



# STORK & HYDROGEN

## How Stork supports the energy transition through next technologies

### BACKGROUND

While hydrogen has been touted as an essential 'ingredient' in the energy transition, it hasn't really taken off yet. There are several reasons for this, including:

- Competitive position of H2 produced via 'dirty' gas: the price is low, the technology is completely derisked, the reliability is high, ... without carbon taxing / hydrogen subsidies in place it has been hard to beat
- Chicken-and-egg situation: you can produce hydrogen, but then there need to be off-takers (and typically transport & storage in between) and if you want hydrogen, you need someone producing it.

### STORK'S POSITIONING

Historically Stork has waited for a client to build a (hydrogen) facility and then we turn up to perform (parts of) the maintenance.

In 2021 we took a different approach: we decided to team with promising hydrogen technology providers and in this way get into the game earlier, creating the following dynamics:

- Stork helps give O&M input into the original design (better lifecycle cost)
- Stork co-markets the technology (increase market exposure)
- Of the technology, hopefully resulting in projects for that technology
- Of Stork as a company involved in hydrogen, hopefully resulting in hydrogen work of any kind (this technology, but for any other part of the hydrogen supply chain)

Stork is positioned to:

- Manufacture modules (nice revenue stream)
- Provide O&M services for the whole facility (steady revenue stream)
- Collect data over multiple facilities, creating great value for the technology provider, helping them avoid downtime / enhance their reputation; and great value for Stork to show case its predictive maintenance capabilities irrespective of industry

### TECHNOLOGIES WE TRACK

Stork is tracking several technologies, but the following two are progressing well.

**SGH2 ("Solena"):** Makes hydrogen from bio-waste / landfill, via novel plasmification process.

- After years of testing, they are poised to build their first full production facility in Lancaster, CA, USA, closely followed by a near-identical facility in Paradise, CA, USA. Fluor will be providing the FEED services.

**Utility Global:** Makes hydrogen from high temperature electrolysis, getting a lot of energy from waste heat

- In 2021 Stork's Dallas workshop manufactured their test skids



### PROJECT EXAMPLE: SUCCESSFUL HYDROGEN BURNER CONVERSION

#### PROJECT INFORMATION

Conversion of a natural gas fired steam boiler to a multi-fuels steam boiler, allowing for solo hydrogen firing in combination with natural gas and a liquid waste stream. The 12 MWth burner was manufactured at Stork's Thermeq facility in Hengelo and subsequently installed at a major chemical plant.

- Multi-fuel requirements and fuel flexibility
- Turn-key project execution
- Including commissioning and SCIOS inspection

#### PROJECT RESULT

- Result compliance with the local emission standards
- Reduction of carbon dioxide emissions