EV Remote Internship
Project Report

Created by

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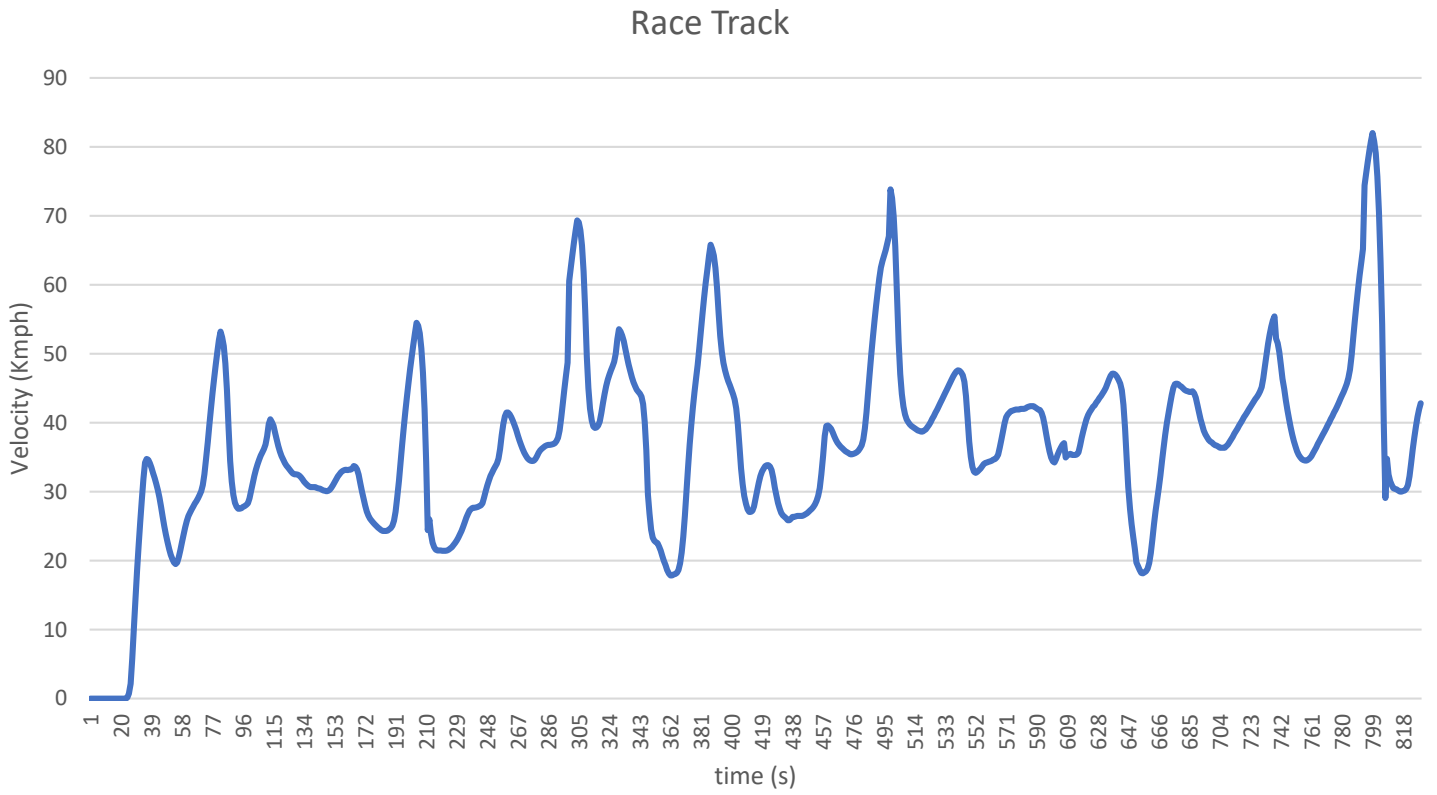
Project Name

Student Electric Racing Vehicle

Case Studies: Race Track Drive Cycle

Race Track Drive Cycle



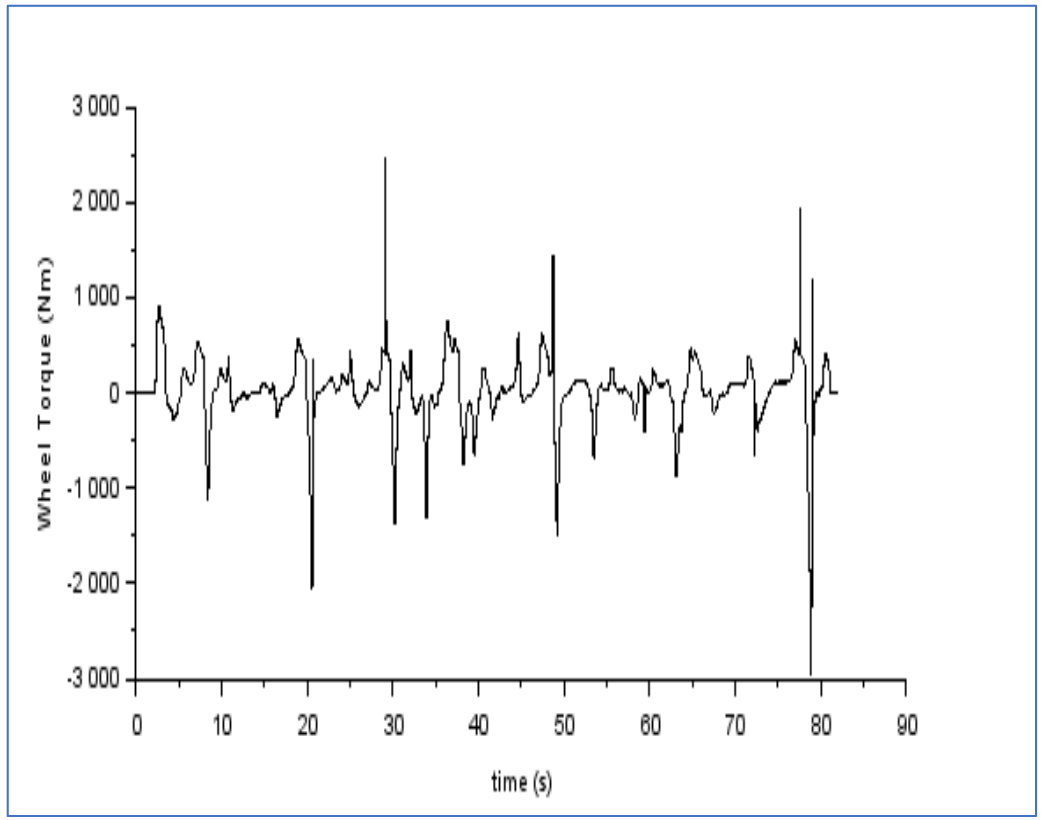
Model Inputs

Parameters	Values	Units
1.Rolling Resistance Force		
• Coefficient of rolling resistance	0.015	
• Gross Vehicle Mass	320	Kg
• Gravity constant	9.81	m/s
2.Gradient Force		
• Gross Vehicle Mass	320	Kg
• Grade Angle	0	degree
• Degrees to radians conversion factor	pi/180	
3.Aerodynamic Force		
• Velocity	From the Drive Cycle data	Kmph
• Kmph to mps conversion factor	1000/3600	mps
• Constant	0.5	
• Area	1.8585	m^2
• Air Density	1.225	Kg/m^3
• Drag Coefficient	0.15	

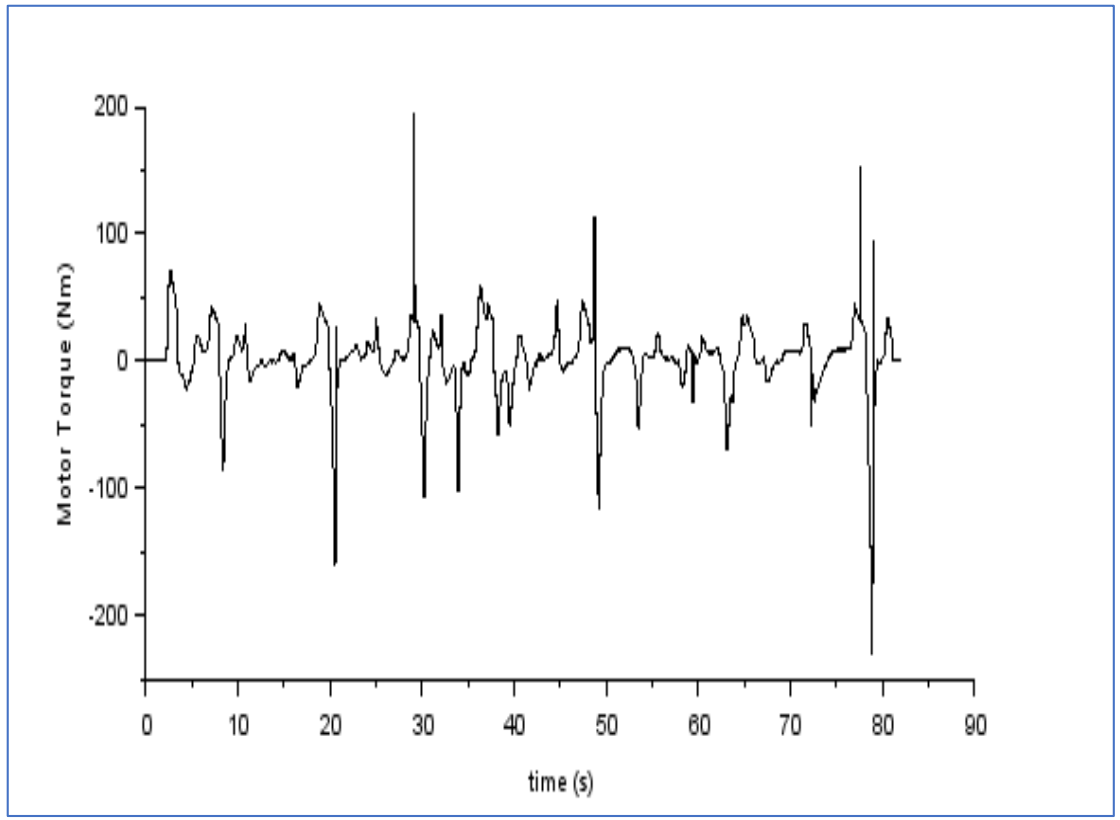
Parameters	Values	Units
1.Acceleration Force		
• Gross Vehicle Mass	320	Kg
• Kmph to mps conversion factor	1000/3600	mps
2.Wheel Speed		
Radius of wheel	0.2286	m
3.Transmission		
• Gear Ratio	15	
• Transmission Efficiency	85	%
4.Motor		
Motor Efficiency	90	%
5.Battery		
• Motor Controller Efficiency	85	%
• Battery Voltage	540	V
• Drive cycle distance	0.825	Km
• No of Laps	12	
• Battery Initial SOC	100	%
• Drive Cycle time or Simulation time	82	s

Wheel and Motor Torque

Wheel Torque

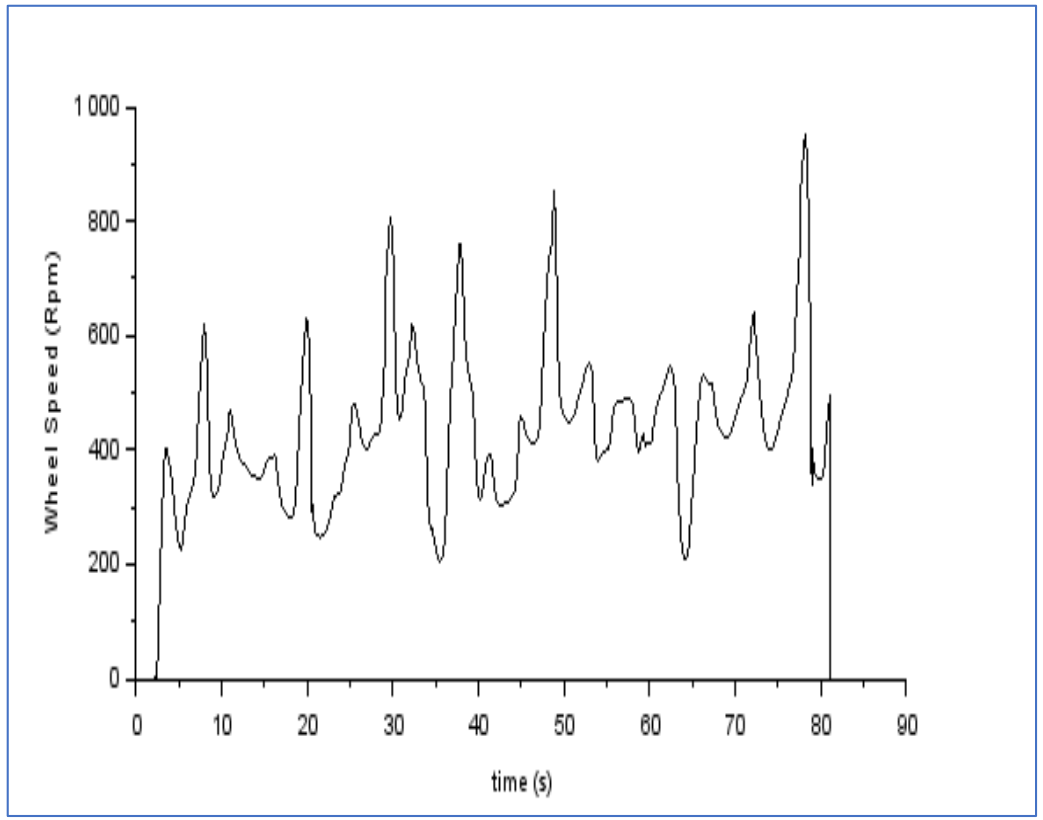


Motor Torque

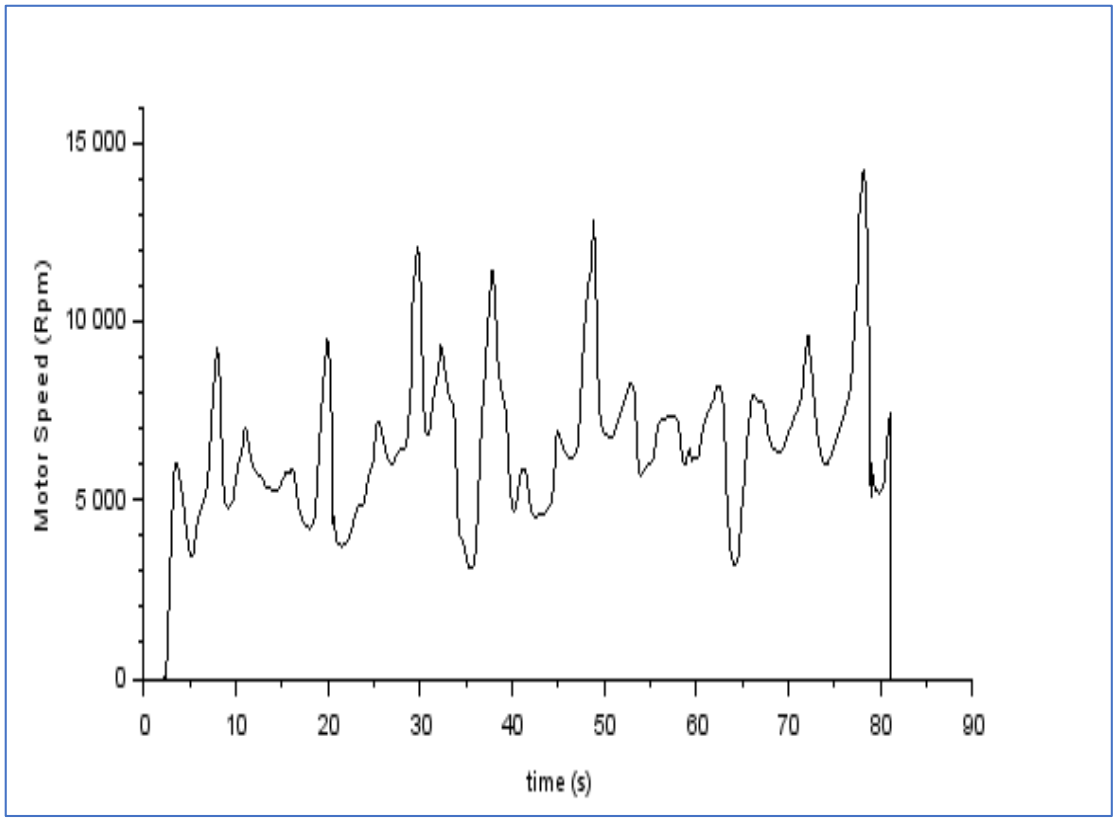


Wheel and Motor Speed

Wheel Speed

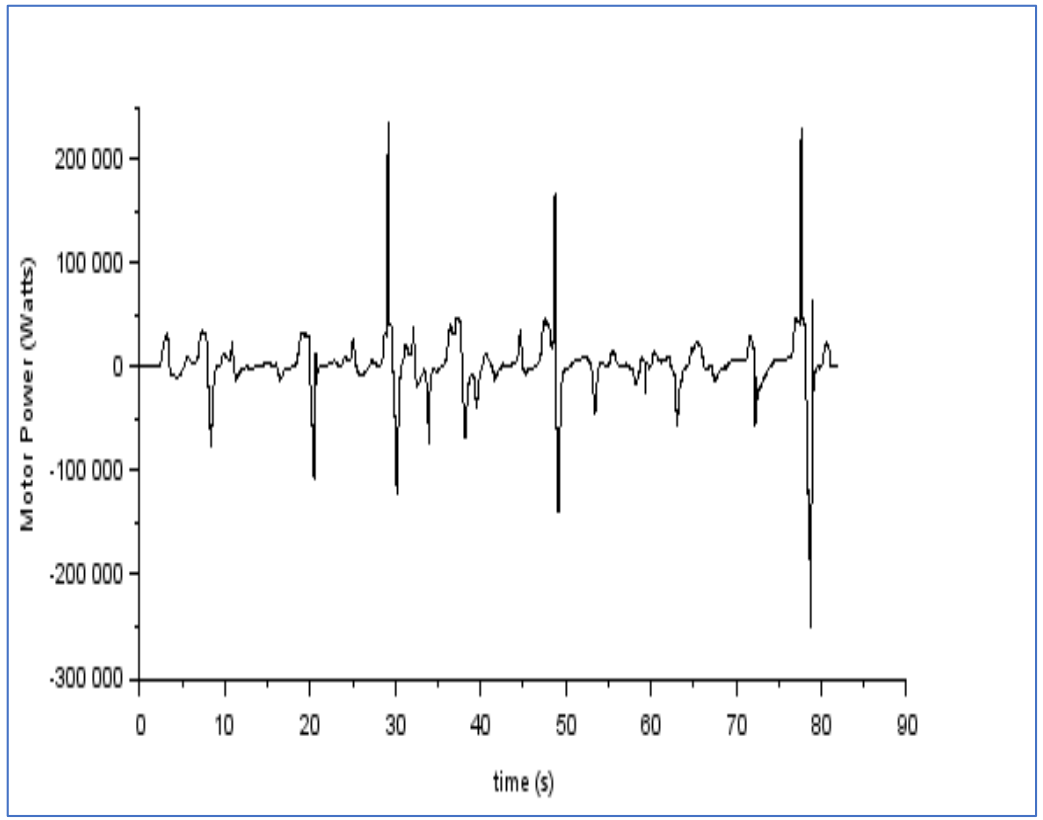


Motor Speed

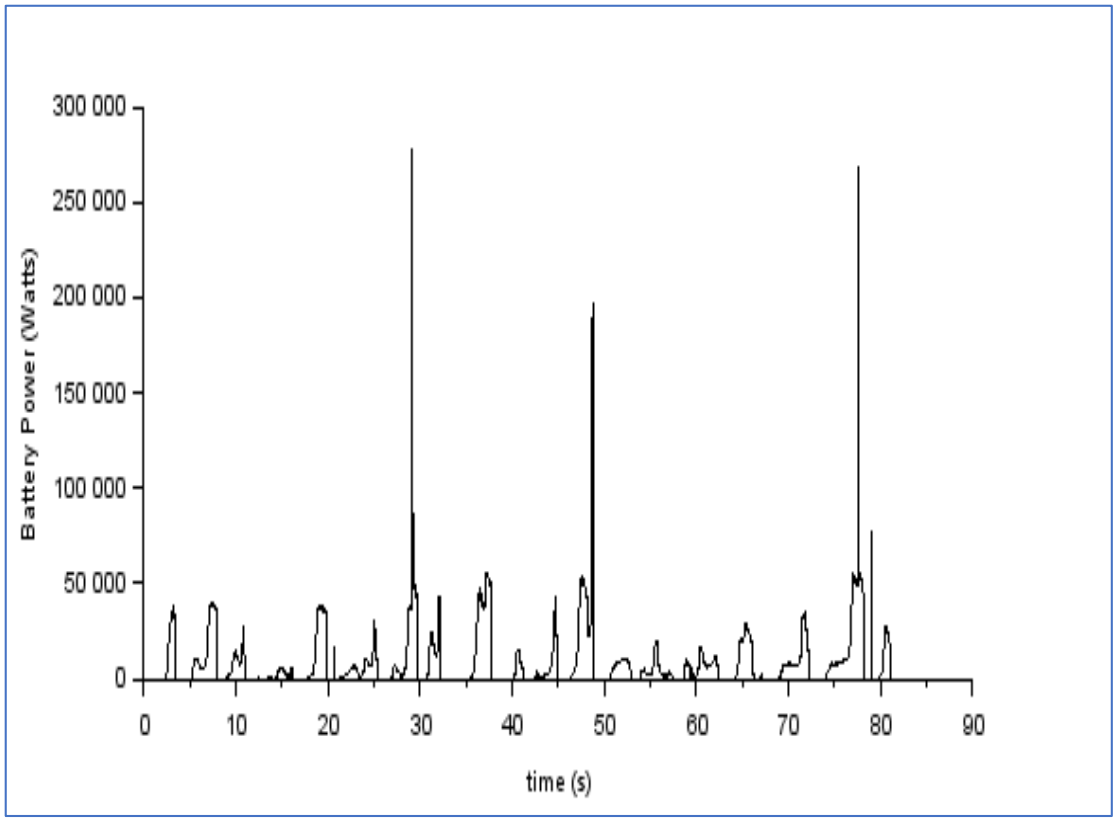


Motor and Battery Power

Motor Power

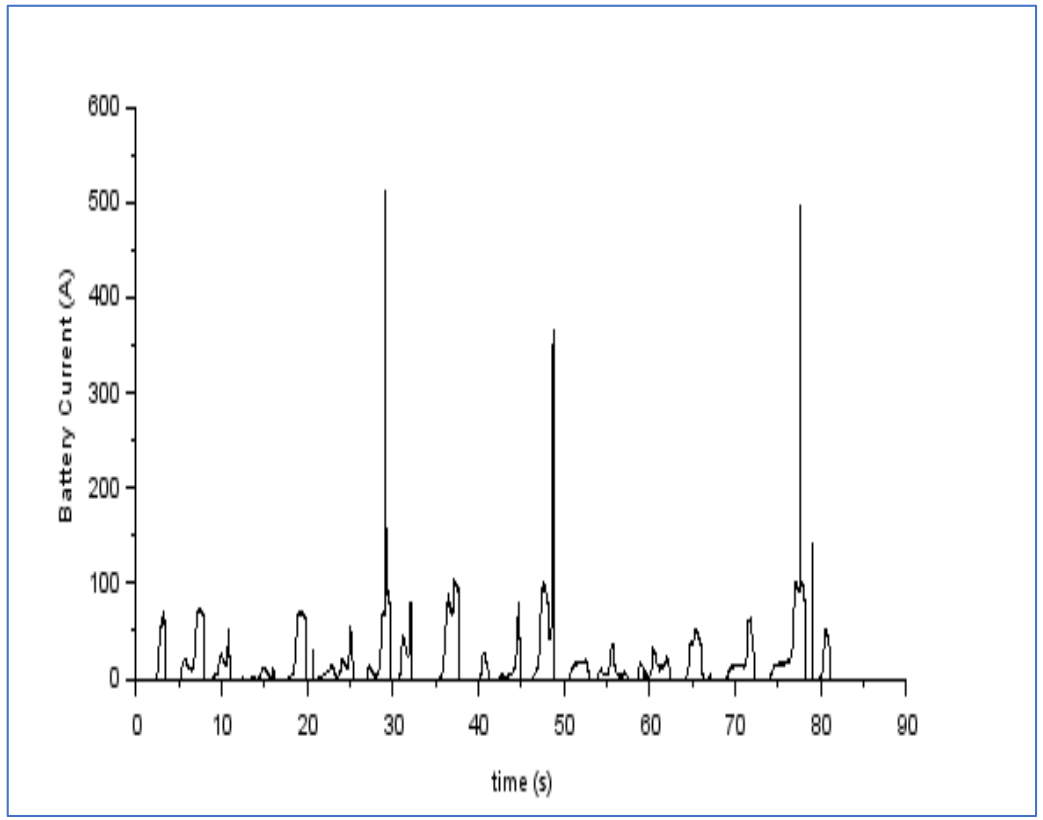


Battery Power

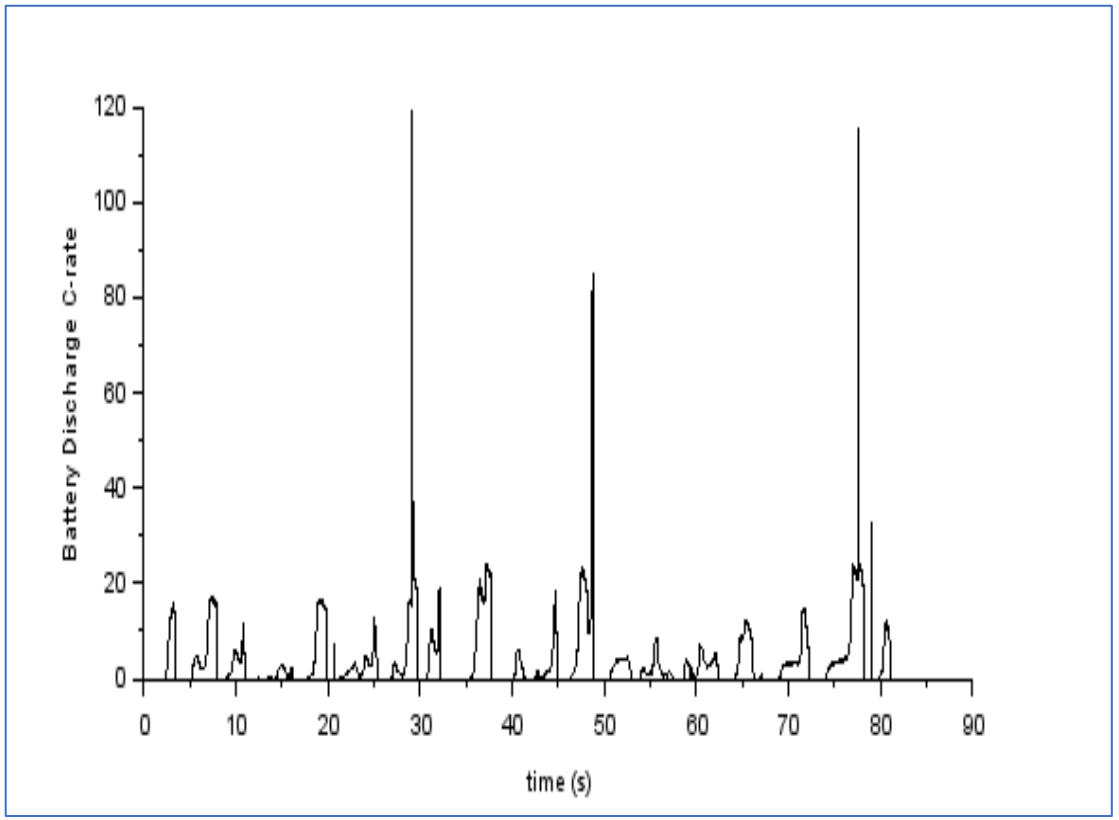


Battery Current and Battery Discharge C-rate

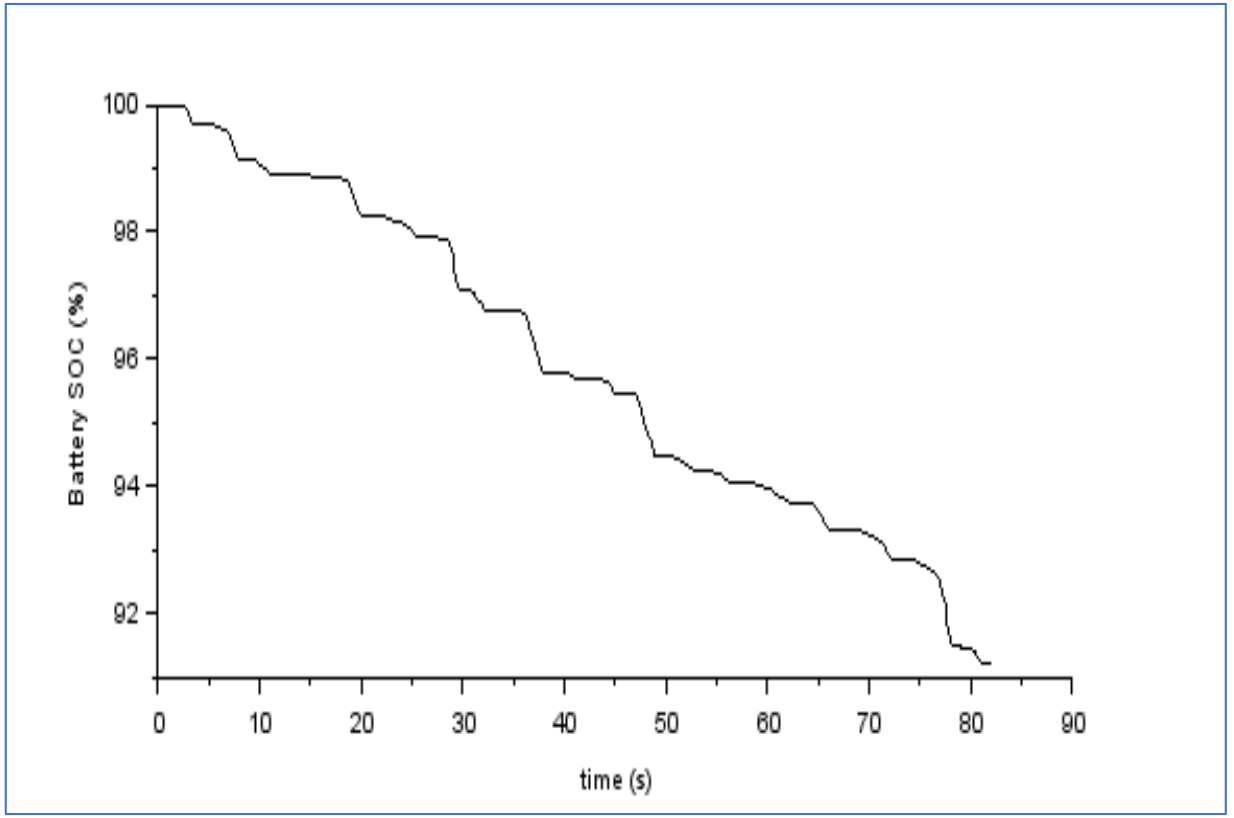
Battery Current



Battery Discharge C-rate



Battery State of Charge



Results

Sl No	Parameters	Value	Units
1	Power per Km	233.5	Wh/km
2	Range	9.9	Km
3	Battery Capacity	2311.7	Wh
4	No of cells	122 (S), 1 (P)	

Thank you

Email-id :
Mobile no.: