

8th GM, Nov. 5

The guest speaker Serran Louis Wong, our newly inducted Serran graduated in Engineering from the University of Toronto. He is now the Senior Director of Business Development at the Jing Mei Automotive Limited. The topic of his talk is "E Mobility".

[Download here for a summary of the talk]

A. Introduction electro Mobility"

"E Mobility" is "Electro Mobility", i.e. electric powered cars. In the 19<sup>th</sup> century, both electric and fuel driven cars were introduced. Because of the prevalence of oil wells found in the U.S.A., the fuel driven car gained ascendancy over the electric cars. However, recent scientific advances solve many problems of battery-driven cars. "

B. The Pros and Cons of Electric Cars

i. Advantages of Electric Cars

- Emission – clean and so environmentally friendly
- Less noise
- Cheaper running cost and high performance reaching topic speeds in 3 seconds.

ii. Disadvantages

- Short running range – around 300 kilometers per charging of batteries. A full tank of fuel can run for 800 kilometers.
- Long re-charging time
- The production of battery requires Lithium, Cadmium, Cobalt and Nickel which are very expensive and cause damage to environment with their extraction.

iii. Efficiency

The fuel driven car uses only 20% of the fuel in powering the car, with 80% fuel lost in heat and friction. The electric car uses 60% of electricity in running the car with only 40% less of energy. MPG (miles per gallon of fuel energy) – the fuel driven car had 30 MPG whereas the electric car has 120 MPG (i.e. 3 to 4 times more efficient).

C. Future Development

The production of electric cars is in a "high growth phase", especially in China and the U.S.A. At present, only 0.4% of all cars in the world are electric cars whereas 4% of all car production is electric cars. (total car production in the world is around 7,000,000 cars per year). China hopes to reach 60% of cars will be electric cars by the year 2035. Thus

Now in use	Annual production	Goal in 2035 AD.
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This may appear far-fetched now. Colour T.V. was a scarce luxury 50 years ago – now almost all T.V. sets are coloured T.V.

More and more major car companies are devoting their research and production resources to the production of electric cars, e.g. Benz, WW, Volvo, etc.

- D. Sustainability – these following factors must be considered and solved:-
- i. Battery disposal (or Recycle) – the raw materials used in making car batteries are expensive the production of these materials cause damage to the environment.
  - ii. Electricity source for recharging car batteries.
  - iii. Space for "recharging stations".

E. Environmental Factors

The "CO<sub>2</sub> Equivalent per Km running" is different in different areas of the world. This includes CO<sub>2</sub> production in making the batteries as well as CO<sub>2</sub> production in running the cars throughout the life cycle of the battery (green neutral red areas in world map).

There is still much research to be done in "closing the Re-cycle Loop" of car batteries

This interesting and informative talk was followed by sharing by Serrans Denis Chang, Joyce Chang, Michael Lau, Fiona Wong, Howard Sou, Fergus Chau and John Wong.