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### Production of Solid Carbon and Hydrogen from Biomethane using Non-thermal Plasma

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## 1. Biomethane pyrolysis

Biomethane pyrolysis is a promising approach to reduce the carbon footprint during hydrogen production.

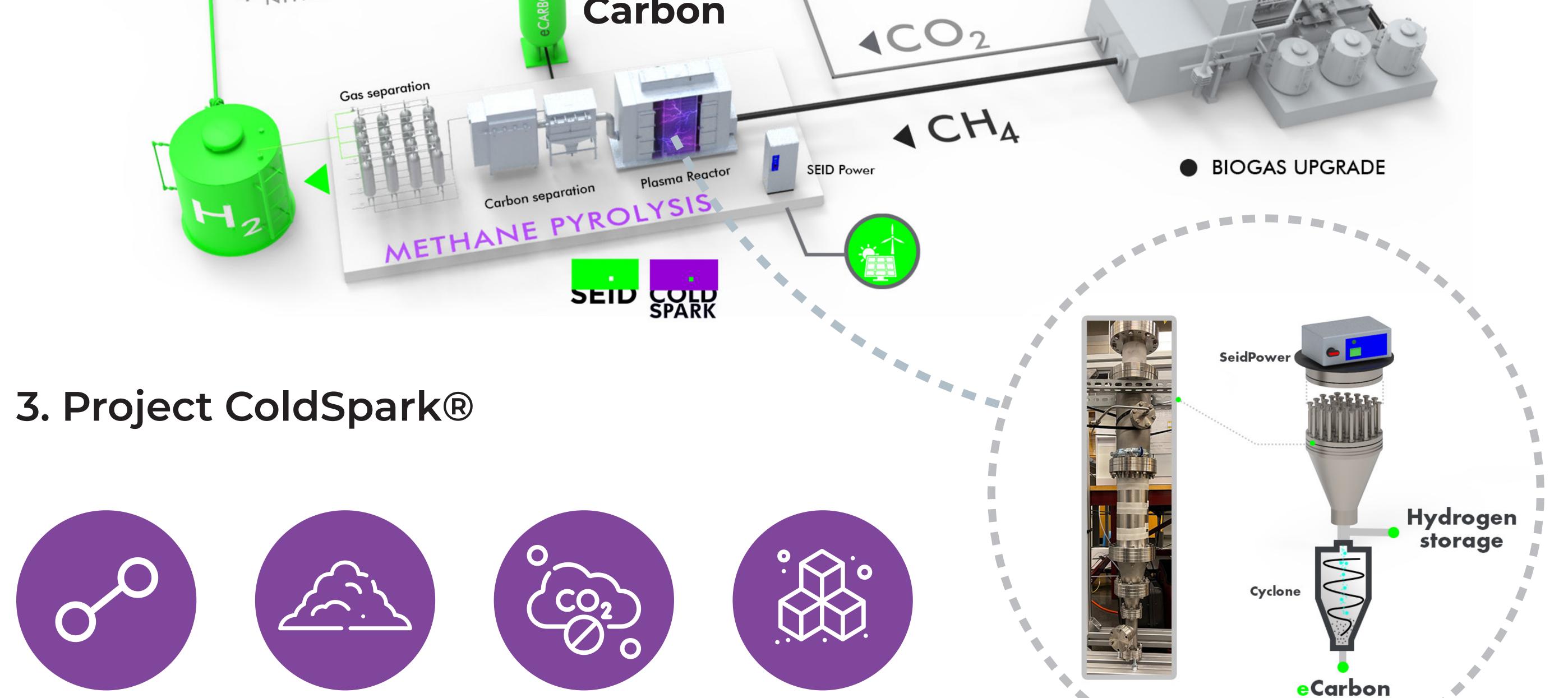
tages	Disadvantages	energy by elec of reaction ter
•	Very high CO2 emissions, require water	2. NTP initiates on <b>temperatu</b> reactions.
-	High temperatures needed (> 800° C) and high energy demand to reach high temperatures, require catalyst	<ol> <li>ColdSpark® g that have ene cost-efficie</li> <li>ColdSpark( of high-tempe</li> </ol>
yst, less onal costs,	Not yet in TRL9	5. ColdSpark® h tuning the pro energy consu
AL-BASED PRODUCTION		
	AL-BASED PRODUCTION	veloped       Very high CO2         ogy       water         sing new       High temperatures needed         ive to SMR       High temperatures, require         ergy costs,       Not yet in         yst, less       Not yet in         praid       RL9

#### 2. Methane cracking using Non-Thermal Plasma

- Non-thermal plasma (NTP) generate the required energy by electrone dissociation almost independently of reaction temperature.
- NTP initiates chemical reactions at remarkably lower temperatures than conventional thermochemical reactions.
- ColdSpark® generates highly energetic electrons that have energy to break certain molecules in a very cost-efficient manner.
- 4. **ColdSpark**® can overcome the major disadvantages of high-temperature or catalytic requirements needed by thermal/ catalytic processes.
- ColdSpark® has an inherent flexibility that allows tuning the process parameters in order to optimise energy consumption.

BIOGAS

BIOGAS





## Visit project ColdSpark® website: https://coldspark.eu/ Follow us on LinkedIn: Project #ColdSpark





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