



FPGA BASED VIBRATION CONTROL OF A MASS VARYING TWO-DEGREE OF FREEDOM SYSTEM

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Abstract- Controlling of vibration in any system is very challenging problem. In the present work design, fabrication and testing of a variable mass 2-DoF system was presented. The system has been designed to be used as tool to demonstrate the capability of mass variable tuned vibration damper for wide frequency application. All valves and pumps were controlled by a cRIO with onboard FPGA. cRIO with FPGA enable the designer to implement different control algorithms that can be used for real time wide spectrum vibration control. LabVIEW with real time suite was used for algorithm implementation and device control. To avoid sloshing in tanks at different water height a floating roof was used. Its effect on damping was also studied.

Index terms: FPGA (Field Programmable Gate Array); Reconfigurable Input Output device (cRIO); Vibration control, Real time control; TMD (Tuned Mass Damper); LabVIEW.