explains.

"The visual and tactile input of the steering input is a great benefit for the cox," he says. "The cox will, at all times, know the angle of the drives merely by feeling where his hands are – just like on a bike." The handlebar-based system can also benefit fellow crew members and/or passengers; Ullman says: "The visual representation of the steering input is also important. Being

able to observe the angle of the steering bar grants passengers the ability to be proactive – they can anticipate and brace before a turn, instead of bracing when the force of the turn occurs.

"You can compare this to typical bridge routines aboard naval destroyers, where the commander gives the coxswain a command for a rudder angle or a new heading, and the coxswain needs to reply by loudly repeating the given command and then confirming when the new rudder angle or heading has been achieved. The whole idea of having crew side-by-side in control is to increase the safety in manoeuvring, so it's important that the co-pilot knows exactly what the coxswain is doing."

Another advantage is the protection the Steering Bar System can offer against the effects of slamming. Ullman explains: "With the Steering Bar System, you are able to use not only your legs but also your arms to absorb the impacts – hence protecting your spine and neck from injuries, while still being in full control of your own body posture."

Total control

The second element is throttling. This is simply conducted by twisting the grip on the bar; again, anybody who has spent

The customisable Magnum 850

Harald Bluetooth, the demonstrator boat which hosted the Ullman Steering Bar System at Seawork 2015, is a modified version of Norsafe's powerful Magnum 850 class, a fast rescue boat type designed to partake in SAR / patrol / dive support work, and which is suitable for installation on both offshore installations and stand-by vessels.

The Magnum 850's basic design incorporates an overall length of 8.87m, a beam of 3.27m and a height of 3.2m, and the class can accommodate up to 17 persons (including six crew members), including survivors.

Harald Bluetooth was fitted with a pair of Volvo Penta D4 engines, rated 224kW each, feeding Volvo Penta's DPH Duoprop drives. This propulsive arrangement is controlled directly by the Ullman Steering Bar System, as is the Humphree Active Ride Control system. Altogether, these help the boat to achieve a speed of approximately 48knots, while a fuel storage capacity of 576litres grants the Magnum 850 sufficient range to handle demanding rescue and pursuit missions.



Harald Bluetooth can attain a top speed of 48knots

10 minutes on a motorbike should be able to pick this up on the Steering Bar System instantly. This aspect also enables the coxswain to keep both hands on the bars, for full vessel control, whilst simultaneously adjusting speed. As Ullman puts it: "You'll never have to make the choice between steering, throttling or just holding on and bracing yourself during potentially dangerous impacts, as all can be done simultaneously."

The third element is related to trim control. "This can also be adjusted up and down using the buttons, which are placed in reach of the thumb," Ullman explains. Finally, the Steering Bar System enables integrated gear control, which would come into play when the vessel is conducting lower-speed operations, such as mooring. A forward/neutral/reverse rocker switch is positioned so that the coxswain can easily control it by thumb, and clearly shows which gear is engaged on each respective engine.

Waterjet Know-How



HT SERIES
1500kW to 5500kW

www.hamiltonjet.co.nz


HamiltonJet

Trim pickings

Harald Bluetooth is fitted with two Interceptor trim tabs, supplied by Swedish manufacturer and vessel stability specialist Humphree. These tabs have been developed to counter the effects of vessel roll and pitch motions, to ensure a smoother ride for crew and passengers alike, across a range of open sea conditions; in fact, the company estimates that the Interceptor tabs can dampen the effects of vessel roll by approximately 40-55%, making it a popular option among high-speed patrol and rescue craft and RIB operators. Each Interceptor features a width of 350mm and has a full stroke of 50mm.



The boat was also fitted with Humphree's electronic Active Ride Control system, which can be controlled via the Ullman Steering Bar System. To make the coxswain's life easier, this is an automatic system, which, fitted with gyroscopes and accelerometers, measures all axes and adjusts the Interceptor trim tabs accordingly, from semi-displacing to planing speeds. The Active Ride Control system can be turned on or off via the press of a switch; should the coxswain choose to deactivate the system, the Interceptor tabs will retract, thereby eliminating additional hull resistance.

The presence of Humphree's Active Ride Control system dampens the craft's roll by 40-55%

The Steering Bar System can be operated in dual-handle or single-handle mode, the latter requiring the user to only concentrate on those buttons situated by the right handlebar. Ullman highlights the main differences, saying: "In dual-handle mode, you shift and throttle one engine with each hand. This would be the most suitable mode when docking and boarding. In single-handle mode, you shift and throttle both engines with one hand. This is better suited when the vessel needs to operate at speed, such as when in pursuit."

Also, in positioning the trim and gear control switches within easy reach, without requiring the coxswain to remove his/her hands from the bars, another advantage is a far less cluttered helm space.

Drive-by-wire solution

The Steering Bar System and the drivelines are linked by drive-by-wire technology, reducing the need for messy mechanical overhauls in the event of a retrofit. At present, the system is compatible with Volvo Penta engines. "Some projects today are specifying Volvo drivelines, not only for their extreme acceleration capacity, but also to keep the option open for the Steering Bar System," Ullman confirms.

The Ullman Steering Bar System is already being used by the Swedish Coast Guard, integrated with single waterjet drivelines.

The twin driveline version of the system, meanwhile, will be commercially launched in the very near future, Ullman adds. This is the version that was installed on Norsafe's *Harald Bluetooth* for the Seawork trial.

Apart from the fact that the system is great fun to work with (racing fanatics will lap this up for sure), *Ship & Boat International's* personal experience of piloting *Harald Bluetooth* backs Ullman's claims regarding the system's intuitive design. For instance, even when throttled to the max, control of the vessel was remarkably simple, and, with both hands on the bars, it was relatively easy to execute a crash stop before launching into full-speed mode again, almost instantaneously. Having also experienced crash stops whilst sitting on one of the Ullman Dynamics Suspension seats, the 'jolt' of the sudden stop proved to be far less physically jarring than one might expect of an 8.8m vessel travelling at the 45-49knots mark.

As a result of the smooth controls, coupled with the Magnum 850's design, I felt confident when standing at the helm and slamming the Steering Bar System all

the way to the left or right at full speed; spray whizzed past the passengers port and starboard, but at no point soaked the aft, and there was little fear of the boat flipping over (nor of the coxswain being flung forward). While I may have some motorbike experience, I'd hazard a guess that, even if you've never commanded a vehicle, you'd be able to pick this up within a minute or two; mooring the vessel was the only task I was happy to hand back to the Norsafe team's coxswain. Given this personal experience, it's not surprising that Ullman cites reduced crew training times as another potential advantage of this system.

As mentioned, the Steering Bar System is still subject to R&D, and it will be interesting to see if Ullman Dynamics incorporates any additional features in the future for enhanced user-friendliness. One likely advance will be the development of the system to interface with a wider range of drivelines, Ullman confirms. As it operates at present, however, the system provides a viable alternative to the traditional steering wheel arrangement and could provide a useful buffer against the risk of accidents and the long-term effects of whole body vibration (WBV). **SBI**