

Rolls-Royce, Volvo Penta, Raymarine and Ullman build concept boat



Johan Ullman, a Swedish specialist in emergency medicine and occupational medicine, commenced his PhD work 15 years ago on how to prevent the severe injuries sometimes experienced by crews of high-speed boats.

Serving in the Royal Swedish Navy, Dr. Ullman had found that a majority of 19-year-old conscripts complained of back problems after having served onboard torpedo boats for nine months.

"Nothing had been done scientifically to investigate the risks and biomechanics of human exposure to the high-energy impact on high speed craft," Dr. Ullman recalled. "We measured 18 g impacts in hulls, at normal operation conditions.

"This was alarming, considering that fighter aircraft ejections give around 20 g and that 50 per cent of ejected pilots suffered acute injuries. They came down with fractured vertebrae and cracked disks."

No methods were available to measure whole-body shock exposure at sea. Dr. Ullman had to develop his own



measuring devices and validate the method against traditional lab routines. He measured a hundred times higher impacts than anything that had been measured onboard before.

Dr. Ullman developed a new concept for shock mitigation seats and also a handle bar steering system that would allow full control of the vessel, even under severe impact.

The Ullman Jockey Seats are designed to optimise body posture and muscular response to impact. The suspension is

optimised to interact with human body's natural reflexes.

Going beyond the seat concept, a group of corporations has come together to build a high-performance RIB, with the entire man/machine interface optimised for responsiveness, ease of use, safety, control, and comfort. The Responder Technology Demonstrator is a joint R&D project between Rolls-Royce, Volvo Penta, Zodiac, Raymarine and Ullman Dynamics. A CAN bus-based system has been developed by CPAC Systems, to link all controls, displays, navigation electronics, VP 260 D4 engines and RR 240 waterjets together. The Ullman steering bar control system is totally intuitive and allows full control of the vessel and drivelines at all times, even under impact. Ullman JockeySeats provide the shock protection and ride comfort, essential to keep the crew fully operational, even under the worst conditions.

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