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Analysis of Torsional Vibration Reduction Performance for Roller Type of CPVA

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Abstract

In the recent automobile industry, Number of engine cylinders have been reduced as one of the method for the fuel saving technologies. However, as the number of cylinders decrease, engine torque fluctuations increase and NV performance deteriorates. Therefore, development of torsional vibration reduction technology has been regarded as important. In this research, we focused on a roller type of CPVA with a simpler structure, and developed a theoretical analysis model to analyze torque performance. Next, in order to verify the effectiveness of theoretical analysis results, a multibody dynamics model corresponding to the theoretical analysis model was developed and the results were compared. Furthermore, the theoretical analysis results numerically clarified the influence of the vibration damping performance of the roller type of CPVA.

Keywords*:* CPVA, Torsional vibration, Theoretical analysis, Multibody dynamics.