



JM

Cadent



ESSAR

HyNet Hydrogen Supply

H₂ from CH₄ with CCS in HyNet

Date 16/07/20



Contents

1. HyNet general project description
2. Hydrogen production from natural gas

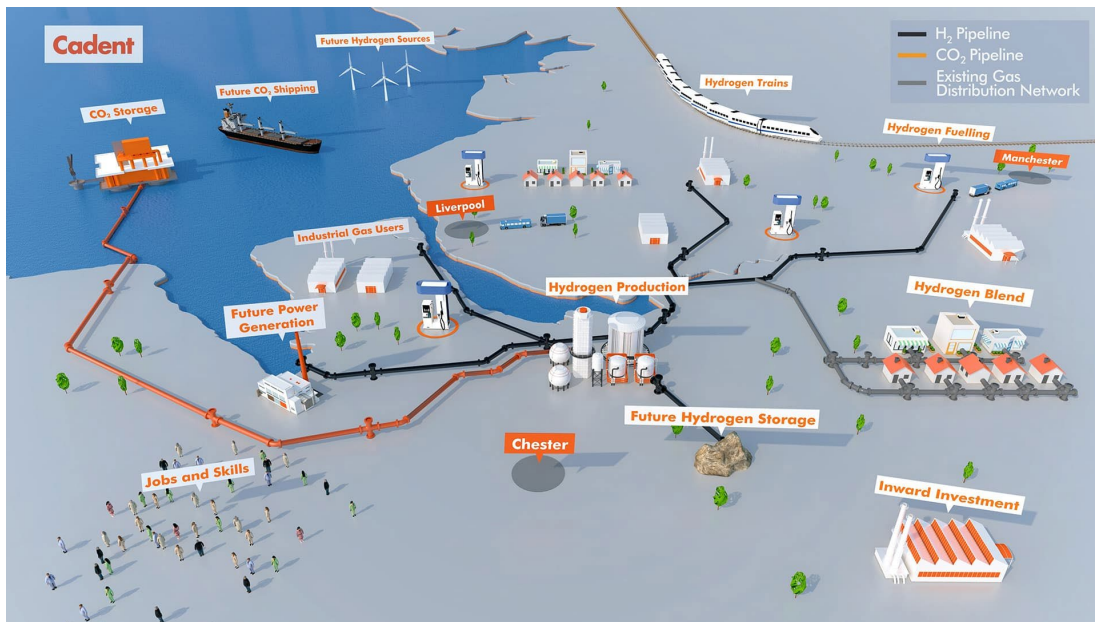


4 things needed to make a hydrogen project happen



- A source of hydrogen and the technology to extract it
- A method of disposing of any by-products of the process
- A customer(s) for the hydrogen
- A commercial framework in which to operate





4 things needed to make a hydrogen project happen



- Source of hydrogen
- By-product disposal
- Customers
- Commercial framework

4 things needed to make a hydrogen project happen



			
New section	Existing NG line	Existing NG line	Depleted gas field
<ul style="list-style-type: none">• Gas phase• 35barg• 36" dia.	<ul style="list-style-type: none">• Gas phase• 35barg• 24" dia.	<ul style="list-style-type: none">• Gas phase• 35barg• 20" dia.	<ul style="list-style-type: none">• Gas phase• Low pressure
	Upgrade when >3mtpa	Upgrade to higher pressure when >3mtpa	

4 things needed to make a hydrogen project happen



Existing CO₂

- Processing
- 35barg



New section

- Gas phase
- 35barg
- 36" dia.



Existing NG line

- Gas phase
- 35barg
- 24" dia.

Upgrade when
>3mtpa



Existing NG line

- Gas phase
- 35barg
- 20" dia.

Upgrade to
higher pressure
when
>3mtpa



Depleted gas field

- Gas phase
- Low pressure

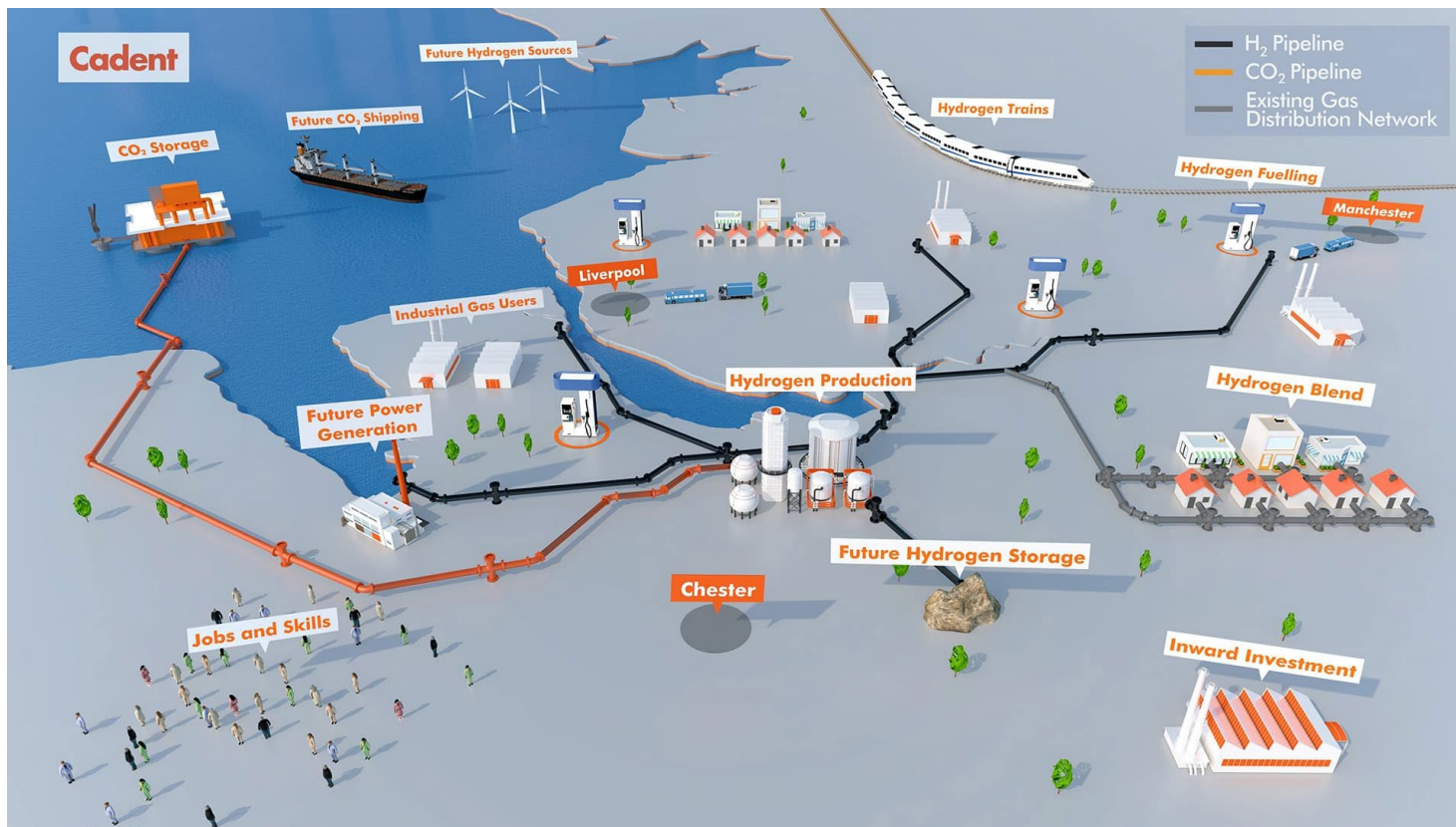
4 things needed to make a hydrogen project happen



Encirc Glass

ESSAR refinery

4 things needed to make a hydrogen project happen



HyNet North West



- **Phased approach: constructing and commissioning the CO₂ infrastructure, dislocating the CCS infrastructure from 'blue' hydrogen production, and minimising the risk associated with the hydrogen plant**
- **Up-scalable technology allowing a build-out to keep pace with projected hydrogen demand**
- **Pipeline infrastructure designed to handle full-scale hydrogen and CO₂ production**

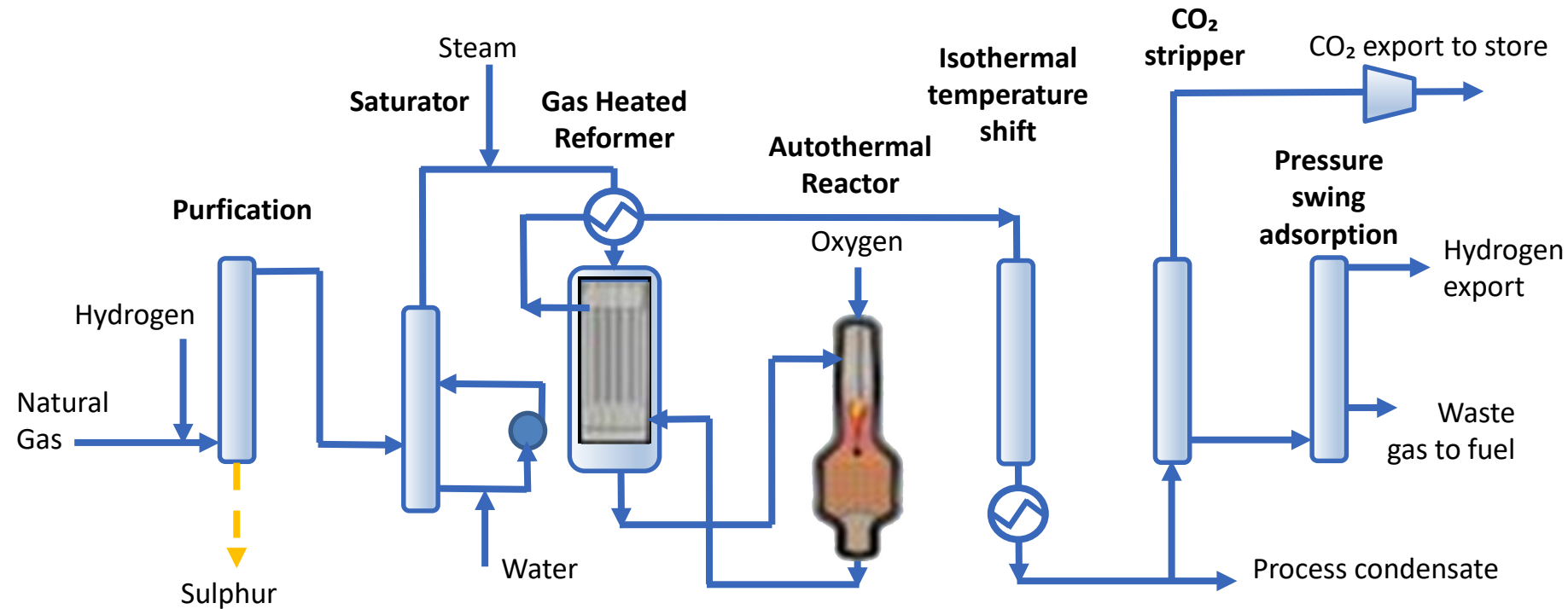
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Hydrogen production from natural gas

JM Low Carbon Hydrogen process



Hydrogen production from natural gas

