

## عنوان مقاله:

Semi-active Control of an Offshore Platform Using Updated Numerical Model and Experimental Laser Doppler Vibrometer Data

## محل انتشار:

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## خلاصه مقاله:

In this study, a semi-active control system is assessed over a numerically updated model to achieve the most promising numerical results and to keep the performance of the numerical model as close to the prototype behavior as possible. Numerical model updating is performed based on the experimentally captured non-contact sensing data considering uncertainties. The elastic modulus of the jacket elements is specified as the calibration parameter. A mathematical function -optimized using Particle Swarm Optimization (PSO) algorithm- is also employed to reduce the structural uncertainties of the numerical model. Eight MR dampers both in X and Y directions are located in a platform numerical model. Modified Newmark-Beta method besides optimized parameters of instantaneous optimal control algorithm are utilized to predict the response of the system. The performance of the updated model is evaluated under environmental loads. The results indicate the importance of model uncertainty reduction in improving the accuracy of simulation results in a complex system. Based on the results using a non-contact sensing technology such as Laser Doppler Vibrometer (LDV) system is strongly recommended in practical cases due to great sensitivity capabilities and also no direct contact requirements.

## کلمات کلیدی:

Numerical Model Updating, Laser Doppler Vibrometer (LDV), Offshore Structure, Semi-Active Control, MR damper

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