結構空蝕對船舶結構之影響

譚嘉雄、梁卓中, 徐慶瑜

E-mail: 365784@mail.dyu.edu.tw

摘 要

水中爆炸過程中會產生主震波與氣泡脈衝，其中主震波接觸到結構表面會產生垂向速度(Kick-off velocity)，此為造成結構空蝕區之主要因素。結構空蝕區的效應對自由液面附近的船艦結構有極重要的影響，故進行水下爆炸後船艦整體效應分析時，必須將空蝕(Cavitation)之影響納入考量。 本論文以垂向速度(Kick-off velocity)為研究對象；利用ABAQUS有限元素軟體中CEL(Couple Eulerain-Lagrangian)為工具及Taylor平板理論，探討船艦在受水下爆炸衝擊後產生之垂向速度(Kick-off velocity)及結構空蝕；其次探討某巡防艦船舶結構在水下爆炸過程中某巡防艦船舶結構受力情形，由分析結果得知當距離炸藥點越遠時，船舶結構所承受的von-Mises應力越小，本論文研究之成果可提供船艦結構設計者進行船體結構設計時使用。

關鍵詞 : 水下爆炸、空蝕、結構空蝕

目錄

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