

Abstract

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Increasing Fatigue Life in Ship Structures using Y-Stiffeners with Right Angle of Hat

Few researches have been performed in the past on the solution of fatigue life assessment using stiffened panels. The objective of the present work is to increase the fatigue life. The available analytical models for predicting the fatigue life of midship sections having Y-stiffeners with two variations of the inclination angle of the hat part are compared. The dimensions of the Y-stiffener are deduced from the actual T-stiffener such that the Y-stiffener will have a higher section modulus and lighter same weight. The weight of structure per meter of length amidships is computed. In the early design stage, this weight is taken as uniform for a portion of the midship length. Using AutoCAD software, validation tests are carried out for some cases. Common Structural Rules are used to calculate the fatigue damage for 7 modified midship section cases taking into consideration the effect of corrosion thickness reduction. A comparison is held between all cases from the point of view of fatigue life prediction. Another comparison is carried out between Y-stiffened panels having inclined web of the hat and those having right angle web.