World Academy of Science, Engineering and Technology
International Journal of Mechanical and Industrial Engineering
Vol:10, No:12, 2016

Thermal and Acoustic Design of Mobile Hydraulic Vehicle Engine Room

Authors : Homin Kim, Hyungjo Byun, Jinyoung Do, Yongil Lee, Hyunho Shin, Seungbae Lee

Abstract : Engine room of mobile hydraulic vehicle is densely packed with an engine and many hydraulic components mostly generating heat and sound. Though hydraulic oil cooler, ATF cooler, and axle oil cooler etc. are added to vehicle cooling system of mobile vehicle, the overheating may cause downgraded performance and frequent failures. In order to improve thermal and acoustic environment of engine room, the computational approaches by Computational Fluid Dynamics (CFD) and Boundary Element Method (BEM) are used together with necessary modal analysis of belt-driven system. The engine room design layout and process, which satisfies the design objectives of sound power level and temperature levels of radiator water, charged air cooler, transmission and hydraulic oil coolers, is discussed.

Keywords : acoustics, CFD, engine room design, mobile hydraulics
Conference Title : ICHP 2016 : International Conference on Hydraulics and Pneumatics
Conference Location : Miami, United States
Conference Dates : December 05-06, 2016