

VIBRATION SUPPRESSION OF WASHING/SPIN-DRYER MACHINE USING DISCONTINUOUS SPRING CHARACTERISTICS

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ABSTRACT

It is well known that, the clothes tend to clump creating an unbalance in a rotating washing/spin-dryer machine, and than serious vibrations and noise of the machine are inevitable. Therefore, various methods for vibration suppression were proposed, but there is no effective means to overcome this problem until now. If a large vibration and noise occur at the major critical speed of a washing/spin-dryer machine, the machine is stopped automatically for safety and then the machine pumps water and starts to rotate and repeat the drying process again. In this paper, the vibration characteristics of the washing/spin-dryer machine are analyzed. It is shown that the simple method using discontinuous spring characteristics, which was proposed to suppress vibration of Jeffcott rotor before, is effective to suppress vibrations of a practical washing/spin-dryer machine. The validity of the method is verified theoretically and numerically.

Keywords

Vibration Suppression, Discontinuous Springs Characteristics, Washing/Spin-Dryer Machine, Nonlinear Vibration, Nonstationary Vibration