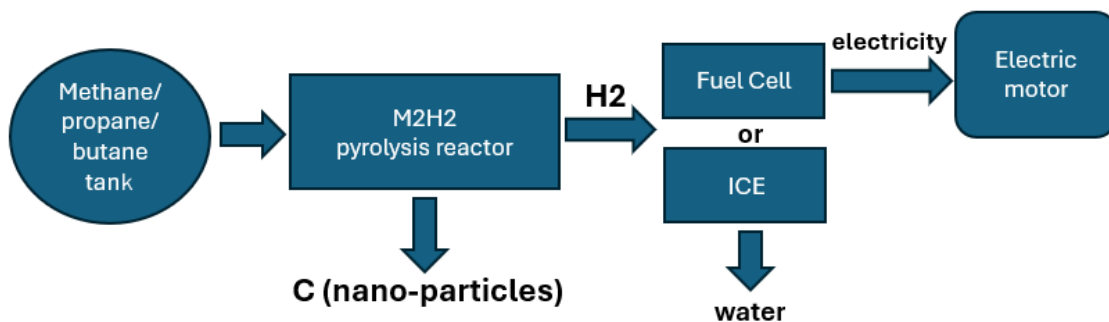


Metryon Vehicle Technology



Metryon is a new technology for producing hydrogen on board a vehicle from hydrocarbons. The generated hydrogen is supplied to a fuel cell that produces electricity to power the vehicle. Metryon is highly efficient and produces no harmful emissions.



Metryon reactor receives any kind of hydrocarbons (CH_4 , C_3H_8 , C_4H_{10} , etc.) and produces

- **hydrogen** used in fuel cell or in internal combustion engine **to power the vehicle** and
- nano particles of carbon (**graphene** structures) offering an additional **valuable product**

Metryon Advantages

- **Metryon** reactor is compact (up to 100kg for a family car) and allows hydrogen-powered electric vehicles to refuel at propane/butane and methane stations, **expanding the geographical use of hydrogen transport**
- Propane/butane **filling stations are much safer and cheaper** to build and maintain than hydrogen ones
- Hydrogen is produced on demand, greatly **increasing safety**
- Conversion of hydrocarbons into hydrogen and valuable carbon materials leaves **no "carbon footprint" (CO2 emissions)**
- The carbon released during the conversion of hydrocarbons creates nano materials (graphene) with high strength and conductivity offering a valuable product and a new source of income

Expected Performance of Metryon

Currently, the most cost-effective is to use propane/butane (LPG).

Standard LPG (propane/butane) equipment for a mid-sized internal combustion engine (ICE) family car allows for an average range of 500km on a 60L LPG, with an engine efficiency of 10-15%.

Estimated **Metryon** LPG to hydrogen conversion efficiency is 40%.

Efficiency of proton exchange fuel cells (such as Nafion) in the electrochemical conversion of hydrogen to water is over 70%. Assuming 35kW of electrical power and efficiency of electric motors of over 80%, **Metryon** can more than double the vehicle's range as compared to burning LPG in ICE. Additionally, there is the added benefit of obtaining advanced carbon materials as byproducts.

To provide for a 1000km vehicle range 60L of LPG will be required. LPG will be converted into 5kg of hydrogen and 20kg of nano carbon (approx. 5L volume).

