

Abstract

Samy A. Mansour

Safe Struck Ship(3S):Software Package for Structural analysis of collision between ships

Each year, thousands of tons of crude oil and petroleum products are spilled in the seas as a result of collision between ships. So, as a part of the overall effort to promote maritime safety and environmental protection an integrated software package of collision analysis is developed and used to calculate mid-ship plastic neutral axis position, moment of inertia about the plastic neutral axis in addition to maximum and minimum ship sectional modulus for actual and smeared mid-ship section for the intact ship. The minimum required moment of inertia and section modulus as required by the common structural rules in damaged condition are also calculated. Moreover, the program calculates the working bending moment in both cases hogging and sagging conditions either for actual mid-ship section smeared mid-ship section. The critical penetration, damaged mid-ship plastic neutral axis position, damaged moment of inertia about the plastic neutral axis and critical maximum and minimum ship sectional moduli are calculated. Finally the program calculates a new proposed strength safety factor based on the residual strength of the ship after collision and which ensures adequate structural redundancy to survive in the event that the ship's hull is accidentally damaged. All the results will be appeared in a printable reports.