NI06

NUMERICAL MODEL TO ANALYZE A SNCR SYSTEM TO REDUCE NOX

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Taking into account the importance of NOx (nitrogen oxides) emissions from marine engines and the current increasingly restrictive legislation, this work aims to develop a numerical model to study NOx reduction. To this end, a Selective Non-Catalatitic Reduction (SNCR) system was designed. A numerical model was developed to analyze several performance parameters. The pressure, velocity, temperature and NOx concentration fields were characterized. This numerical model was compared with experimental measurements, obtaining satisfactory results which validate the work.

NI07

COMPARISON OF THE PERFORMANCE OF A SEA-BASED RADAR –STATE OF THE ART-

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Welding distortion is an unavoidable problem in welded steel structures, such as ships and offshore platforms. Distortion increases its construction cost because it should be straightened. For ships and offshore structures, straightening is usually performed by line or spot heating which introduces additional inherent strain into steel plates. In order to optimize the straightening process, it is necessary to predict the deformation due to local heating. Numerical simulation is an advantageous way to do this. In this study, Osaka University's inherent strain based welding simulation code JWRIAN is modified so that inherent strain's equivalent nodal forces are calculated in cases where the inherent strain confined within a narrow region whose size is smaller than element size. In the developed code, the initial strain force vector and element stiffness matrix's non-linear term which includes stress components are integrated using higher order (e.g. 30 x 30 x 4 for 4-nodes shell elements) Gauss-Legendre quadrature while other quantities are evaluated by using ordinary order (2 x 2 x 2) quadrature. The validity of the developed software is examined by comparing rectangular plate's transverse bending due to gas line heating calculated by three-dimensional thermal-elastic-plastic analysis and that calculated by the developed system.