

# HYDROGEN ECONOMY

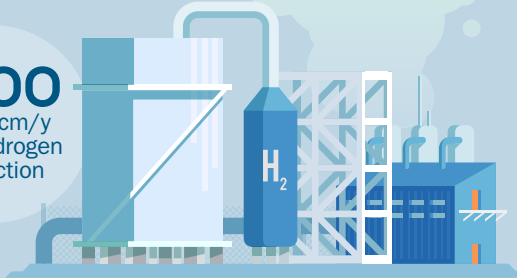
With huge industrial demand and renewable energy storage potential, hydrogen could play a critical role in the world's transition to a cleaner, more sustainable energy mix

POWERED BY  
**SIEMENS**  
*Ingenuity for life*

## INDUSTRIAL PRODUCTION

**98%**  
Hydrogen made from compressed natural gas or other carbon-releasing hydrocarbons

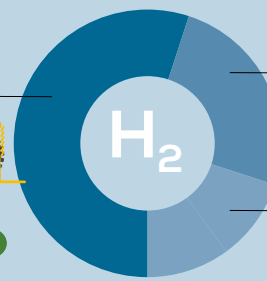
**~600**  
billion cm<sup>3</sup>/y total hydrogen production



**2%**  
Hydrogen is derived from water electrolysis, which can be powered using 100% renewable energy sources

## HYDROGEN APPLICATIONS

**55%**  
Share of hydrogen used for ammonia synthesis

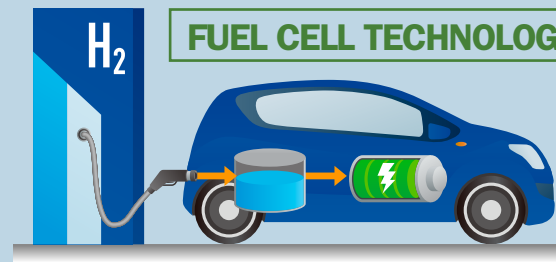


**25%**  
for refinery processes



**20%**  
for methanol production and other uses

## FUEL CELL TECHNOLOGY



**500-600km**

Operational range of the latest fuel cell electric vehicles (FCEVs) based on the consumption of about 1kg of hydrogen over 100-120 kilometres

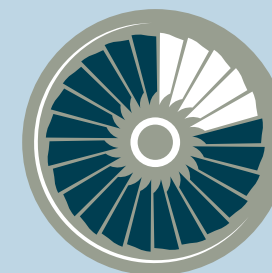


**240kg/d**

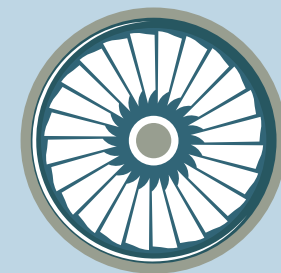
Hydrogen output at the region's first solar-powered water electrolysis plant\* at the MBR Solar Park in Dubai – enough to fill 50 FCEVs

## NATURAL GAS REPLACEMENT

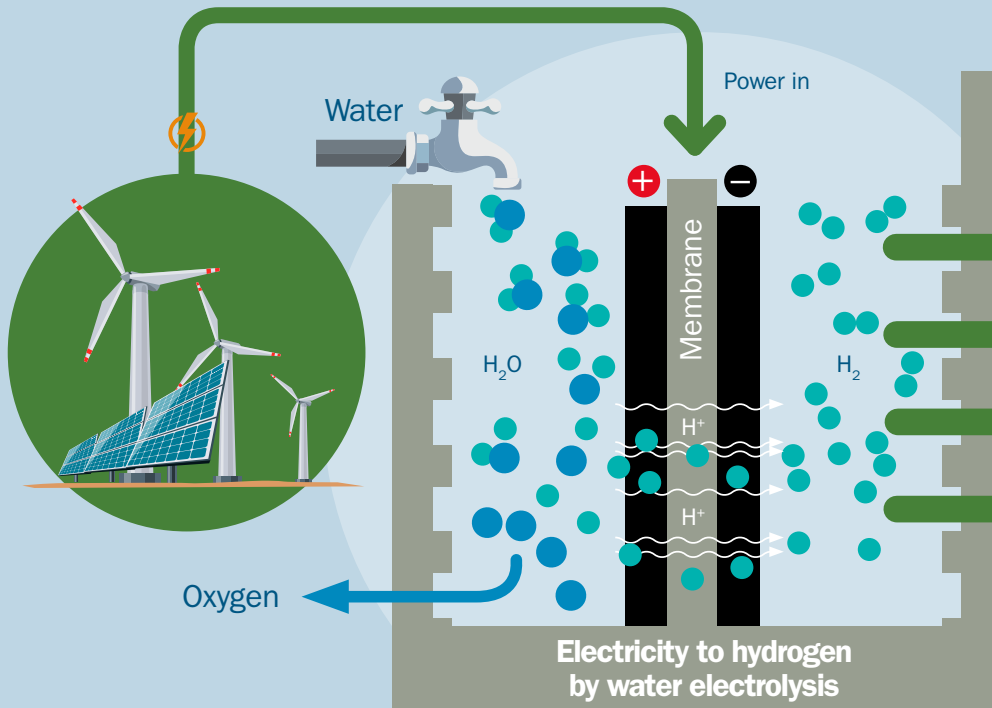
Hydrogen is an increasingly viable transitional feedstock for gas turbines



**20%**  
Hydrogen capacity of gas turbines by 2020\*\*



**100%**  
Hydrogen capacity by 2030 (new or retrofitted)\*\*



## RENEWABLE OPPORTUNITY



**\$2.5**

Typical cost of a kilogram of liquid hydrogen at today's commercial rates

**\$1.0**

Cost of production of hydrogen with the most competitive solar projects



**30%**

Estimated net fall in the cost of producing hydrogen from electrolysis by 2030



**30%**

Share of gas for homes and businesses replaceable by hydrogen

**0** Changes required to gas infrastructure

**18%** Potential reduction in carbon emissions

**0%**

On-site release of climate-warming emissions

\*=A joint initiative between Dubai Electricity & Water Authority, Siemens and Expo 2020 Dubai; \*\*=EUTurbines group targets. cm<sup>3</sup>/y=Cubic metres a year; kWh=Kilowatt hours; kg/d=Kilograms a day. Sources: EIGA, Hydrogen Europe, IEA, MEED, Swansea University