

An Experimental Study on Wind Loads Acting on a Trimaran PCC^(PDF)

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Title: An Experimental Study on Wind Loads Acting on a Trimaran PCC

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摘要: In recent years, demands for car transportation by a ship have been increasing with favorable economic conditions in auto sector, and the need of a pure car carrier (PCC) has grown quickly. A PCC needs huge parking space but smaller displacement since a car is comparatively light for its volume. As a result, almost all PCCs have wide breadth, shallow draft and huge structure above the water surface. These features cause some technical issues of a PCC, like lack of stability, effect of strong winds on its resistance, difficulty of course keeping in rough seas, difficulty of berthing in strong winds, and so on. To overcome these technical issues, one of the authors has proposed a new concept for a PCC. This is a trimaran PCC which has very limited transverse bulkheads in the center hull by using two side hulls as fenders. In the present research, wind forces acting on a scale model of the trimaran PCC were measured in the towing tank with a wind generator at Osaka Prefecture University. Furthermore, in order to clarify the characteristics of wind pressure on the trimaran, height and width of tunnels which are between a main hull and side hulls were changed. And then, in order to imitate a real ship, we used wind reduction technology of corner-cut design for accommodation house of the ship. Moreover, the wind pressure acting on the trimaran was compared with that on a mono-hull PCC. Using these experimental and theoretical results, an estimation method of wind pressure acting on the trimaran PCC is deduced.

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备注/Memo: -

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