

Public Engagement Forum cum Prize Presentation Ceremony EMSD, HKSAR Government

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Net-Zero Carbon Strategies for Buildings

Ir Prof. Michael K.H. Leung 梁國熙教授

Associate Provost (Academic Affairs)

Shun Hing Education and Charity Professor of Energy and Environment

Professor, School of Energy and Environment

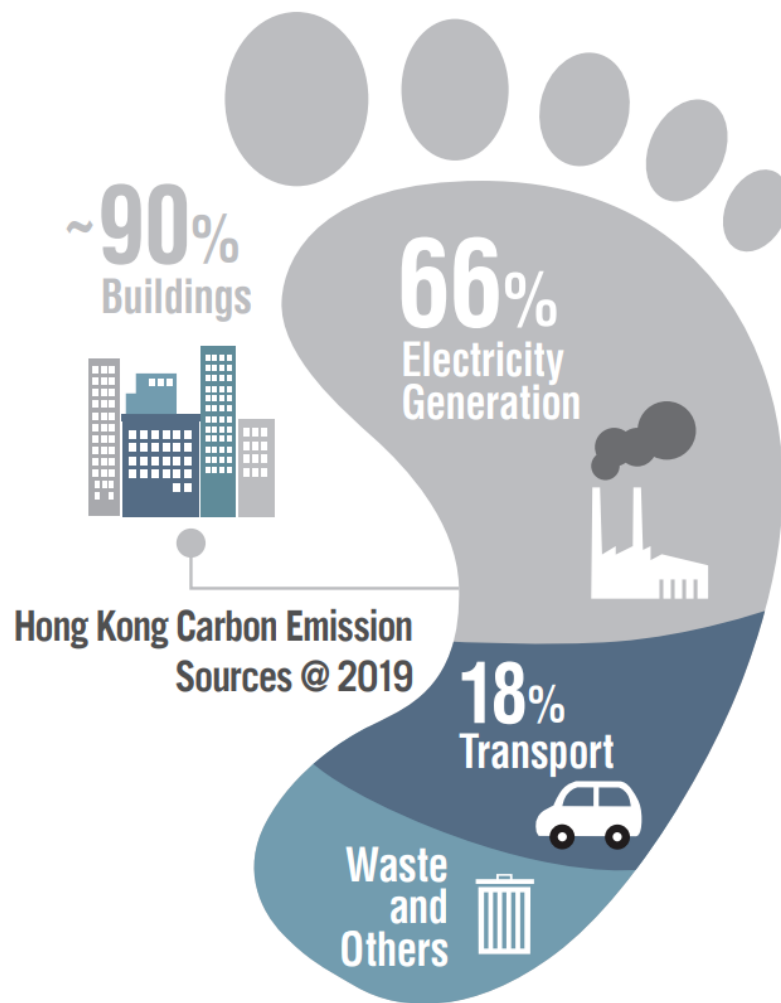
Director, Ability R&D Energy Research Centre

City University of Hong Kong

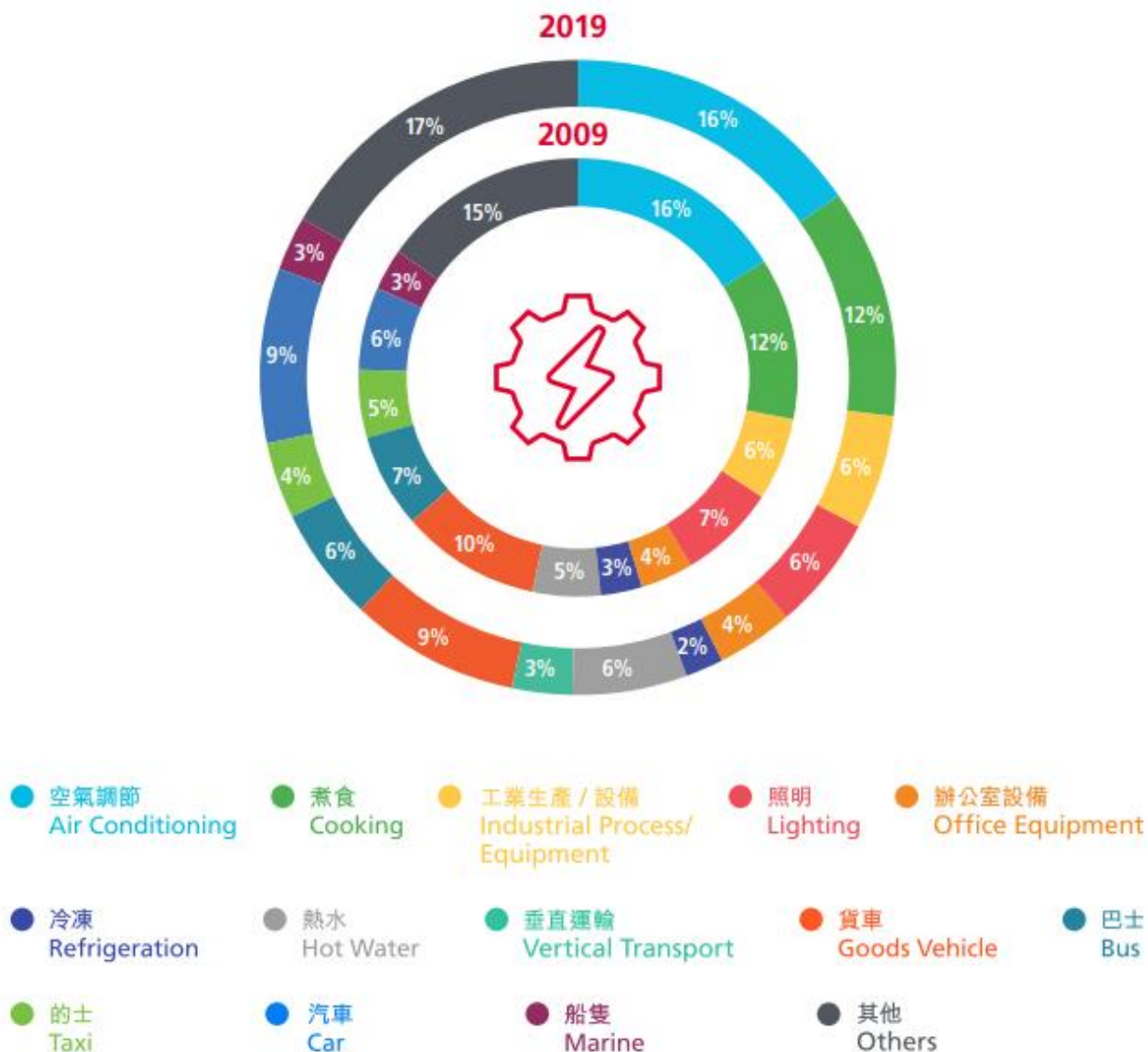


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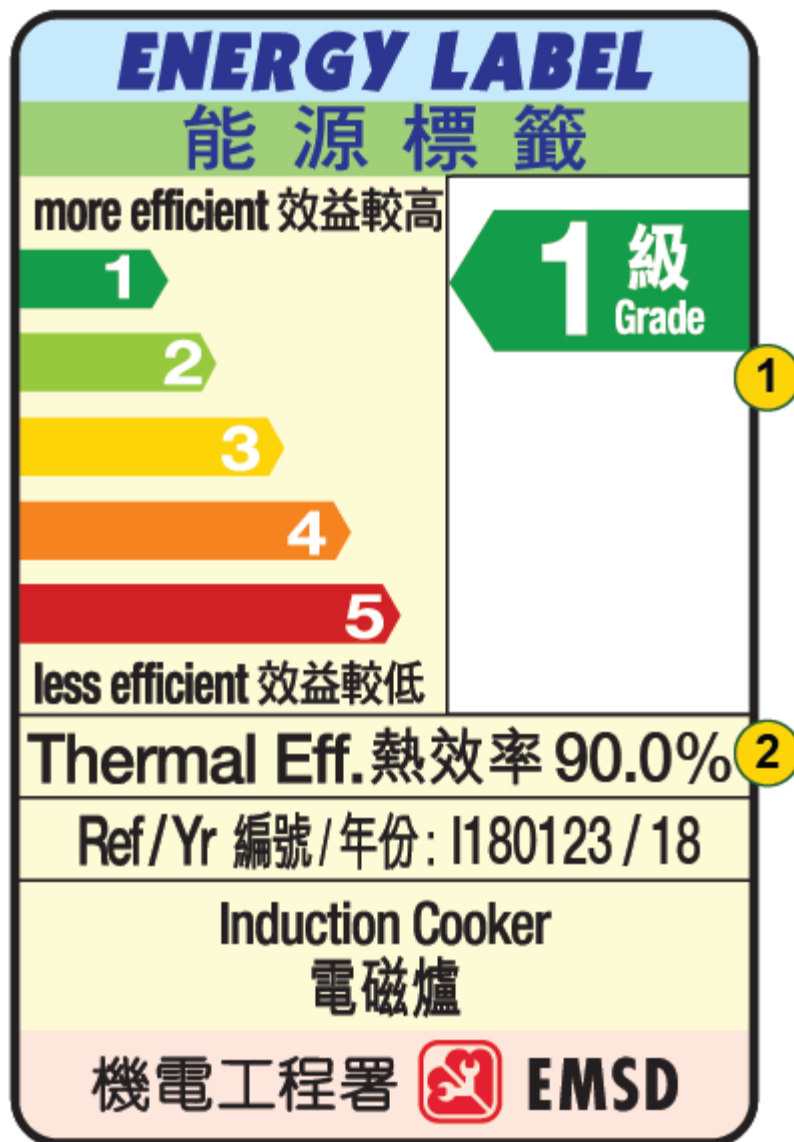




Total GHG emissions in 2020:
33.8 million tonnes of CO_{2-e}



Energy Labels 能源標籤



[Product List](#)

[Air-Conditioners](#)

[Refrigerators](#)

[Washing Machines](#)

[Dehumidifiers](#)

[Televisions](#)

[Water Heaters](#)

[Induction Cookers](#)

[More....](#)

Retro-Commissioning 重新校驗



Retro-commissioning (RCx) is a systematic process to periodically check an existing building's performance to identify operational improvements that can save energy and thus lower energy bills and improve indoor environment.

Water-Cooled Chillers 水冷式冷水機

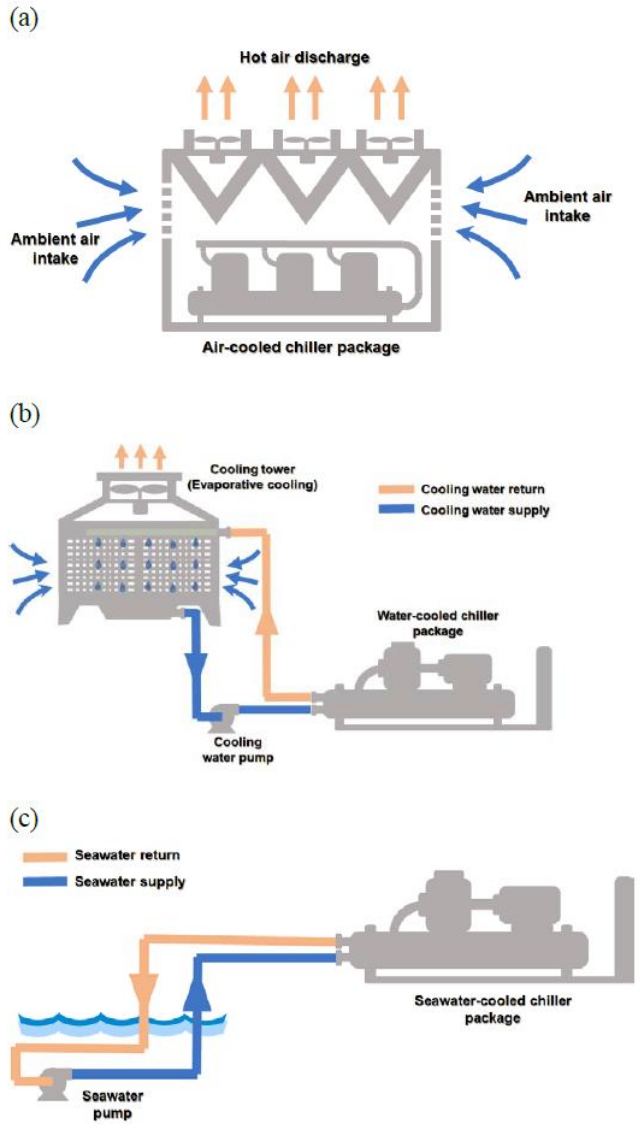


Figure 4. Chillers using different condenser types: (a) air-cooled condenser; (b) water-cooled condenser; and (c) seawater-cooled condenser.

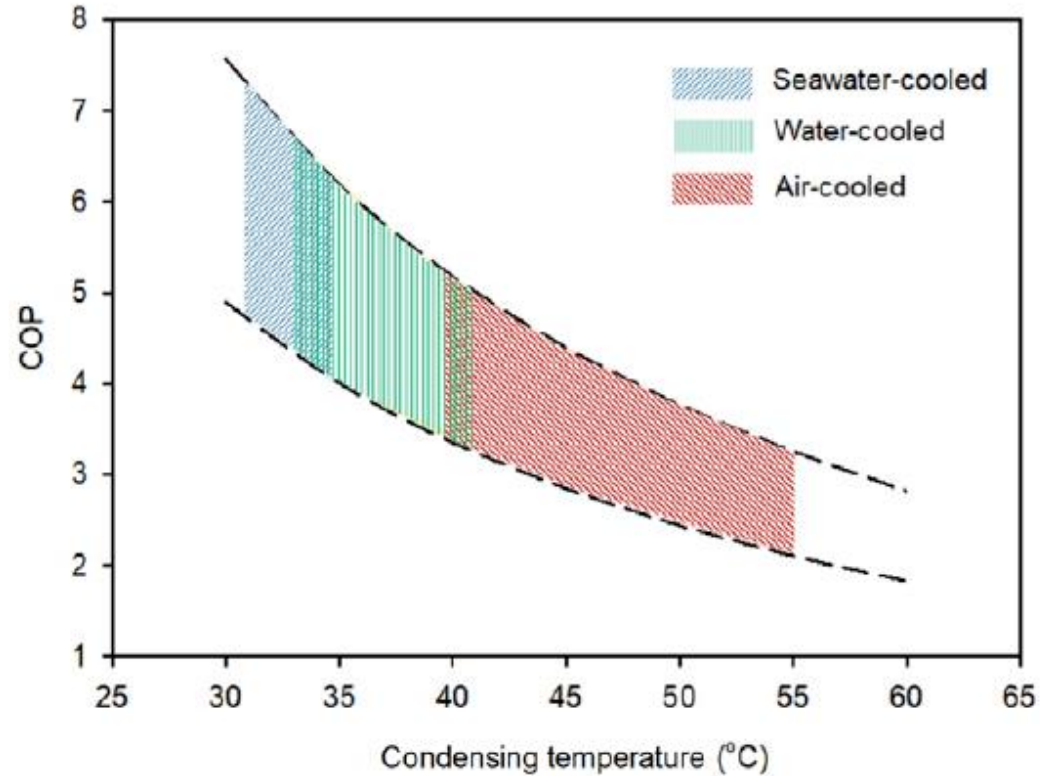
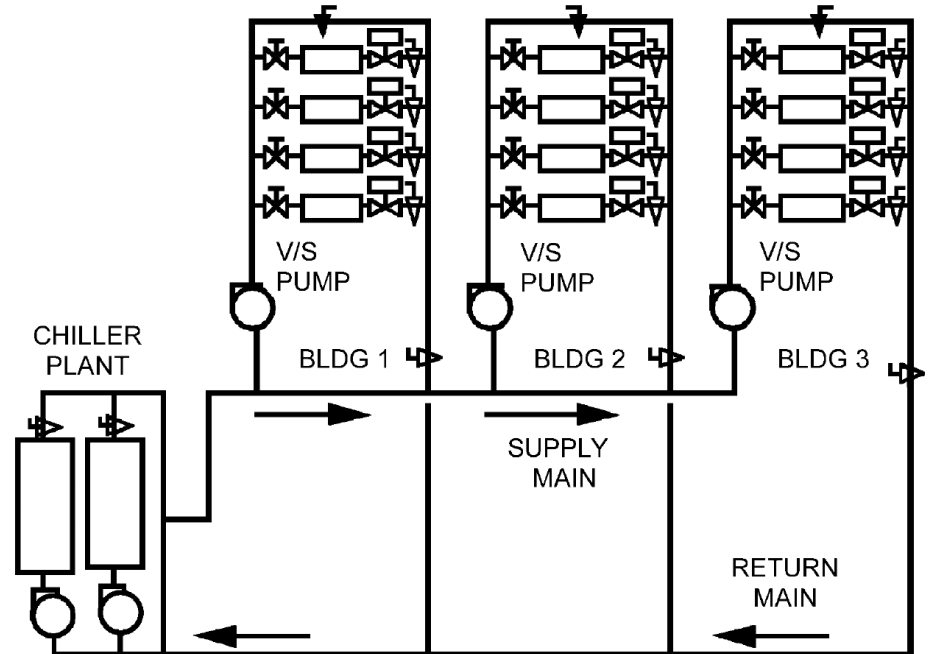
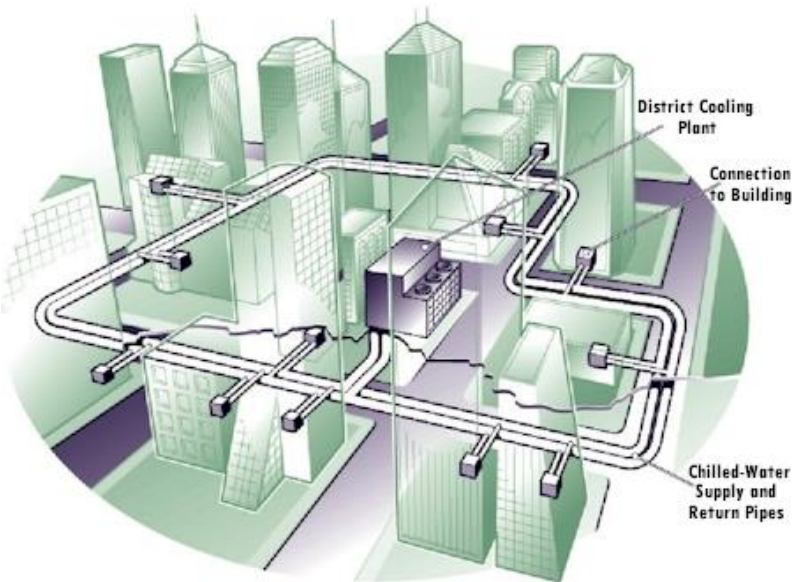


Figure 5. Typical COP of air-cooled, water-cooled and seawater-cooled chillers.

District Cooling 區域供冷

- District Cooling System (DCS) - centralised air-conditioning system on a mega scale.
- DCS provides cooling by distributing chilled water via a supply network to multiple buildings within a district.
- It eliminates the requirement of installing chiller plants for each individual building.



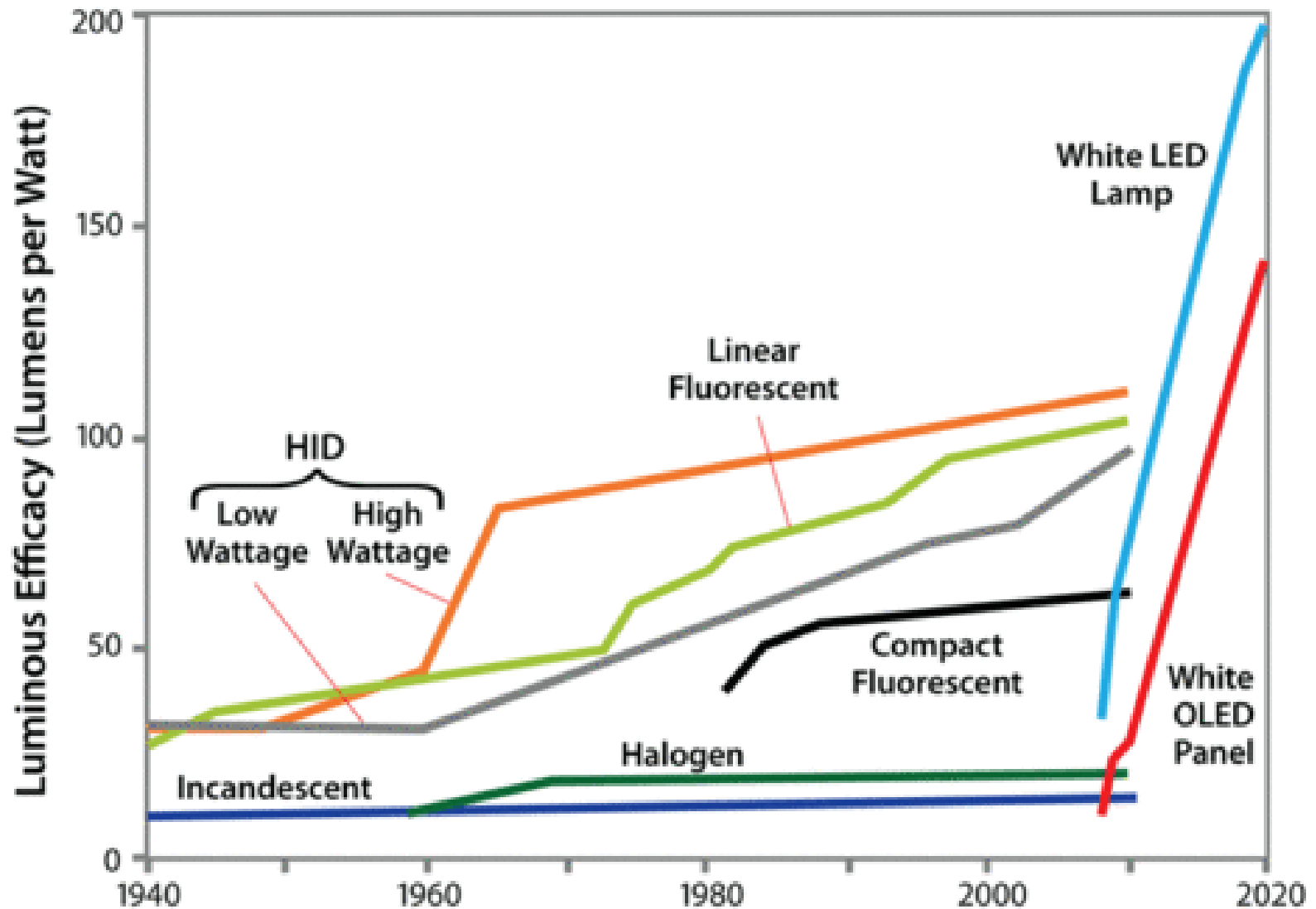
Heat Pump Water Heater 熱泵熱水器



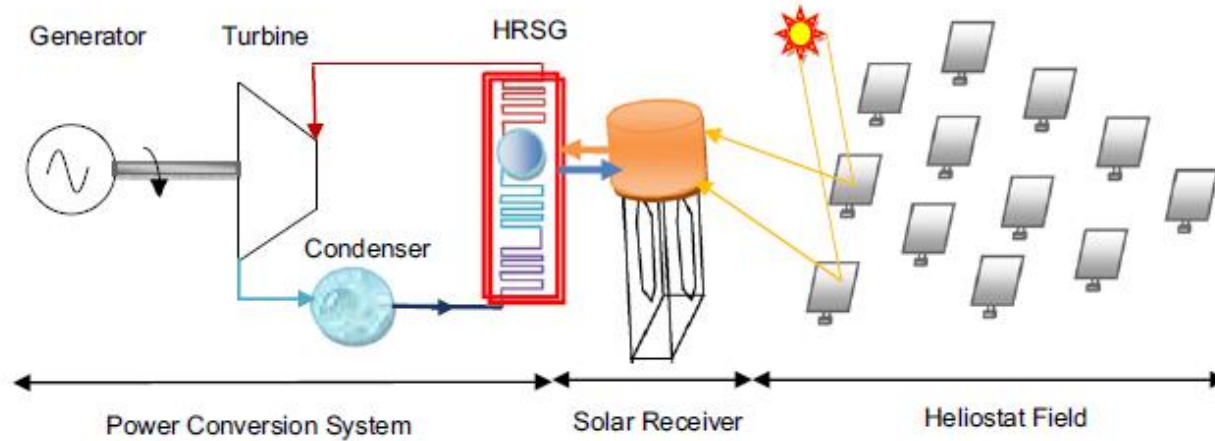
Features:

1. Compact in size => Tankless, direct heat design
2. Double-wall heat exchanger with high heat transfer coefficient
3. Rapid response to dynamic heating load (hot water) and cooling load (air-conditioning)

Lighting 照明



Heliostat Solar Power Plant 定日鏡太陽能發電



Solar Photovoltaics (PV) 太陽能光伏



Poly-Crystalline
Solar Cell



Mono-Crystalline
Solar Cell



Rooftop PV



Thin Film CIGS

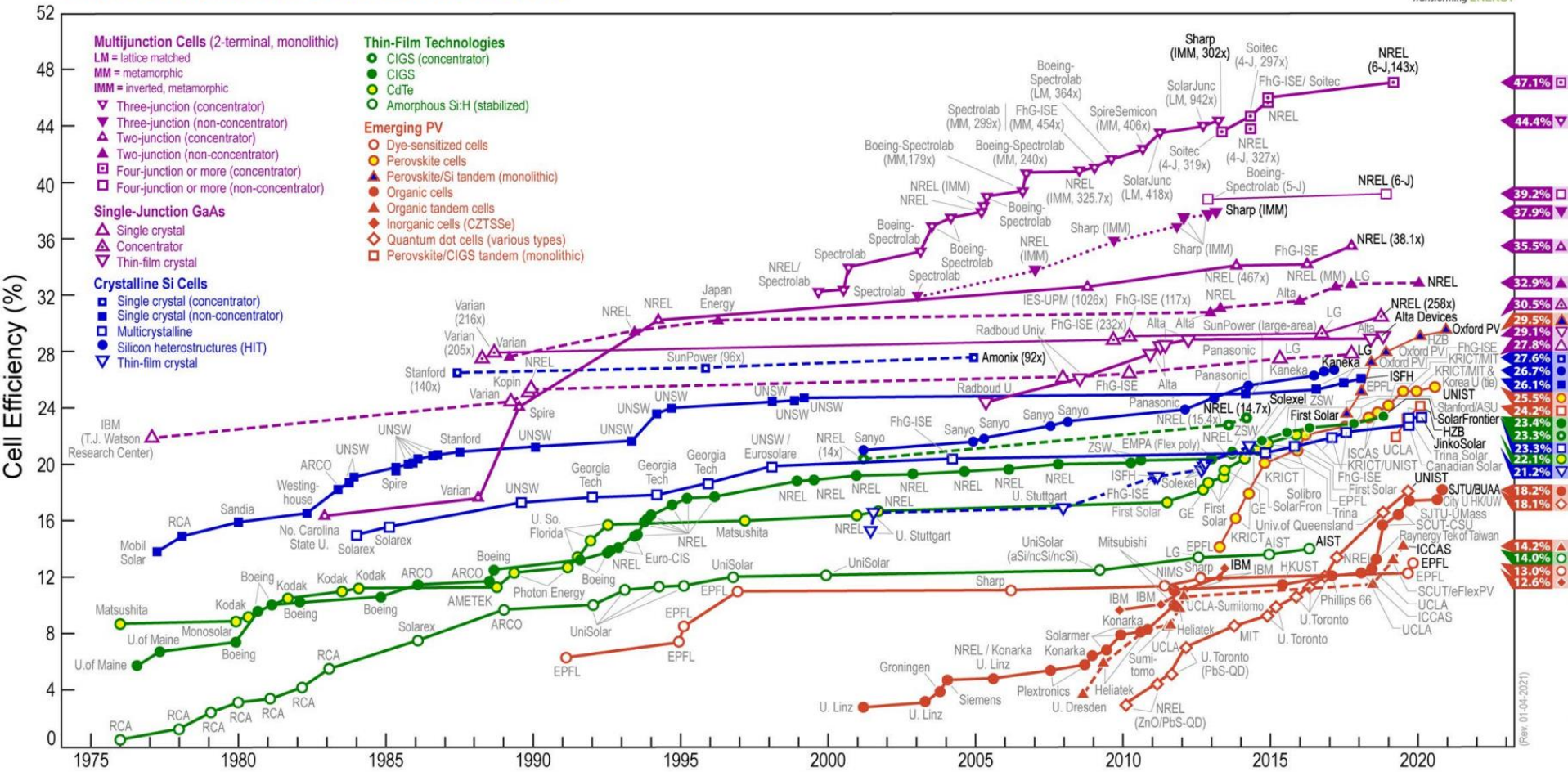


DSSC



Building Integrated Photovoltaics (BIPV)

Best Research-Cell Efficiencies



(Rev. 01-04-2021)

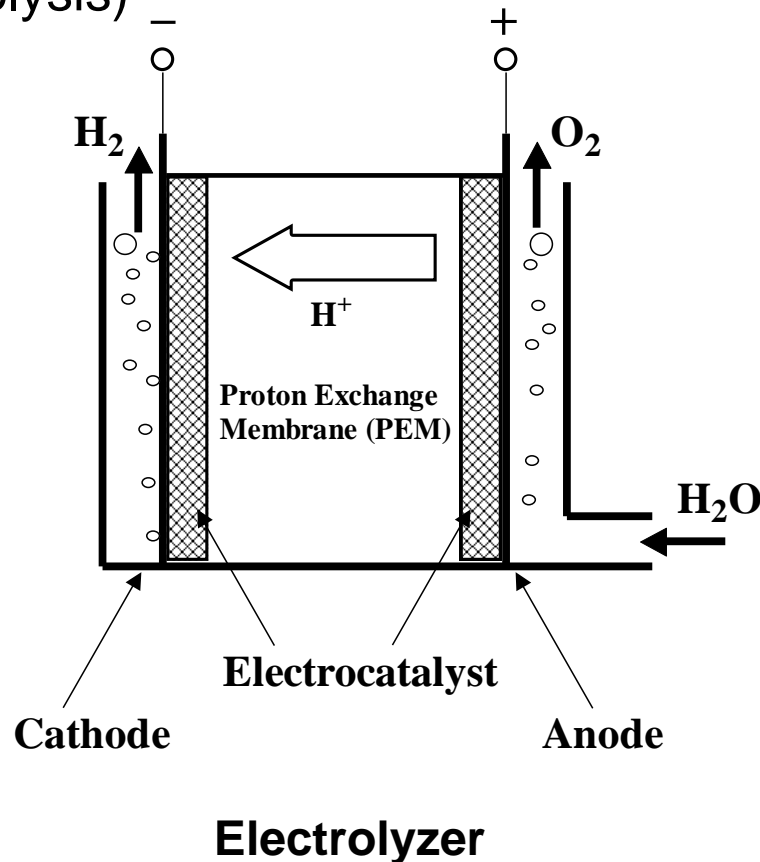
Offshore Wind Turbines 離岸風力發電

- Offshore wind is stronger and steadier. Thus, offshore wind turbines generally produce more power output than onshore wind turbines.
- Offshore wind is less turbulent.
- Sea has less resistance to airflow. Offshore wind turbines can be installed at a lower altitude.
- More environmentally friendly as noise problems are less disturbing.
- Adverse visual impact is less as offshore wind turbines are farther away from the community.



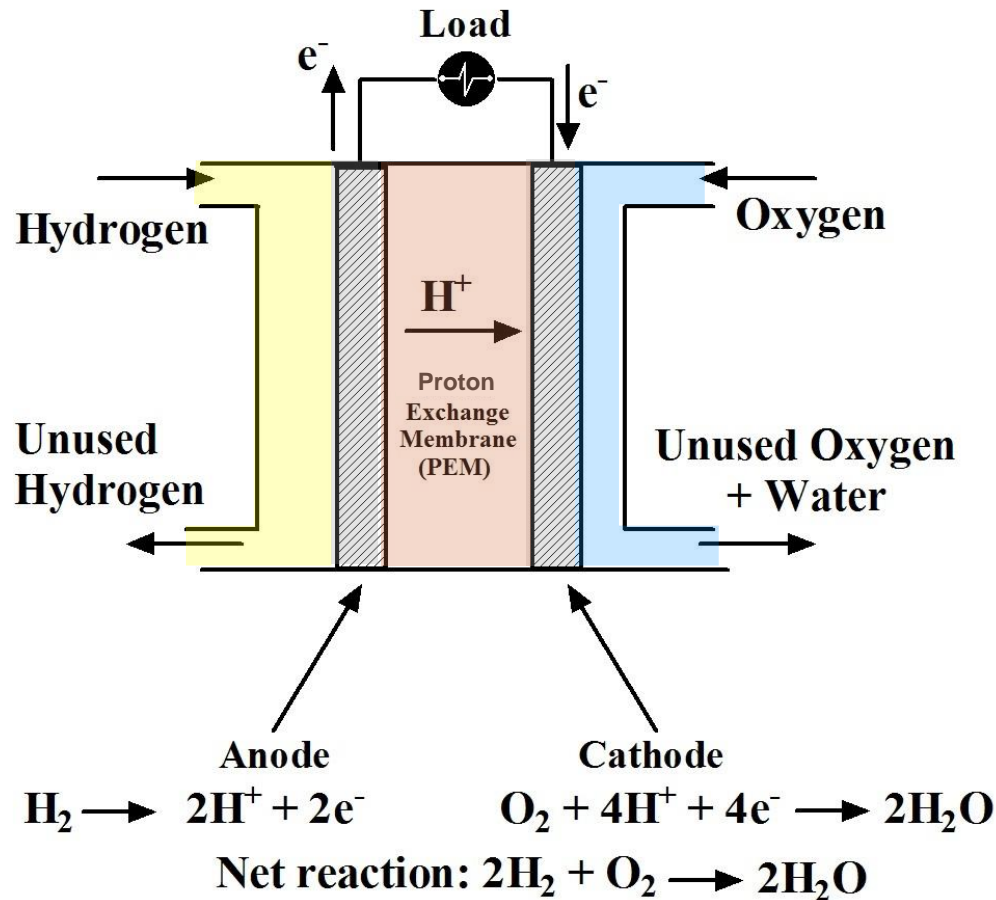
Hydrogen Power 氢能

- Water electrolysis for hydrogen production
- Metal hydrides for hydrogen storage
- Fuel cells for energy conversion (reverse process of electrolysis)

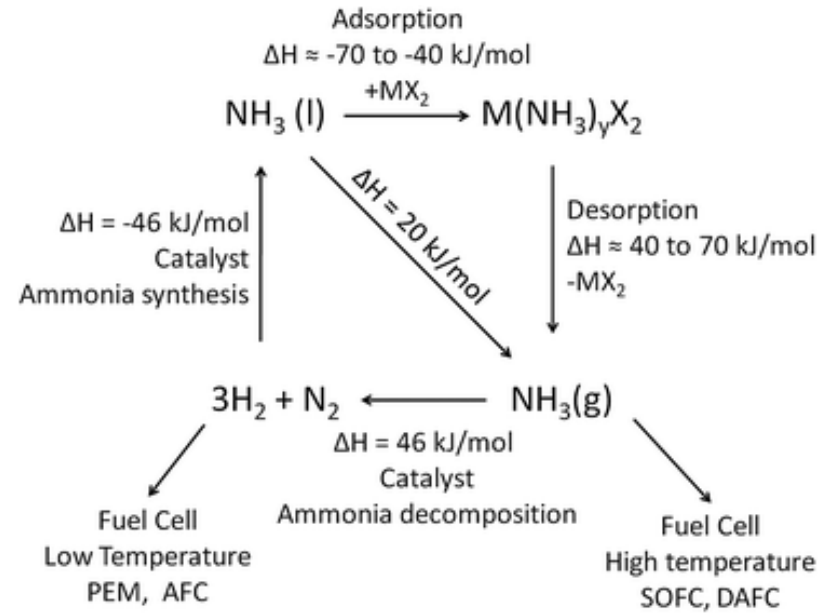
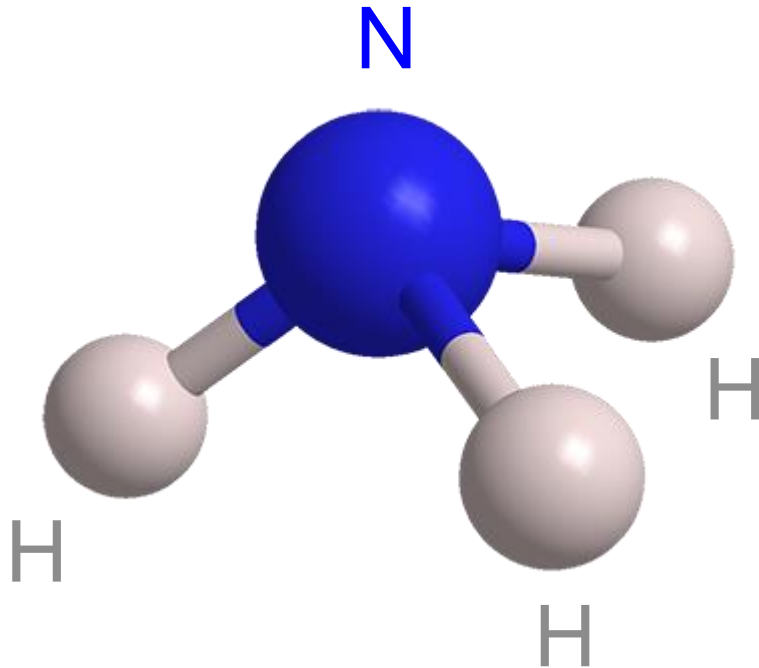


Fuel Cell 燃料電池

Fuel cell converts **hydrogen** into **electricity** by **electrochemical** reactions. **Water** and **heat** are byproducts.

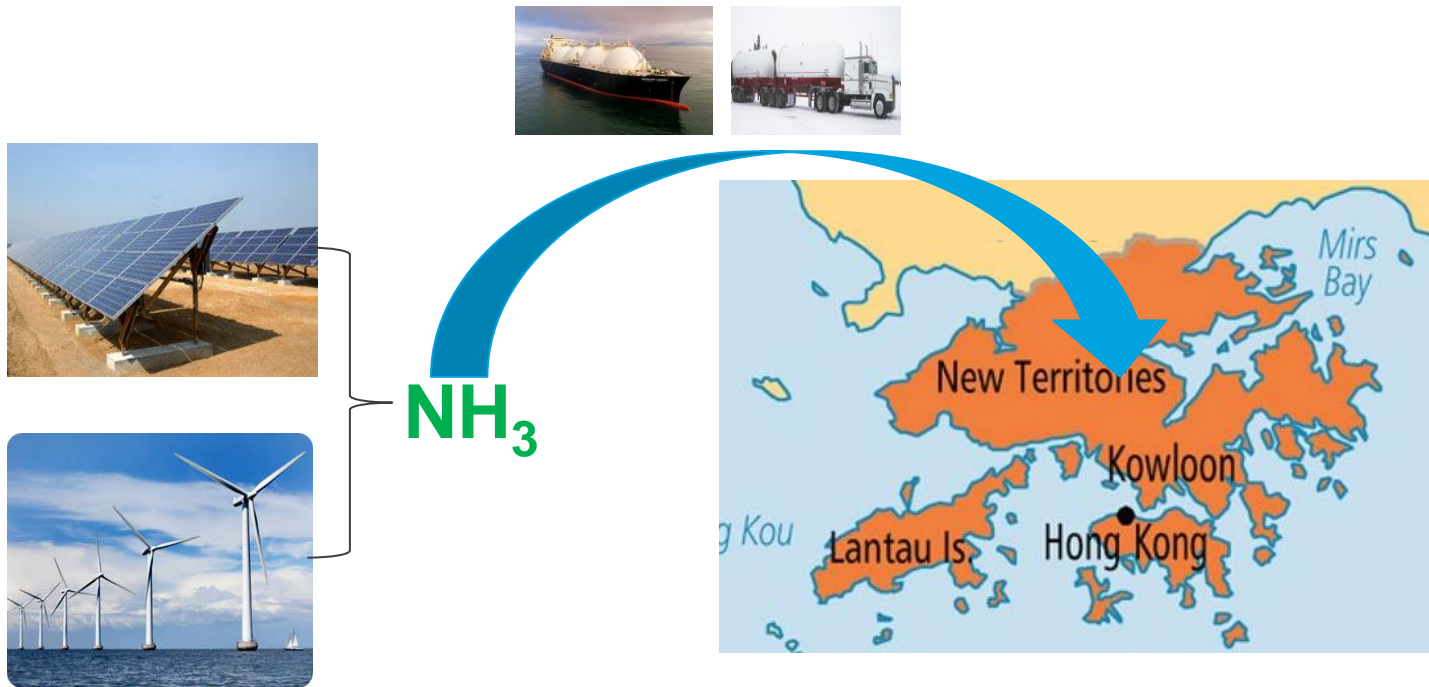


Ammonia Energy 氨能



Imported Renewable Energy

進口可再生能源



Thank You