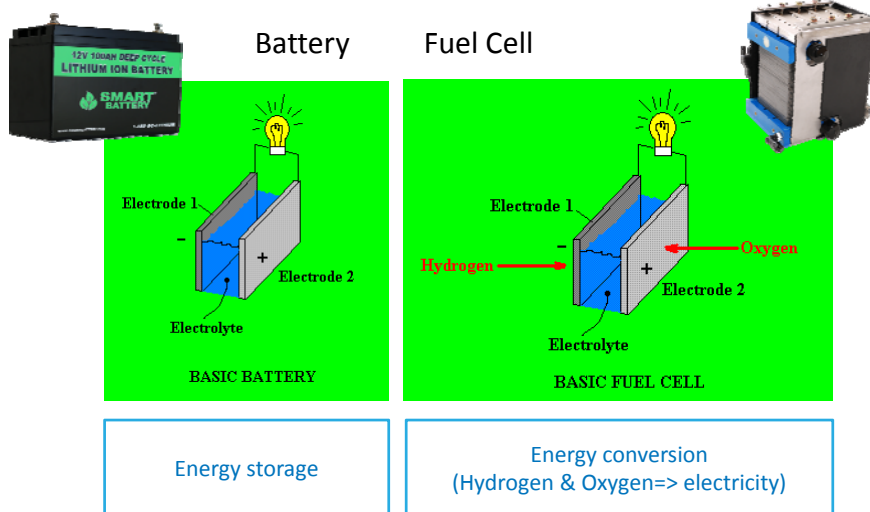


燃料電池教育宣導體驗會

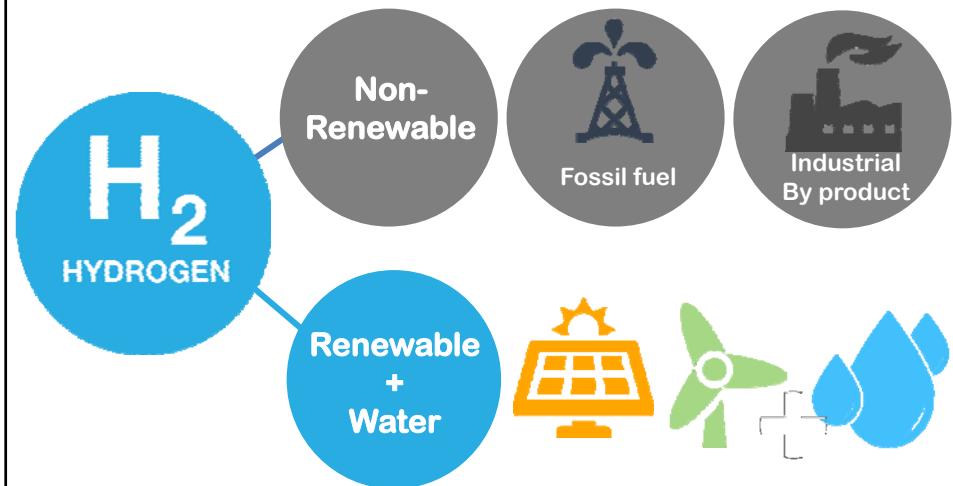
主辦：桃園市政府經濟發展局

協辦：亞太燃料電池科技

燃料電池是什麼？



氫從哪裡來？



2016/12/19

3

燃料電池 – 解決最基本的空氣汙染問題



Pollution caused by motorcycles are the most serious problems of all modes of transport

2016/12/19

4

機車運具改善與進化 – 氫能燃料電池可以帶來巨大貢獻

台北市衛生局2013/09公布2012年台北市男、女性死因均以惡性腫瘤為首，而位居癌症死因第一名的，不管是男、女性，均為**肺癌**。

根據衛福部今年6月公布的資料顯示，已蟬聯31年國人死亡原因之首的惡性腫瘤中，**肺癌占了大多數，去年共有8,587人死於肺癌，佔所有癌症之首。**

【中時健康 黃靖芳／台北報導】2013.12.02



世界衛生組織旗下的國際癌症研究署（IARC）2012/06/12宣布，將柴油廢氣從「很可能致癌」二A物質，提升為對人致癌性充分的第一類致癌物質。

中國時報2013年11月05日報導長期吸入汽機車廢氣當心致癌危機



燃料電池的應用

Hydrogen	LOW PRESSURE			HIGH PRESSURE			
							
10W	100W	500W	1kW	5kW	12kW	100kW	250kW
							
							

TOYOTA 燃料電池車 2014 年已正式量產

燃料電池自動車
水素で走るクルマ



TOYOTA 董事長不認為純電動車會有市場



豐田公司即將開賣的燃料電池車充飽一次燃料能行駛的距離約700km，且充飽燃料僅需約3分鐘、相當於現行汽油車充滿油所需的時間。

豐田燃料電池車初期的銷售地點將以東京、名古屋、大阪和福岡等已設有氫氣站的日本4大都市圈為主，之後並計劃於2015年夏天進軍美國、歐洲市場。

2016/12/19 8

氫能源是日本國家政策

- 首相安倍晉三親自試開豐田燃料電池車2014/6/30



安倍在Science and Technology in Society Forum 2014 再度強調日本將以氫燃料電池汽車降低空氣汙染



氫氣儲存

High Pressure

35/70 MPA




Over 100kW




Low Pressure

1MPa



2-10 kW



11

High Pressure

高壓加氫站

Stations installed at a cost of around \$3-5 million dollars per site.



Resource: HySut, NREL 12

Low Pressure

低壓儲氫罐

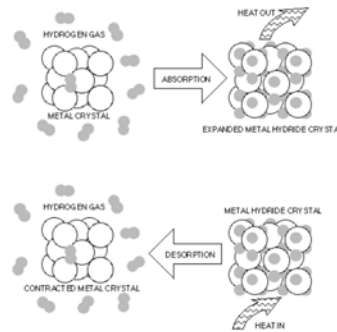
Hydrogen can be absorbed into the metal-hydride and then desorbed back out for thousands of cycles. Metal hydrides store hydrogen in a solid form.

High Volume Density

low storage pressure 1MPa (10 bar)

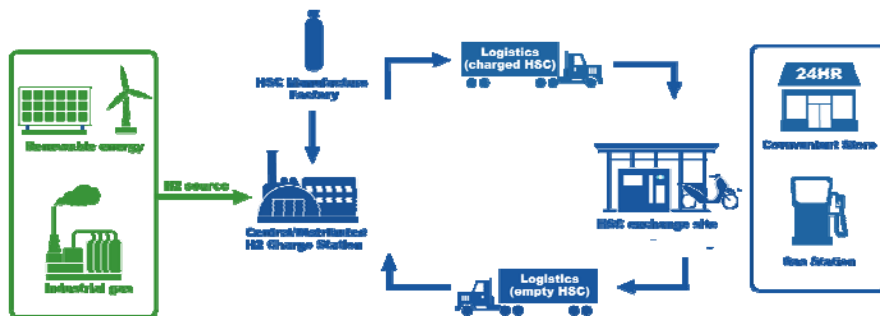


Canister loading with AB₅ metal hydride




Low Pressure

低壓氫罐基礎建設



Low Pressure

低壓氫罐基礎建設



Cost Effective → Convenient → Safe

Hydrogen Society

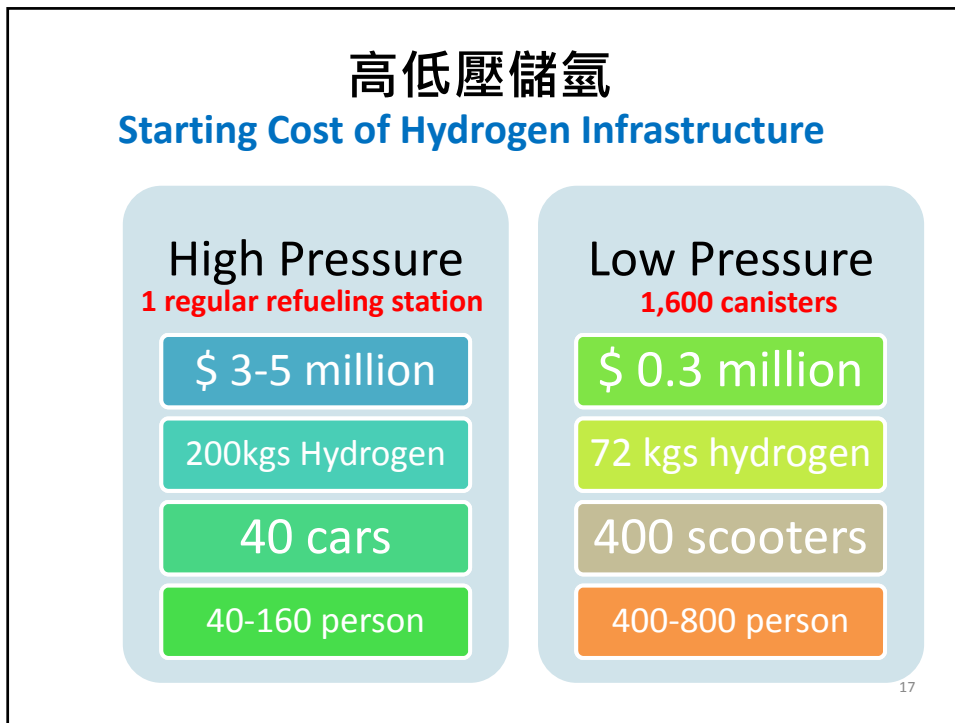
15

Detailed description: This slide illustrates the foundation for low-pressure hydrogen storage. It features a 3D rendering of a hydrogen exchange station. The station has a white and blue color scheme with a canopy. A person in a blue shirt and yellow pants is standing next to a motorcycle, which is positioned at a station labeled '氫罐交換站' (Hydrogen Tank Exchange Station). The station includes a control panel and a display. Below the rendering, three colored arrows point from left to right, labeled 'Cost Effective' (blue), 'Convenient' (green), and 'Safe' (orange). To the right of these arrows, the text 'Hydrogen Society' is displayed. The number '15' is located in the bottom right corner of the slide.

高低壓儲氫

High Pressure	Low Pressure
Large vehicle (Passenger car, bus)	Light vehicle (Scooter, minicar)
City-to-city travel	Urban Mobility
Strictly regulated	Easy to distribute

Detailed description: This slide compares high-pressure and low-pressure hydrogen storage. It is titled '高低壓儲氫' (High/Low Pressure Hydrogen Storage). The content is organized into two columns. The 'High Pressure' column lists: 'Large vehicle (Passenger car, bus)', 'City-to-city travel', and 'Strictly regulated'. The 'Low Pressure' column lists: 'Light vehicle (Scooter, minicar)', 'Urban Mobility', and 'Easy to distribute'. Each item is contained within a colored rounded rectangle within its respective column.



已通過相關法規



PUBLIC ROAD READY

Fuel Cell Scooter

- Passed Taiwan Vehicle Safety Certification
- Taiwan E-scooter Standard (TES) for FC scooter
- Subsidy for FC scooter in Taiwan now available



Low Pressure Hydrogen Storage

ISO 16111:2008

Transportable gas storage devices

- Fire test
- Cycling test
- Drop test
- Leak test
- Impact test

6

台灣已完成燃料電池機車前期技術驗證

- 2012 ~ 2013 – 能源局墾丁社會實證，行駛總里程超過360,000km
- 2012 – 標檢局標準實車確證計畫，總里程超過122,000km
- 2011 – 5,000 km 惡劣路面測試 by ARTC
- 2010 – 3,700 hrs 連續變動負載測試 by 工研院
- 2010 – 1,000 km 環島測試 by APFCT
- 2007 – 1,500 km 惡劣路面測試 by 車測中心
- 2006 ~ 2007 – 於北海道進行一年的燃料電池機車測試 by 日本製鋼
- 2003 ~ 2004 – 燃料電池連續3,700 小時測試 by 美國杜邦

2012/11/09

2012~2013 (墾丁, Taiwan)

20



APFCT被Discovery Channel選為台灣最有潛力的科技公司



儲氣罐符合國際ISO16111標準 經過步槍實際射擊確認安全(Discovery)



於101年已合法掛牌上路!



感謝聆聽!
敬請指教!

2016/12/19

25

Q & A

2016/12/19

26