



**BIOENERGY**  
INFRASTRUCTURE GROUP

## Innovation in Biomass

Greg Williams – Head of Procurement and Regulatory Affairs

Strictly Confidential





WE DEVELOP...



WE OWN...



WE OPERATE...

At Bioenergy Infrastructure Group (BIG) we are safely operating one of the UK's largest portfolios of locally sourced Waste Wood and Waste to Energy facilities.

SOCIETY'S DRIVERS:



OUR PEOPLE:



OUR FUTURE:



# BIG's portfolio

**1.2Mtpa**  
Avoided waste to landfill

**357,000**  
Houses powered

**~1.4 Mtpa**  
carbon capture potential

**~20%**  
of UK's 2030 carbon  
removals target

Evermore Renewable Energy



Levensat Renewable Energy





Energy Works (Hull)



Mersey Bioenergy

Ince Bio Power

Northacre

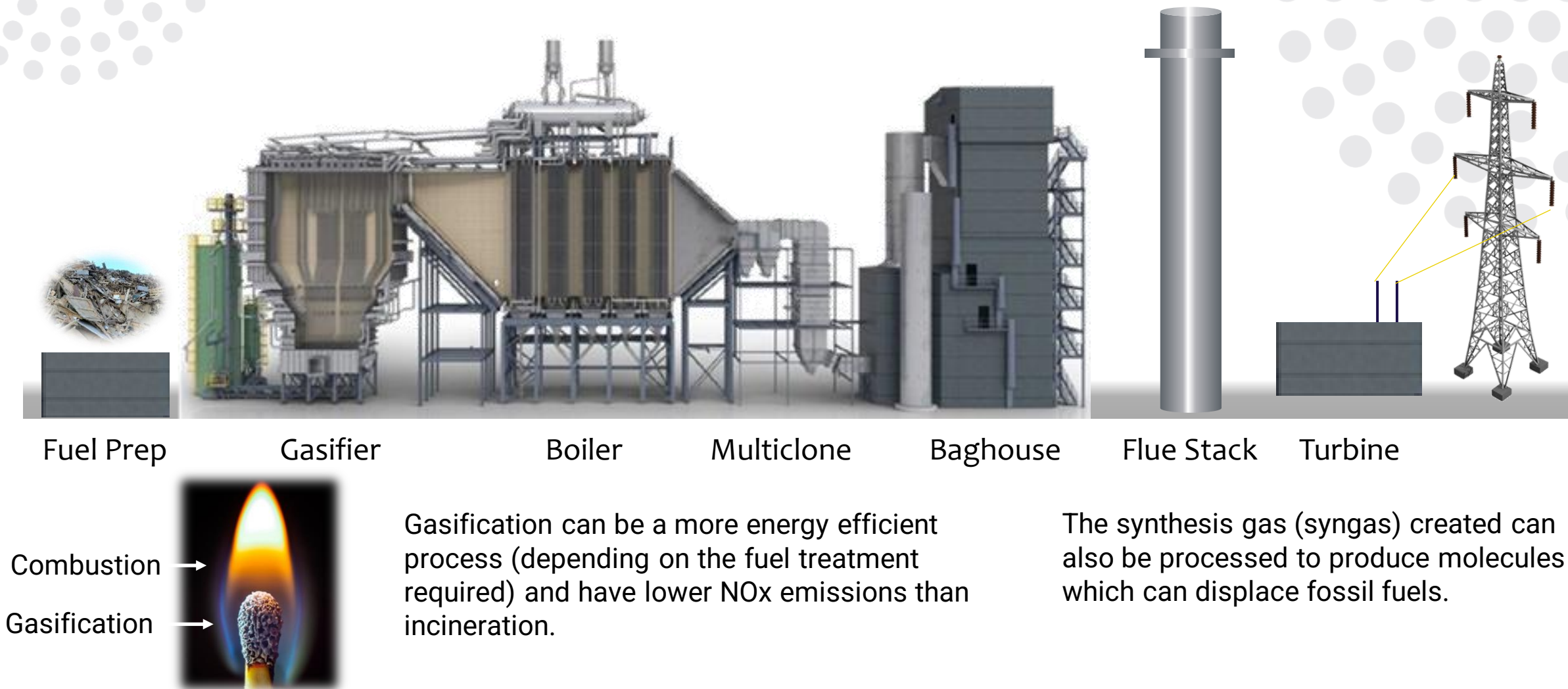
Parameters	Ince	Mersey	Evermore	Levensat	Hull	Northacre
Operations date	2018	2019	2015	2020	2020	2026
Net Capacity	22.6MW	20.9MW	16.4MW	9.3MW	25MW	25.7MW
Feedstock	 Waste wood			 Residual waste		
Industrial cluster	Hynet	Hynet	TBD	Scottish Cluster	East Coast Cluster	7CO <sub>2</sub>
Govt supported business model	Greenhouse Gas Removals / Power BECCS TBC			Industrial Carbon Capture		

*BIG is also operator of Hull, Boston and Barry Biomass ERFs (not pictured here) on behalf of its owner.*



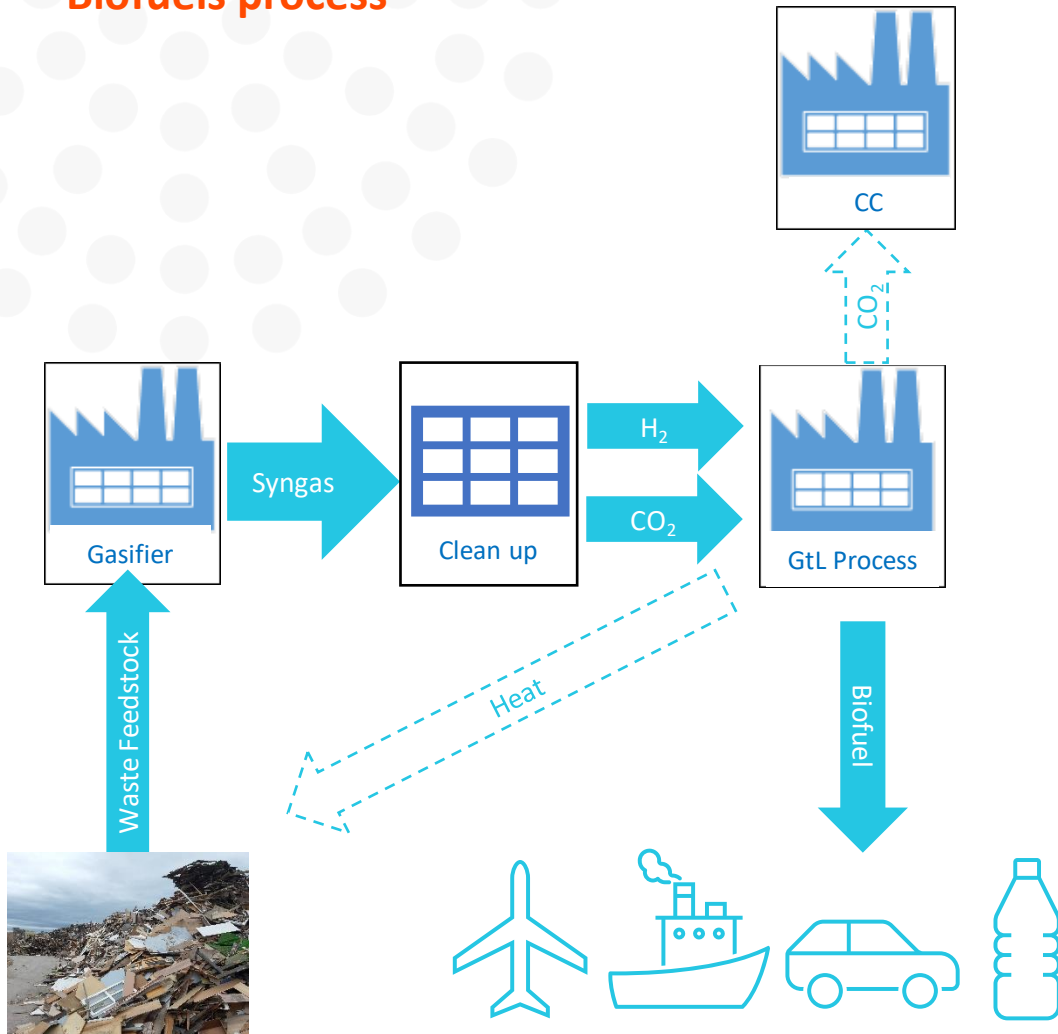
# Potential for gasification assets

Capture and store the emissions from the stack? For negative emissions.

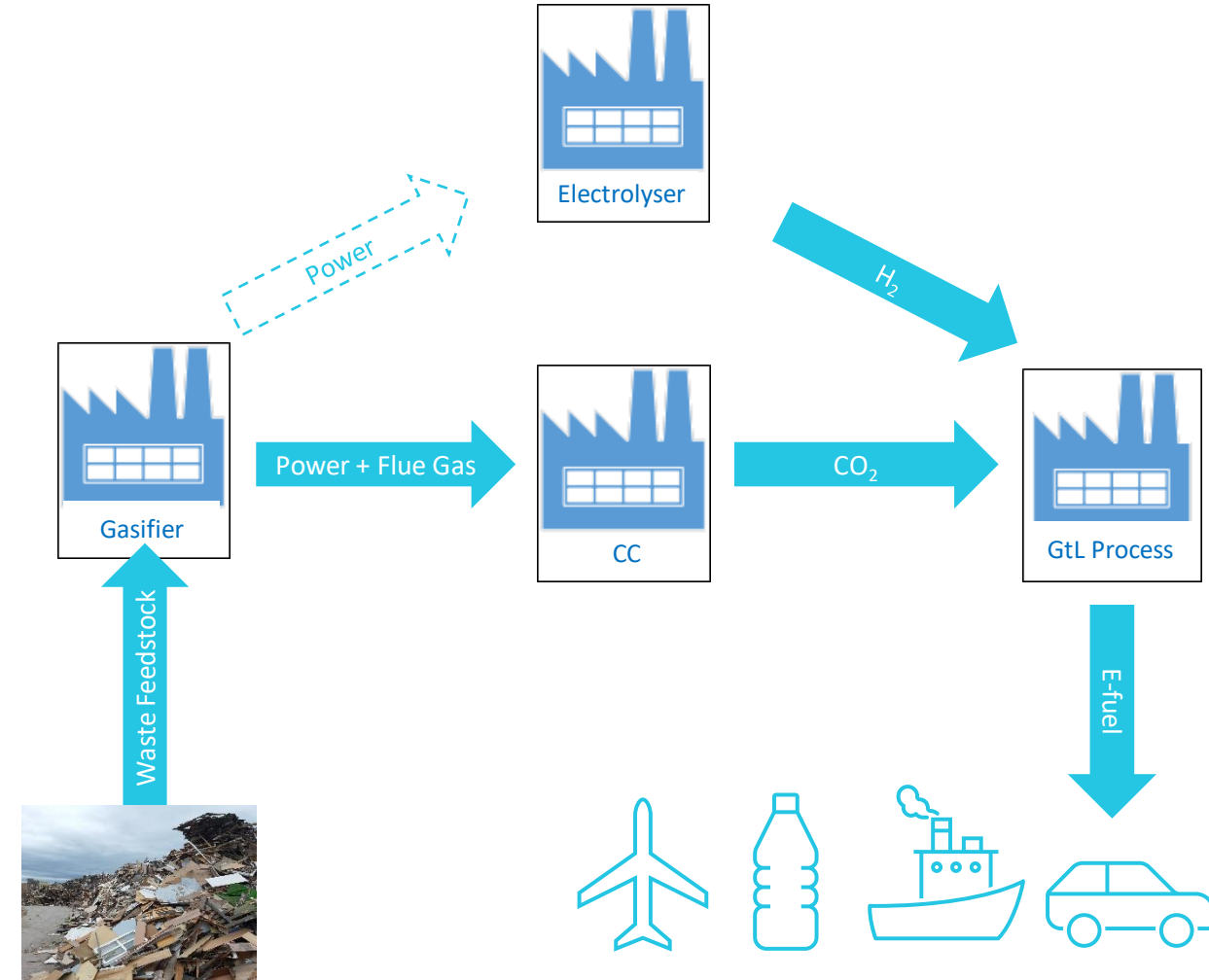


# Gasification assets provide a foundational capability for the production of 'future fuels'

## Biofuels process



## E-fuels process



# Waste into Fuels using gasification and advanced thermal conversion processes

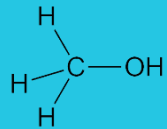
## Sustainable Aviation Fuel (SAF)

- Drop in fuel
- High demand potential driven by UK SAF mandate (10% by 2030)
- Existing engine technology



## Methanol from Biomass

- Can be blended into road fuels
- Large potential for marine use
- Used as a feedstock in chemicals and plastics production



## Hydrogen from Biomass

- Hydrogen could meet up to 35% of the UK's energy demand in 2050
- Uses include heavy transportation, power generation and heat in buildings



## Lifecycle carbon emissions intensity



80-100 gCO<sub>2</sub>e/MJ for the '**counter factual**' of kerosene, steam methane reforming of hydrogen or heavy fuel oil



10-20 gCO<sub>2</sub>e/MJ for when using a **biomass feedstock**; ~50 when using municipal waste feedstock



Potential for negative emissions when using a biomass feedstock AND **capturing the emissions** from the fuel manufacturing process

# Gasification – opens a world of possibility

