

Johnson Controls Industrial Refrigeration

Center of Expertise NH₃-H₂

The power behind **your mission**



“

The importance of **tailor-made refrigeration**
and **heat pump technology** within the
hydrogen and ammonia value chain.

”

Our product portfolio and brands



Johnson Controls Industrial Refrigeration: Total life cycle solutions

(Tailored)
Design & Engineering

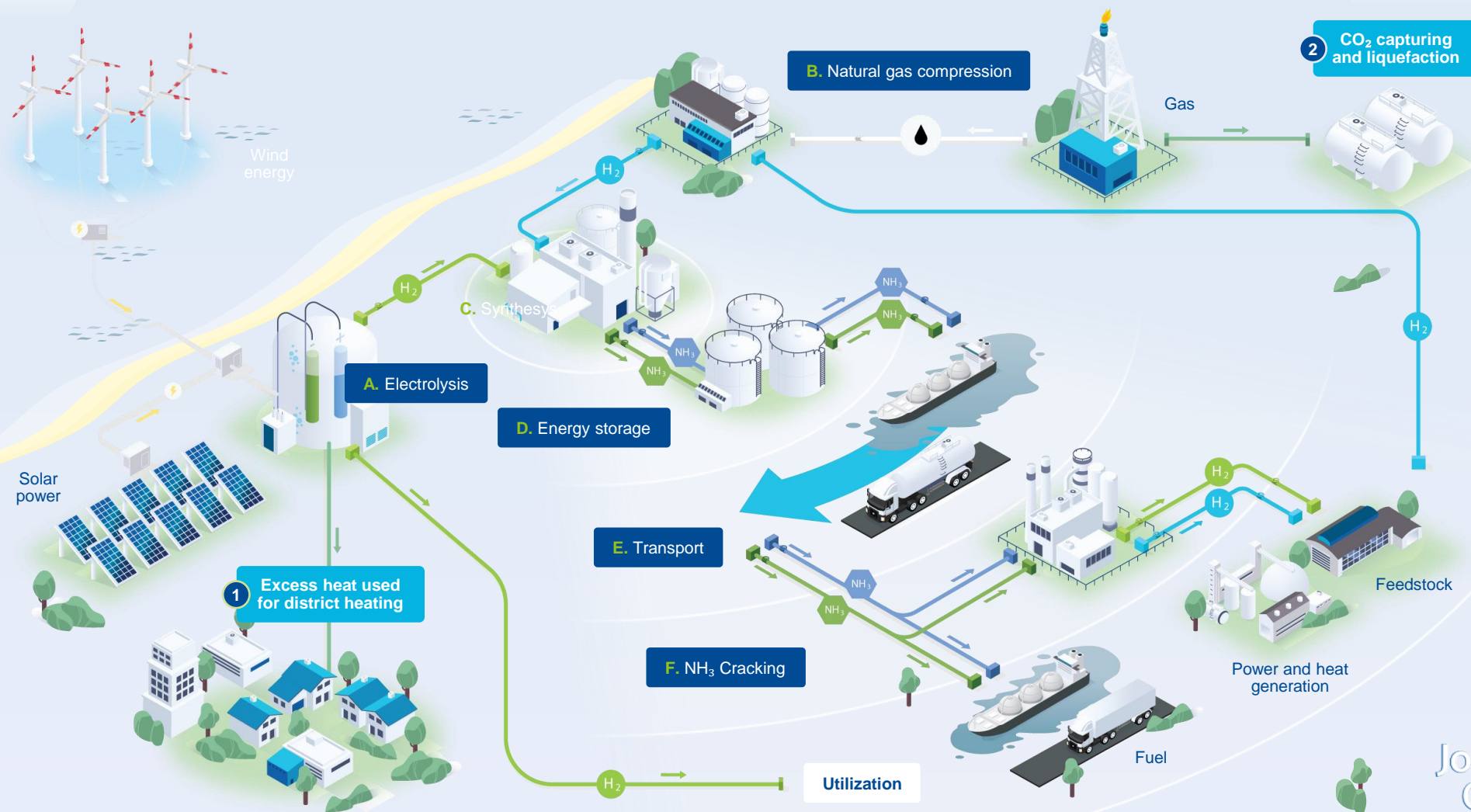
**Manufacturing
& Production**

(Predictive)
Maintenance & Field Services

**Installation
& Commissioning**



Solutions within green and blue hydrogen and the ammonia value chain.





1

Solutions for the storage and distribution of green ammonia



Estonia

Ammonia storage and handling plant

Challenge

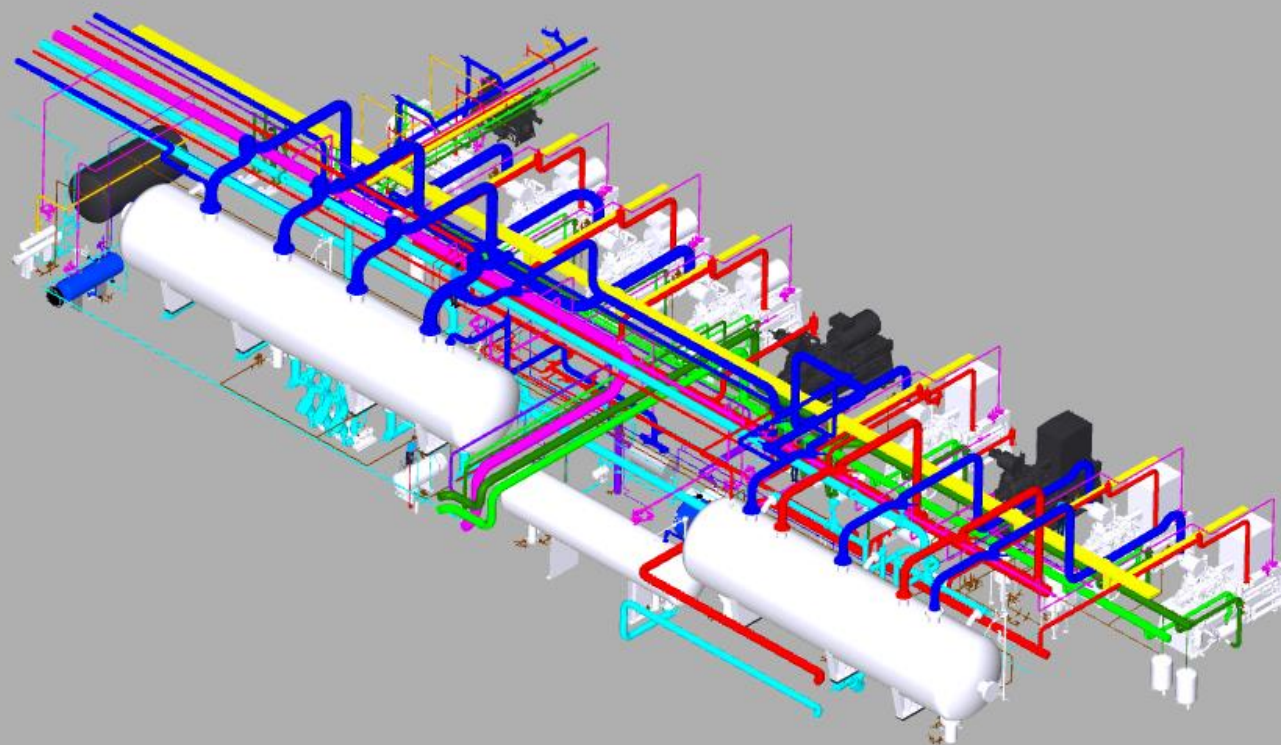
- Custom build installation for unloading the NH₃ rail wagons (240 tons/hr) and holding refrigeration unit (1.8 tons/hr)

Solutions

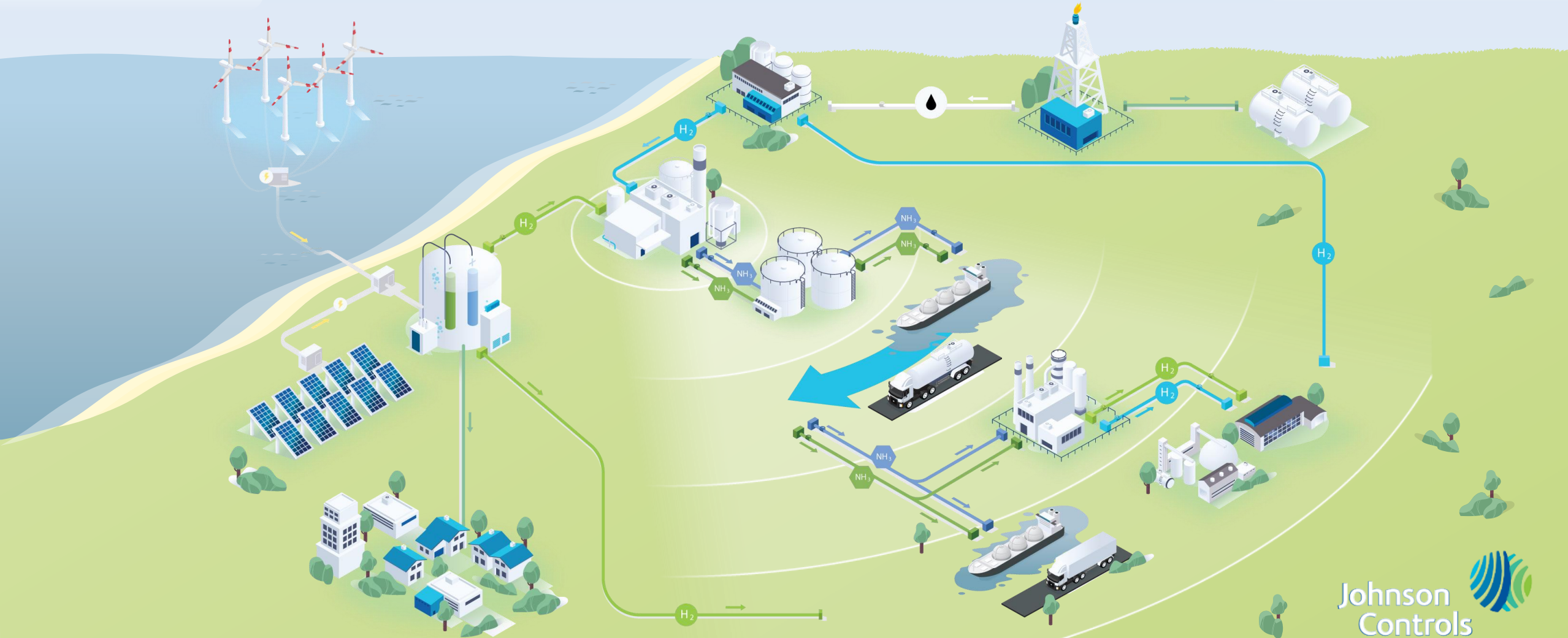
- Ammonia terminals and Boil-off gas (BOG) plants.







Solutions within green hydrogen and the ammonia value chain.





1

Solutions for the storage and distribution of green ammonia

2

Solutions for cooling processes of the electrolyzers



Rotterdam

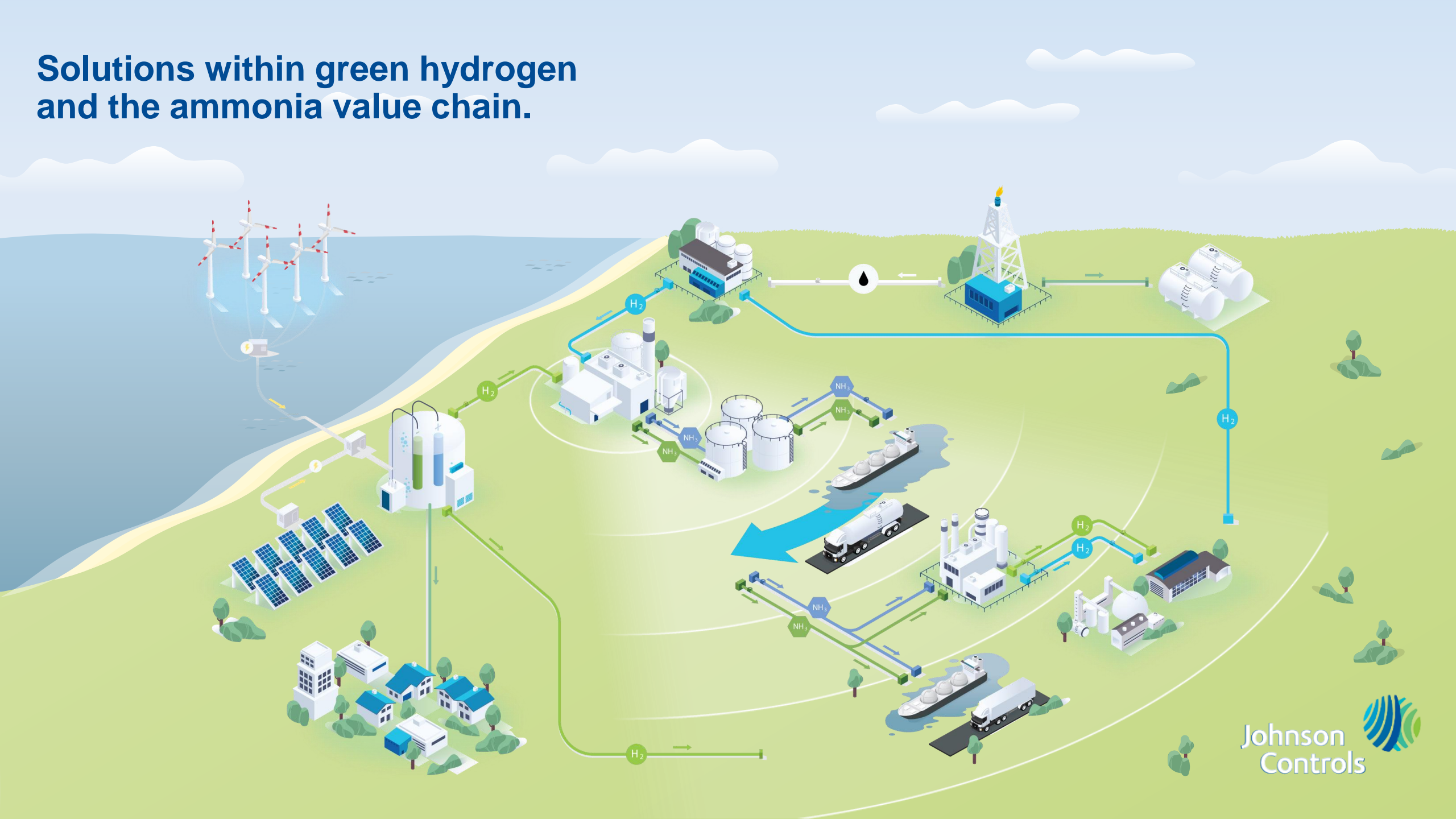
Cooling process of green hydrogen production

Solutions

- Design and realization of sustainable refrigeration solutions for safe cooling of electrical rooms and cabinets, controlling the hydrogen plant and electrolyzers



Solutions within green hydrogen and the ammonia value chain.





- 1 Solutions for the storage and distribution of green ammonia
- 2 Solutions for cooling processes of the electrolyzers
- 3 Solutions for the reuse of residual heat from the electrolyzer



Utrecht

Waste heat utilization

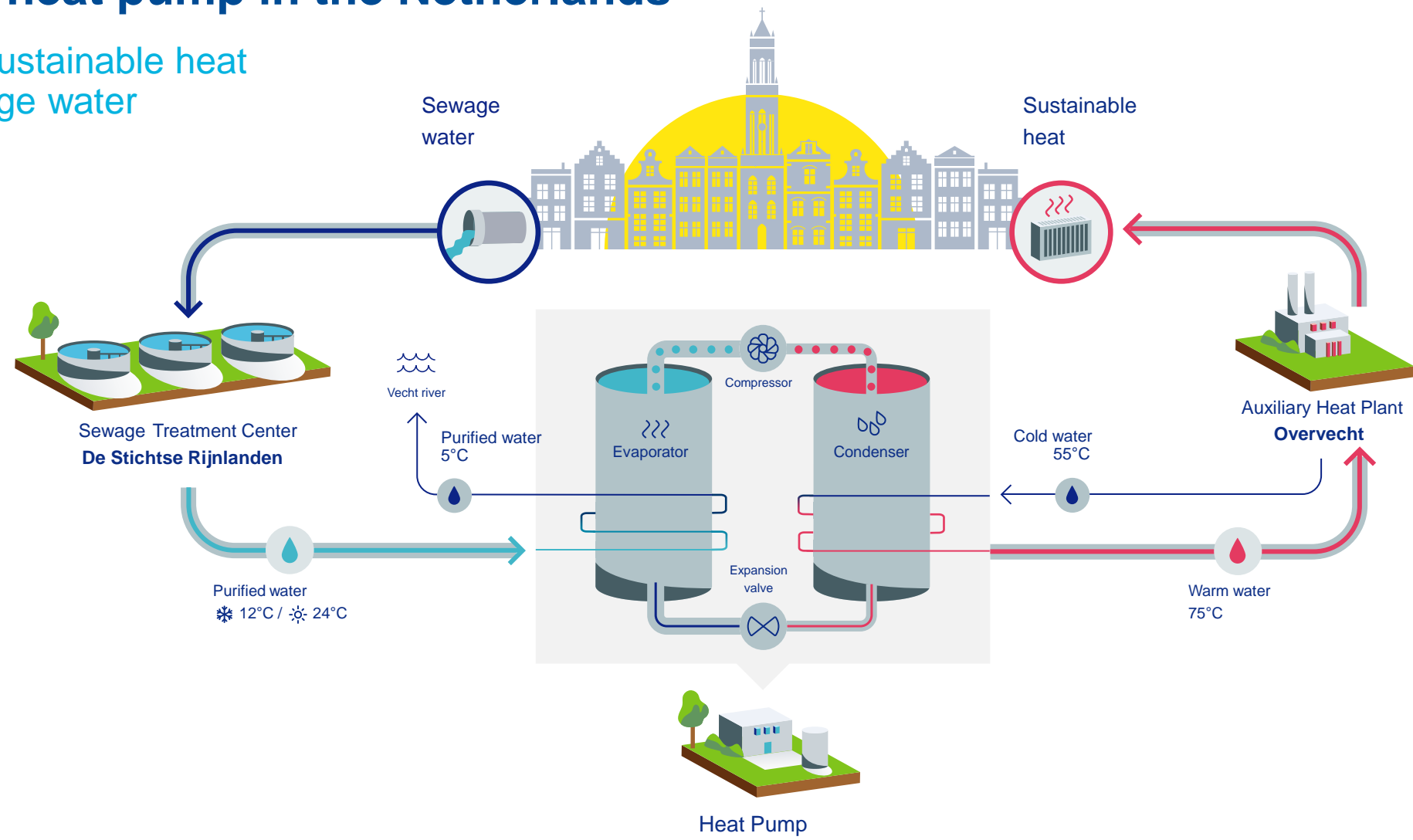
Solution

- Design and realization of a 27MW heat pump system, to utilize the residual heat, subtracted out of wastewater from a sewage treatment plant. The system will provide 20,000 households with sustainable heat.



Largest heat pump in the Netherlands

Supplies sustainable heat from sewage water

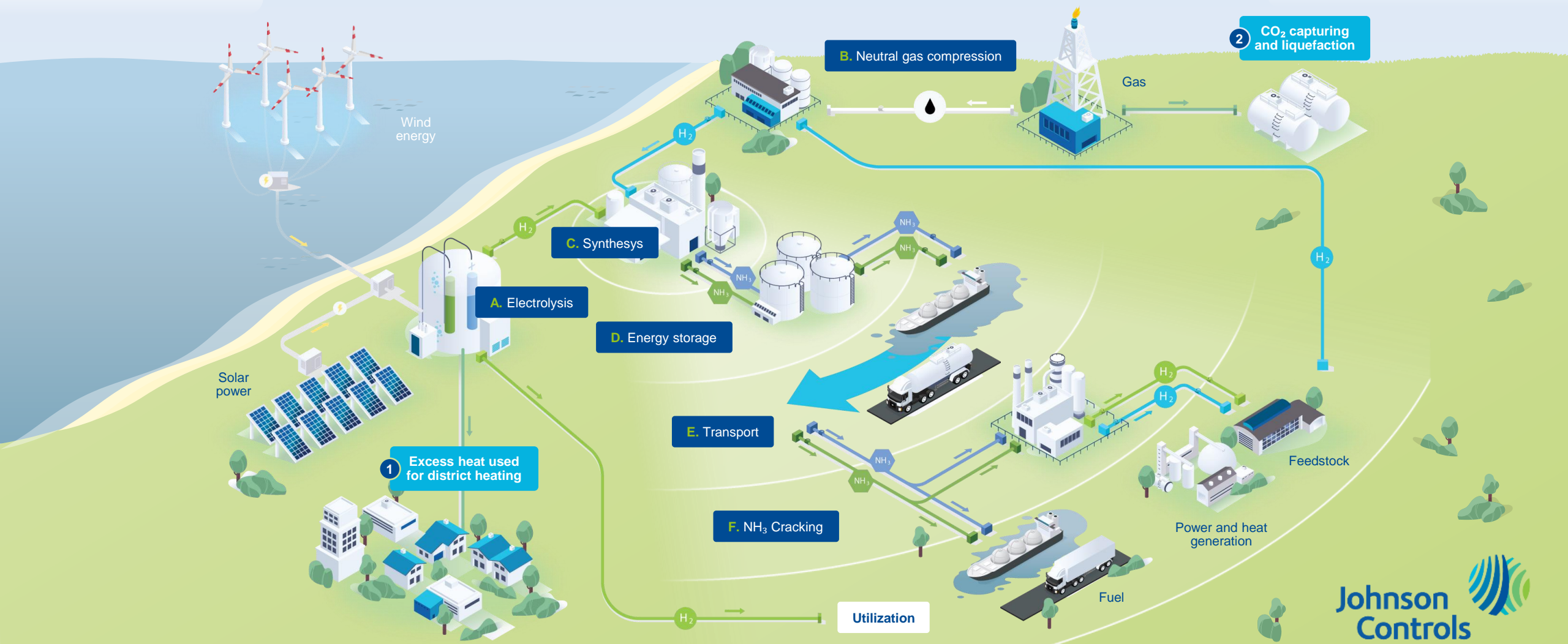


 Provides **10% of heat demand** in Utrecht

 Has a capacity of **27 megawatts** – the country's largest

 Supplies sustainable heat to approx. **20.000 households***

Solutions within green hydrogen and the ammonia value chain.





We are happy to support!

Feel free to request
our whitepaper!

