

船舶結構之應力集中現象探討

Study on the Stress Concentration of Ship Structures

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摘 要

船舶整體強度係由縱向與橫向結構所提供，然而內部結構的縱橫交錯或幾何轉折處，易產生應力集中的現象，當船體承受反覆作用之波浪負荷時，這些部位亦是疲勞破壞容易發生的位置。本文針對船舶結構容易應力集中之典型部位，進行極細網格有限元素分析與討論，藉此了解該些部位之應力集中狀況，文末並針對數種應力集中消除方法做一說明與介紹。

關鍵字：應力集中、極細網格、應力消除

ABSTRACT

The global strength of a ship is provided by the longitudinal and transverse structures, and intersections and geometric transitions of these structures easily result in the phenomenon of stress concentration. Fatigue failures often occur in the positions due to the repetitious wave loading on a ship hull. This research performed finite element analyses with very fine meshes on the typical positions of stress concentration to realize the conditions of stress distribution and concentration. Some methods of stress elimination are also introduced in this article.

Keywords: Stress concentration, Very fine mesh, Stress elimination