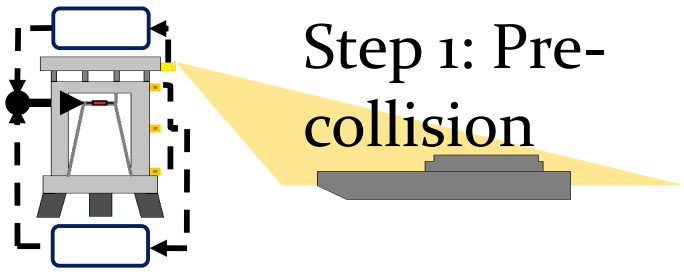
Impact Load Identifier and Control System for Bridges

When building a bridge, plans for reducing damage and lowering the likelihood of bridge collapse after vessel collisions are important to put in place. To help mitigate any potential damage, the Impact Load Identifier and Control System has been developed. The invention uniquely uses two steps: Pre-collision preparation for impact, and the reaction to impact through a real-time, post-collision feedback loop. Currently, bridges are only designed for impact based on specifically sized vessels; whereas the Impact Load Identifier and Control System for Bridges is the first solution that accounts for varying magnitude impacts from unexpected vessels.



Step 2: Post-collision

The pre-collision step above involves observing vessel characteristics such as the mass and velocity of a vessel in order to predict the impact load. The structure is then stiffened based on the predicted impact load. After the collision occurs, the post-collision step involves a feedback structural control loop in which a battery operated MR Dampers- devices used in the automobile industry for vibration reduction- stiffen the bridges sub- and superstructure. Thus, the Impact Load Identifier and Control System for bridges provides a low-cost solution to the problem of predicting and reacting to bridge collisions by various vessels or vehicles.

Features

-First method to account for oversize vessel bridge collisions
-Unique technology using MR Damper devices to strengthen bridge structure immediately in pre-collision stage

Benefits

-Small instillation and maintenance costs
-Promotes bridge structural life predicting collisions

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