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FULL SPEED AHEAD TOWARDS SAFE, NEW, SUPER-FAST SPEEDBOATS



High speed boats need shock absorbing chairs to prevent back injuries on the crew when the boat crashes into the water after the airy jumps.

New super-fast speedboats for defence, special forces, customs, police, coastguard, search and rescue, etc. are being developed at a rapid pace. This is the main conclusion after the three-day “High Speed Boat Operations Forum” in Gothenburg 31 August – 2 September.

■ Text: Tor Husby

The speedboat forum was held for the 10th time. This year, the attendance counted some 300 invited delegates from 21 countries, and 22 boat types were presented. The speedboats are not just getting faster, but they are also better and safer than just a few years ago, and can be powered by outboard engines of up to 500-600 horsepower. The speed potential is usually in excess of 60 knots, or 70 mph – 110 kph. Any accidents at this speed are likely to look like a freeway crash.

Carl Magnus Ullman, general secretary of the Gothenburg forum, says that European speedboat manufacturers and developers have come much further than the USA,

which is still struggling for better safety for the fast boat crews.

Diesel and electric boats are coming

The rapid technical development in Europe means that users are now offered a greater choice of propulsion alternatives, such as hybrid engines including electric motors and water jets. The size of the fast boats is also subject to great variety. Autonomous boats will eventually become more common. The British manufacturer COX used the Gothenburg venue to present the world's first 300 horsepower diesel outboard engine. The company describes this as an incipient revolution, and promises 25 percent less fuel consumption

and significantly longer life with the diesel version compared to gasoline-fuelled speedboats.

Ullman points out that hybrid versions are on the way, combining a petrol engine for high-speed with a quiet electric motor for use by special forces, who need stealth in the last phase of sneaking up on the area of operations. The Swedish “Kraka” from Soal Marine Group represents a different kind of development. It is a small, inflatable, pancake-flat rubber boat, lies completely in the water crust, is propelled by water jet, and will bring a handful of SEALs unseen and silently to the target.

– The investment willingness is high, and the need is strong to take safety seriously, says the top manager of Volvo Penta's Business



Photo: HSBO

Unit Marine, Johan Inden. Volvo Penta, which is the main sponsor of the Forum, works closely with boat builders to develop new engines and applications to make them more efficient.

Ullman chairs for enhanced safety

Swedish manufacturer Ullman Dynamics in Gothenburg plays an important part in driving the work of preventing injuries to personnel and accidents in the speedboat sector. In 1982, doctor Johan Ullman served as ship physician on board the Swedish destroyer HMS "Halland", which led the first surface attack flotilla. His examinations of the personnel on the flotilla's motor torpedo boats showed that more than 80 percent of those who had served more than nine months had developed back problems. This was not OK or even fair in his opinion. He started his research at Sahlgrenska University Hospital, which was internationally

renowned for its research on back trauma and similar injuries. Here he refined further his measurement methods on patients and techniques for injury prevention and proper ergonomics at sea. The next step was that the Swedish Coast Guard asked him to develop technology to protect crews from this kind of damages. The assignment led to the construction of the first Ullman chair – "Biscaya". The soft high-backed seat absorbs shock, suspends the boat driver, and gives the person seated behind him good support with two handles to hold on to. "Biscaya" and the next version were in due course procured by the Swedish and Dutch naval rescue services, and the British Royal Marines. Three decades later, the company continues to be a world leader in this sector. In total, more than 11,000 Ullman chairs have been made and sold, and have become the standard in more than 70 countries. Recent and demanding new users are the US Navy Seals, Australian and New Zealand navies, coastguards and special forces in Scandinavia and the Middle East.

The operators of speedboats are facing new challenges in the form of ever-increasing speed and more lethal enemies, giving scientists and developers no chance to relax. At this year's Forum, Ullman Dynamics presented 14 different, ergonomically designed soft chairs plus attendant equipment, cockpit design, and consoles.

"Flying without wings"

With the ultra-fast speedboats skipping through the air from wave top to wave top, injuries to the back and muscles are something that should definitely be avoided. The Arendal company Viking Norsafes unveiled the "Marathon 900", which is manufactured

on the island of Tromøya and powered by two 250-hp Seapro outboard engines. The boat is the result of ten years of development from what started originally as a RIB version. In excess of 60 knots, turns were negotiated carefully. A better description of the experience may well have been "Flying without wings". When the boat, piloted by Eirik Møllergaard, skipped over the biggest waves, they were "airborne" for brief moments. But the crashes into the water after the airy jumps, or in the extremely sharp turns, did not feel unduly painful thanks to the "Ullman" chairs, which eliminated dangerous shocks to the body to a minimum. It was not necessary to stand up to protect your back. The specially developed soft Ullman chair provided full protection. It was simply a matter of hanging on for dear life. Next to me, Ronald Schartner sat in a so-called "Jockey" seat that provided equally comprehensive protection. He provided the necessary explanations about the manoeuvres. Schartner also told Møllergaard twice to stop to fish out floating debris from the water. If a speed boat gets a piece of plank in the propeller, the bill can be astronomical.

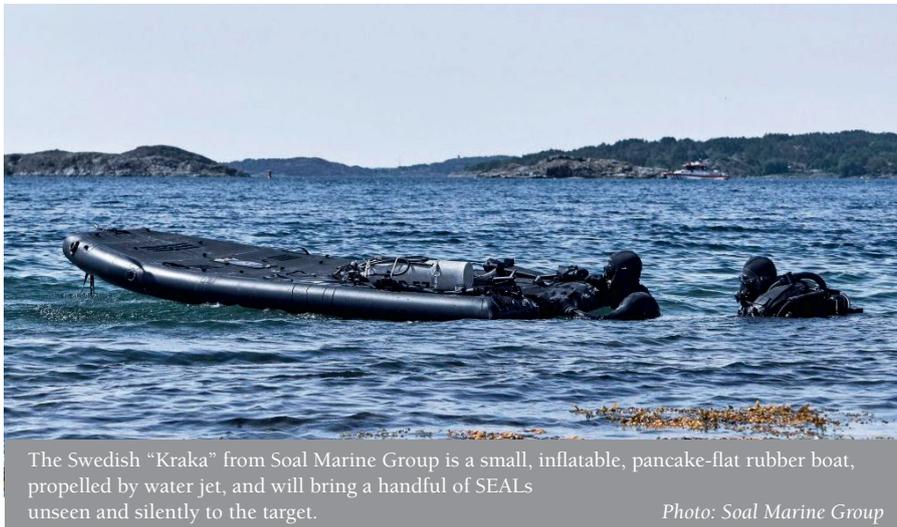
All the speedboats in Gothenburg were as far as you could see equipped with similar types of Ullman special chairs.

The seats on the "Marathon 900" were furnished with what looked like red "Stop buttons".. They were not emergency stop buttons, but were installed to record any discomfort that personnel may have felt during the various extreme manoeuvres. Red wires went from the seats to sensors that collected all relevant data about unpleasant shocks every time a button was pushed. The Norwegian Research Council has offered a grant for the instrumentation.



The "Marathon 900" from Norwegian company Viking Norsafe.

Photo: Ullman Dynamics



The Swedish "Kraka" from Soal Marine Group is a small, inflatable, pancake-flat rubber boat, propelled by water jet, and will bring a handful of SEALs unseen and silently to the target.

Photo: Soal Marine Group

The Viking Norsafe boat can be adapted to "free drop" and electric propulsion. Five units of the "Marathon 900" have so far been sold to the customs, police, and the Coast Guard in Norway. Two boats have been sold to the Coast Guard in Greece, where the boats will probably be built. Møllergaard uses the word "demanding" to characterize deliveries to the Armed Forces in Norway. But in the near future, a significant military breakthrough abroad is expected.

In a short time, Viking Norsafe will start preparations for the purchase of a wave radar that will enable the boat helmsman to detect potentially dangerous waves at night and steer away in time. This will allow the steady high speed to be maintained under most conditions. The wave radar procurement will be a 3-year project where the company will probably have to look abroad to find a supplier.

– We take part in the Forum because we think it is important to show our faces, look at other "intelligent" boats and "mingle" in the environment. The participation was certainly not a waste. In a short time, we made important contacts, says Eirik Møllergaard, who is senior sales manager in the defence department at Viking Norsafe in Arendal.

High speed equals survival and protection

The Fredrikstad-based Hydrolift ship-builder has previously participated in the speedboat forum with both a keynote speaker and a boat (for The Norwegian Sea Rescue Society), but chose on this occasion to present only a portfolio of boats at its stand indoors, says Jon Andre Garberg, Manager of Eker Defence & Security, which is the defence branch of the Eker Group.

– We both design and produce high-speed recreational boats and professional vessels

from 22 to 65 feet, but none are so far taken on by the Armed Forces.

The Eker group, which owns Hydrolift, calls high speed the key to survival and protection, and looks upon the international defence market as a strategic focus area, and then primarily through industrial cooperation. As an example of this, Garberg points out that they have done various design jobs for FFI-supported projects, but also assignments for Kongsberg and several others. From Saab, we have received almost "clean sheets" for the mechanical and industrial re-design of their radar models, most recently the Giraffe IX which is suitable for operations both at sea and on land.

– Until now, we have probably been perceived as a somewhat passive member of FSI, but this is about to change. For example, we participated with, among other things, boats in the water during this autumn's Defence Exhibition at Akershus, says Garberg.

By invitation only

The unique thing about the High Speed Boat Operations Forum is that all participants are invited. Carl Magnus Ullman emphasizes that this is done to ensure a relevant mix of users, industry, and academia, each allocated one third. The forum received 600 applications for 2021, but only half were granted. Around 250 people were present, and the quays outside the now defunct Eriksberg shipyard, where the Forum was again held, were full of exciting speedboats announcing that the future was already arrived and docked. There was no shortage of interested viewers.

– Having a lot more participants is not something we are striving to achieve. The goal is not to have a huge crowd assembled, but to organize as good a forum as possible, Ullman maintains.

– When it comes to conferences, we have become more reserved about participating in many and large fairs, also as a result of the Corona pandemic, says Johan Inden, CEO of Volvo Penta. Niche fairs with fewer participants are preferable to the mega fairs. In 2018, Volvo Penta had devoted a contingent of 20 to the previous speedboat forum. For 2021, participation was shrunk to six persons.

The philosophy of having a niche fair like this is that since so few are working on speedboat development and receive little external attention, it is better to promote a good international working environment among the specialists. Developers, users, and researchers will get the opportunity to meet colleagues and carry the field forward together. Generally speaking, there is no great interest in spreading information beyond the inner circle, says Carl Magnus Ullman. ■■



Four outboard engines, each of 450 horsepower, should provide sufficient power. Photo: HSBO