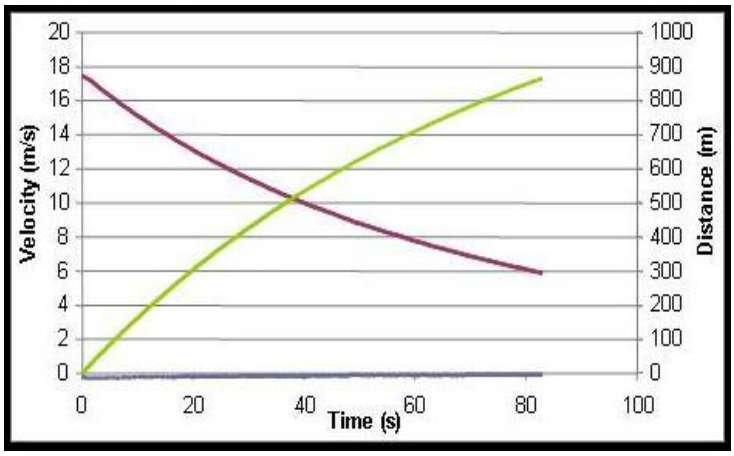
“HYPERMILEAGE” VEHICLE OPTIMIZATION



Model of Vehicle Power Consumption - Pulse & Glide

Vehicle Parameters		**Assumed Constants**			
M	100 kg	Cd	0.15	DT	1
Area	0.35 m²	Crr	0.001		
		g	9.81 m/ss		
		Air Dens	1.18 kg/mmm		
Operational Parameters					
V	40 km/h	11.1 m/s			
A	0 m/ss	Power	**53.4** W		
Vehicle Performance		**Engine Performance**			
Faero	3.8 N	Torque	7.3 Nm		
Froll	1.0 N	BSFC	250 g/kWh	**3.10**	Kw
Facell	0 N	RPM min	2100 rpm		
		RPM max	6000 rpm		
Min Speed	22 km/h	6.1 m/s			
Max speed	62.9 km/h	17.5 m/s			
Wheel Dia	0.7 m	Gear Ratio	**12.59**		20
		Whl Trq	91.9 Nm		18
		Force	257. N		
		Acell	**2.57** m/ss		
Graphic Estimates		**FC Predictions**			
Ton	2 s	TONtotal	46.1 sec		
Toff	80 s	FC	9.9 gm	0.01	
Dist	867 m	Mileage	**1451.7** km/l		
Total Dist	20000 m				

This seminar gives an overview of vehicle dynamics as related to power consumption based on our history of “hypermileage” competition successes. Engine performance data from a wide variety of internal combustion engines, as well as electric motors is presented, and matched to the vehicle model to determine the ultimate energy consumption in km/liter of fuel, or km/kWh of electrical energy.

Vehicle design parameters are adjusted to simulate improvements in mass, rolling resistance, size and aerodynamic drag, with resulting implications on fuel efficiency. Various driving techniques, including both cruise and “pulse and glide” are explained and analyzed in depth. Finally engine modifications are analyzed for efficiency improvements.

Covered Topics Include:

- Vehicle Dynamics
- Drag Coefficient and Frontal Area
- Rolling Resistance
- Parasitic Losses
- Engine Efficiency: BSFC Map
- Engine Tuning for Efficiency
- Engine Design for Maximized Efficiency
- Overall Vehicle Fuel consumption estimation

Focus Applied Technologies Sdn Bhd,
sales@focusappliedtechnologies.com
www.focusappliedtechnologies.com
No.34, Jalan Jawi Indah, Taman Jawi Indah
Sungai Jawi 14200, Penang Malaysia.
Tel: +604 582 2466