15th INTERNATIONAL CONFERENCE
Dynamical Systems — Theory and Applications
December 2-5, 2019. Lodz, POLAND.

DSTA 2019

paper id: EXP128

Fault detection of PTO with accurate MBS method

Hamed Farahmand, Reza Abdollahi

Abstract: In this paper a model – based fault detection method for detecting faults in power take-off (PTO) system of dump trucks is investigated. The main goal of this study is dedicated to describe the early mechanical faults detection of the system. PTO is modeled in a multi body simulation (MBS) environment. This interpreted simulation is well established based on the model of elastic bodies in Simpack 2018.1. Moreover, the simulation of gears is crucial to characterize the behavior of PTO in the whole system, especially in regards to acoustics, fatigue and wear.in this regard, gears work properly in the allowable clearance ranges if this ranges are not provided the gears faults are anticipated. In order to elucidate the fault detection of PTO, the influence of backlash geometrical and operational parameters for a rattling and a loaded gear pair are evaluated. The torque measurements are performed at input and output shafts, which carry gears, and results of two additional sensors in PTO are monitored. The results reveal the possibility of early fault detection by this method for PTO.

[1)] Hamed Farahmand, Ph.D.: Department of Mechanical Engineering, Kerman Branch, Islamic Azad university, Kerman,Iran., Iran,Kerman,Valiasr Blvd. Postal code:7635131167, Iran (IR), hamed_1256@yahoo.com.

[2)] Reza Abdollahi, B.A. (M.Sc. student): Department of Mechanical Engineering, Kerman Branch, Islamic Azad university, Kerman,Iran., Iran,Kerman,Valiasr Blvd. Postal code:7635131167, Iran (IR), rezaabd6593@gmail.com.