

Lumped Parameter Models for Numerical Simulation of The Dynamic Response of Hoisting Appliances

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Abstract : This paper describes three lumped parameters models for the study of the dynamic behaviour of a boom crane. The models proposed here allow evaluating the fluctuations of the load arising from the rope and structure elasticity and from the type of the motion command imposed by the winch. A calculation software was developed in order to determine the actual acceleration of the lifted mass and the dynamic overload during the lifting phase. Some application examples are presented, with the aim of showing the correlation between the magnitude of the stress and the type of the employed motion command.

Keywords : crane, dynamic model, overloading condition, vibration

Conference Title : ICSEMA 2015 : International Conference on Systems Engineering Modeling and Analysis

Conference Location : Venice, Italy

Conference Dates : November 09-10, 2015