Design and Fabrication of a Shaft Drive Bicycle

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Abstract

Recently, due to advancements in internal gear technology, a small number of modern shaft-driven bicycle have been introduced. In the case of bicycle, chain drive was the oldest and most widely utilized type of power transfer. Besides, it had some common disadvantages like the chain falling off while cycling, the chain also broke. This was very irritating at the time of cycling. The purpose of this study was designing a chainless transmission for a bicycle. The project was aim to allow users to rotate the rear wheel of a two-wheeler using a propeller shaft. We developed a design to keep our contribution to the chainless drive technology. The project implemented a shaft drive instead of a chain drive. This design features were two sets of bevel gears and one shaft drive. One gear was added with the rear wheel hub and another one was added at the end of the drive shaft of the rear set of bevel gears. Large gear of another set of bevel gear set with the paddle and it meshes with another bevel gear mounted on the drive shaft. The arrangement of this bevel gear and shaft drive aids in the transmission of human energy from the paddle to the rear wheel. Results revealed that the chainless drive bicycle had more speedy and comfortable. In comparison to a chain-driven bicycle, it has a more appealing appearance. In addition, we tried to fix the above mentioned problem by increasing the speed of cycling and cycling with less power. It takes the place of the old approach.

Keywords
Shaft-drive bicycle, Drive, Bevel gear and Transmission system.

Biographies

Dr. Md Rakibuzzaman is an Assistant Professor at International University of Business Agriculture and Technology-IUBAT, Dhaka, Bangladesh. He awarded Ph.D. in Thermofluids and Energy from Soongsil University, Korea in 2018 under the supervision of Prof. Dr. –Ing. Sang-Ho Suh. He published 14 scientific articles in ISI and SCOPUS-indexed journals and international conferences. His research interests include Cavitation, Turbomachinery, Computational Fluid Dynamics, Multi-phase flow, Biomedical Engineering, etc. Dr. Rakibuzzaman is a member of the Institution of Engineers Bangladesh (IEB) and Korean Society for Fluid Machinery (KSFM) and was a local member of International Conference on Computational Heat, Mass and Momentum Transfer (ICCHM^{2}T).

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