Study and optimize the drag impact on moving vehicles

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Abstract

This project is to study and optimize the drag impact on moving vehicles. There are two main objectives for this project. The first is to reverse the impact of drag force during motion, and the second is to generate electricity from the drag force. So many studies and designs have been done to reduce the drag impact on moving vehicles. However, the goal of this project is to utilize the drag impact to reduce fuel consumption and environment pollution. This project explores alternative setups to maximize the harvested energy resulting from the drag impact. The project calls for attaching few components on the vehicle to capture the drag impact. Those components include fan, belt and pulleys…etc. This system works to rearrange the wind force and make it with the direction of motion not against it.

How the system works?

When the vehicle is moving forward, the wind force pushes it backward. Fan is mounted on the vehicle to receive the drag force and rotate. In one of the setups, the fan is connected through a pulley and belt to an electric generator. In another setup, the fan is connected to the wheel. As motion from the rotating fan is transferred to the generator power is generated. However, when transferred to the wheel it generates kinetic energy that will reduce the fuel needed to get the same speed.