

Question #79171, Engineering / Mechanical Engineering

A 1000. kg battery-powered adiabatic electric vehicle has a fully charged battery containing 30.0 MJ of stored energy. If it requires 20.0 kW of power to keep it moving at a constant velocity on a horizontal road, determine how long the vehicle will operate before its battery is fully discharged.

Solution

$$\Delta t = \frac{E}{P} = \frac{30.0 \times 10^6}{20.0 \times 10^3} = 1,500 \text{ s} = 25 \text{ min}$$

Answer: 25 min