Range Calculator for EV's

Variable Quantities:

- No of Passengers
- Battery Capacity *(KWh)*
- Charge Left *(%)*
- Speed of the Vehicle *(Km/hr)*

Constant Values:

- Air Density *(1.204 Kg/m^3)*
- Gravity *(9.8 m/s^2)*
- Rolling Resistance Coefficient *(0.02)*
- Coefficient of Drag *(0.29)*

Vehicle Specifications:

- Vehicle Weight *(Kg)*
- Motor Efficiency *(85%)*
- Length *(m)*
- Width *(m)*
- Height *(m)*
- Area = Length × Width *(m^2)*

Battery Specifications(for LiPo Battery):

- PevKerts

Range Calculation:

Total Battery Capacity = (Battery Capacity) × 1000 *(Wh)*

Total Weight = (Vehicle Weight) + (No of Passengers) × 65 *(Kg)*

Velocity = Speed × $\frac{1000}{3600}$ *(m/s)*

Power = ((Total Weight)×(Gravity)×(Velocity)×(Rolling Resistance Coefficient)) +

((Air Density)×(Coefficient of Drag)×(Area)×(Velocity^3)) *(Watt)*

WattHr per Km = $\frac{\text{Power}}{\text{Speed}}$ *(WattHr/Km)*

WattHr = $\frac{(\text{Total Battery Capacity})\times(\text{Charge Left})\times(\text{PevKerts})}{100}$ *(WattHr)*

$$\text{Range} = \frac{\text{WattHr}}{(\text{WattHr per Km})} \quad (Km)$$