Green Transportation: Decreasing Power Consumption and Harnessing Wind Energy in Vehicles

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Turbulent streamlines behind moving vehicles increase Drag forces acting on them, thus increasing energy consumption, which causes significant losses to the ministries of transport and vehicle owners—moreover, the vast amount of wasted wind energy around moving vehicles. So, the solution is to reduce drag forces by regulating the turbulent streamlines behind the vehicle by making two input ports on the sides of the last part of the vehicle connected to the two output ports at the end of the train. Additionally, harnessing streamlines wind energy by installing two modified and highly efficient wind turbines inspired by the shape of lotus leaves in the two input ports to generate energy in the form of electricity. Besides, the project provided a bridge rectifier circuit to convert AC to DC. The Avometer device measured electric power. The modified wind turbine has more 31.7% efficiency than the standard turbine. Our project benefits from wind to help the world ensure access to free, clean, safe, and renewable energy (SDG:13). Furthermore, generating renewable energy from wasted energy reduces GHG emissions. It takes urgent action to combat climate change and its impacts (SDG:7).

Awards Won:
King Abdulaziz &amp
his Companions Foundation for Giftedness and Creativity: Full Scholarship from King Fahd University of Petroleum and Minerals(KFUPM) (and a $400 cash prize)
University of Arizona: Renewal Tuition Scholarship