

MEDIA RELEASE

NEWS FROM THE UNIVERSITY OF TASMANIA

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Researchers take on the high seas for fast ferry industry

Researchers at the University of Tasmania are taking on Mother Nature by establishing a platform for structural design for large high-speed catamarans to withstand extreme sea conditions.

In a collaboration between the UTAS School of Engineering, the Australian Maritime College (AMC) and INCAT Tasmania, the research has recently been tested on the latest INCAT ferry and has demonstrated the sea-worthiness of the vessel design.

Sea trials and model test results are used by INCAT in the design of regular ferry and military vessels.

School of Engineering chief investigator, Professor Michael Davis, said INCAT catamarans have a unique wave-piercing design and due to the complex nature of the transient flow around the bow, it was previously unknown how large wave slam forces could be.

Prof Davis said trials have shown that these catamarans could experience extreme slam forces of 2200 tonnes without damage.

“We are measuring slam forces about equal to the weight of the boat: those are very large forces,” Prof Davis said.

“It is essential that the structure can withstand such forces when exposed to severe sea conditions.”

Recent sea trials have been successfully conducted on the 112m, 3000 tonne INCAT built vessels now operating between the main islands of Japan and also on the latest vessel, Norman Arrow, about to enter service between the UK and France.

The United States Navy, which has INCAT military vessels, has collected data in very severe sea conditions as part of the investigation.

AMC Marine Engineering researcher, Dr Giles Thomas, said sea trials are performed by using a wave radar to monitor sea conditions while motion sensors and strain gauges indicate ship motions and forces which are used to evaluate of vessel performance.

Dr Thomas said model tests are an essential part of the research and provide greater control of wave conditions than is possible with sea trials and allow extremes to be carefully explored.

“There has been good correlation between model and full scale forces,” Dr Thomas said.

“We have tested in seas up to 5m wave height without submerging the bow, demonstrating the inherent sea-worthiness of the INCAT design.”

The UTAS collaboration with INCAT began in 1990 and has also included studies of propulsion and motion control.

Information Released by:

Media Office, University of Tasmania

Phone: 6226 2124/2691 Mobile: 0417 517 291

Email: Media.Office@utas.edu.au