

## Solar Powered Front Wheel Drive (FWD) Electric Trike: An Innovation

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**Abstract :** This study focused on the development of a solar powered front wheel drive electric trike for personal use and short distance travel, utilizing solar power and a variable speed transmission to adapt in places where varying road grades and unavailability of plug-in charging stations are of great problems. The actual performance of the vehicle was measured in terms of duration of charging using solar power, distance travel and battery power duration, top speed developed at full power, and load capacity. This project followed the research and development process which involved planning, designing, construction, and testing. Solar charging tests revealed that the vehicle requires 6 to 8 hours sunlight exposure to fully charge the batteries. At full charge, the vehicle can travel 35 km utilizing battery power down to 42%. Vehicle showed top speed of 25 kph at 0 to 3% road grade carrying a maximum load of 122 kg. The maximum climbing grade was 23% with the vehicle carrying a maximum load of 122 kg. Technically the project was feasible and can be a potential model for possible conversion of traditional Philippine made "pedicabs" and gasoline engine powered tricycle into modern electric vehicles. Moreover, it has several technical features and advantages over a commercialized electric vehicle such as the use solar charging system and variable speed power transmission and front drive power train for adaptability in any road gradient.

**Keywords :** electric vehicle, solar vehicles, front drive, solar, solar power

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