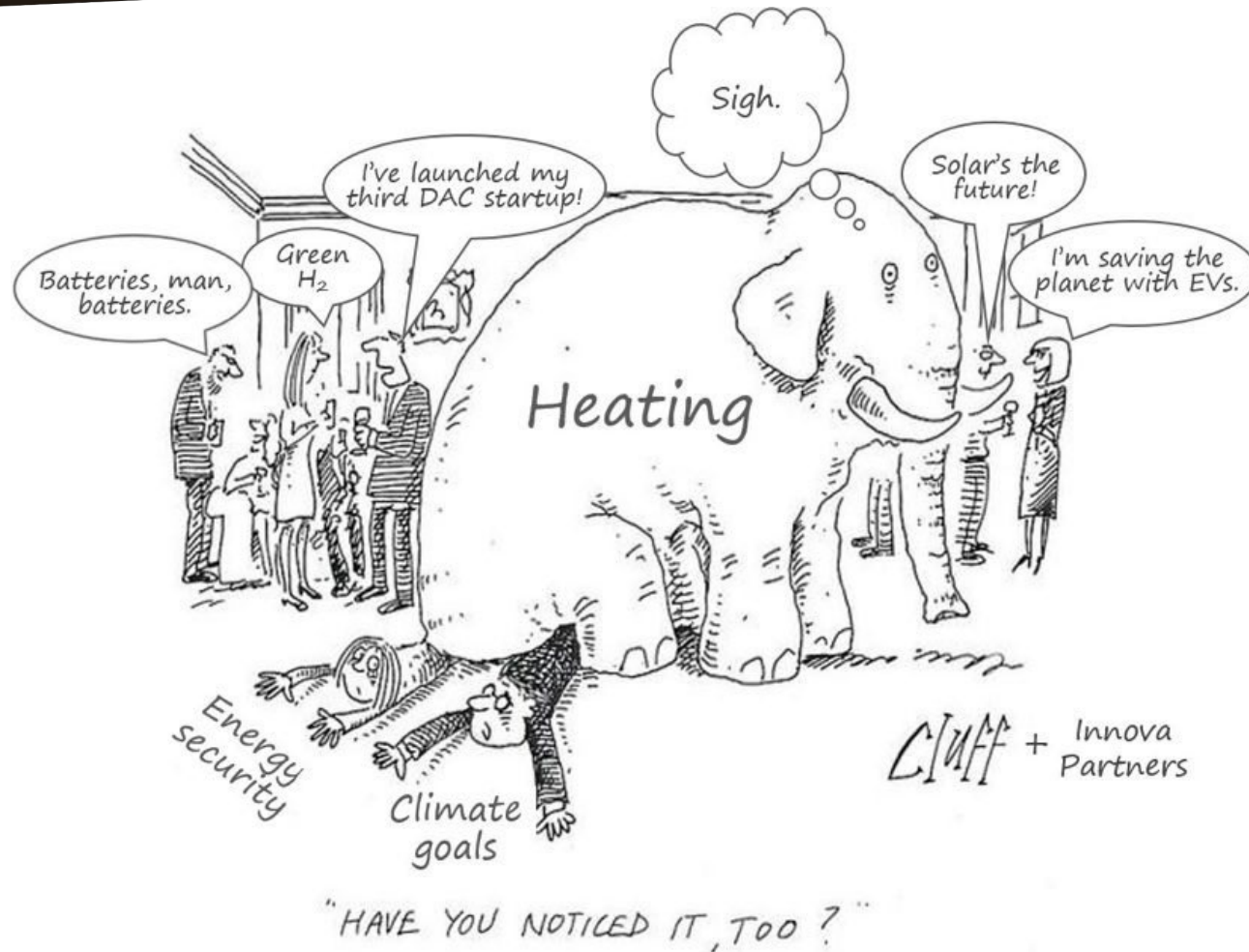
 KRAFT
BLOCK
Rethink Energy Storage

Decarbonisation of the industry



Green Process Heat – how to tackle that elephant



Overview Heat

- Process heat is responsible for 40% of the global emissions
- 75% of the energy in the industry is process heat
- Process heat is mainly produced by fossil fuels
- Kraftblock has developed an alternative solution for **green process heat**



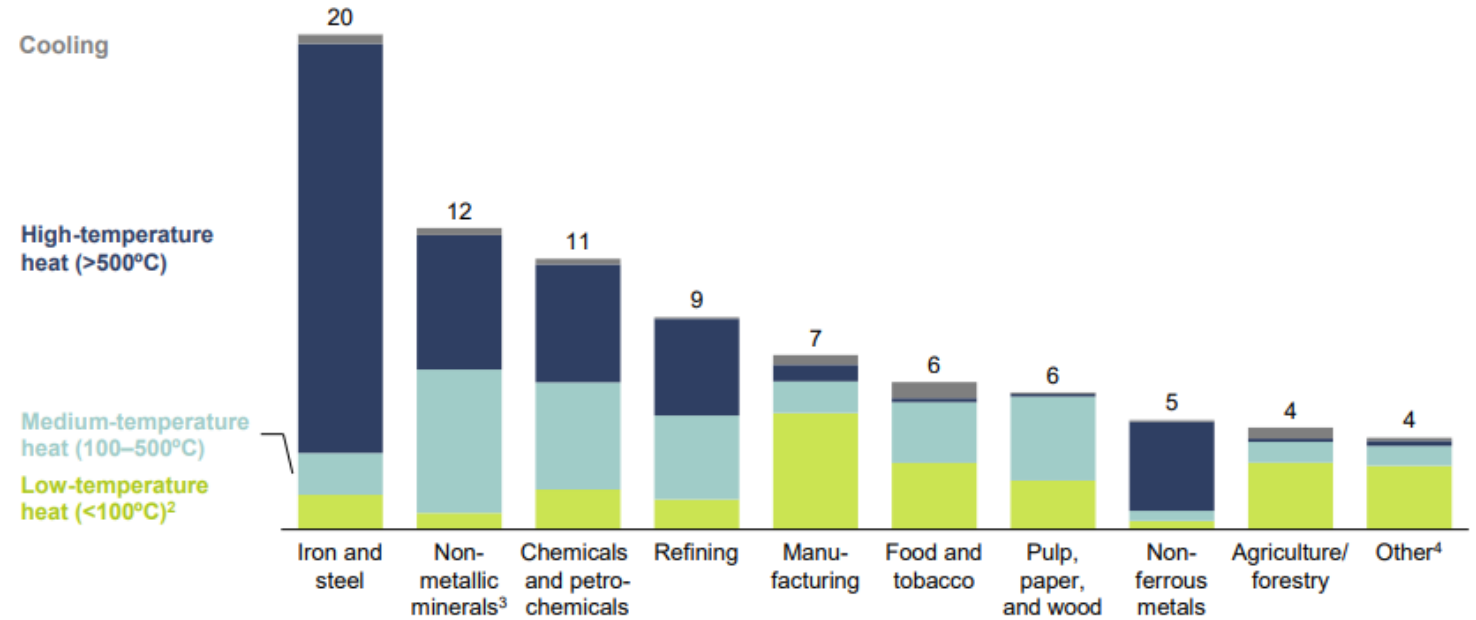
Context and Outlook

Total and tough

- High-temperature, hard-to-abate sectors
- Fossil-free process heat
- High temp waste heat utilization
- Integration in grid for relief
- New business models

Industrial energy consumption is concentrated in high-temperature applications

Global industrial final energy consumption by sector¹
Exajoules, 2019

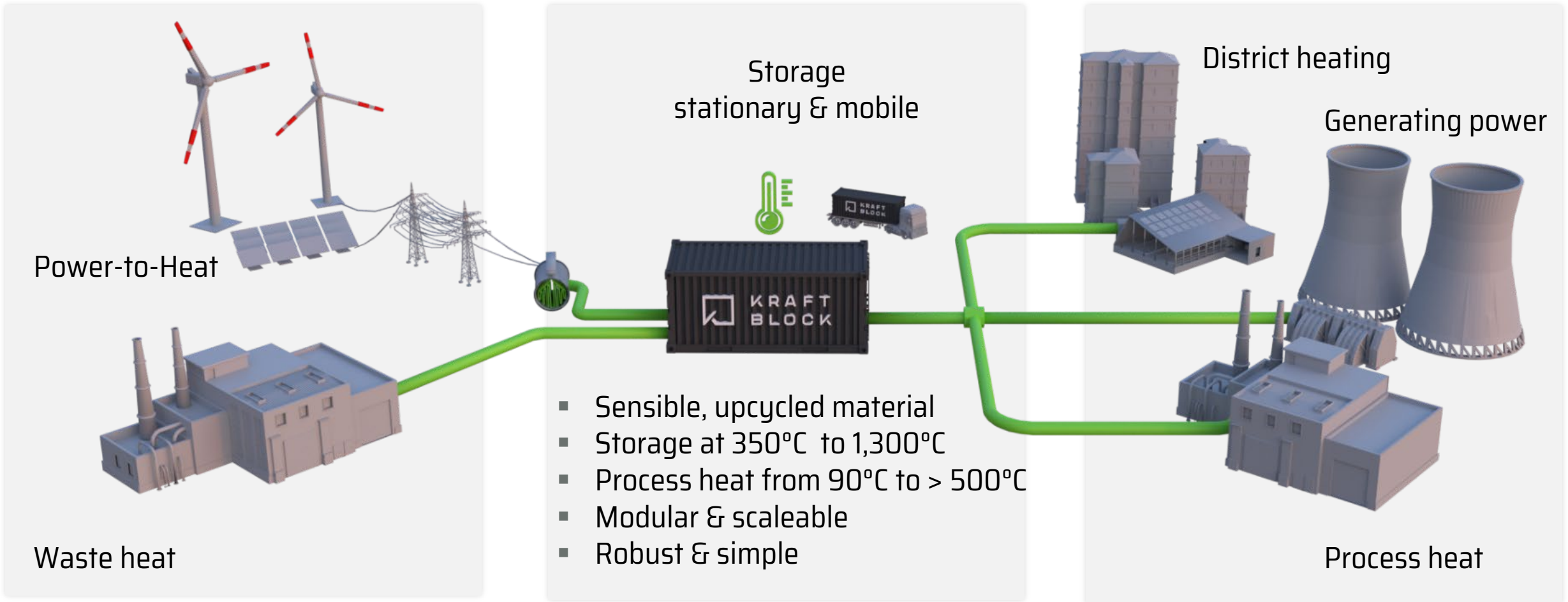


1. Excludes ~20 EJ of industrial final energy consumption due to insufficient reporting.
2. Includes hot water and space heating.
3. Includes ceramics, glass, and cement.
4. Includes energy industry own use.

Source: McKinsey Global Energy Perspective



Intro to technology - multifunctional





PepsiCo Projekt



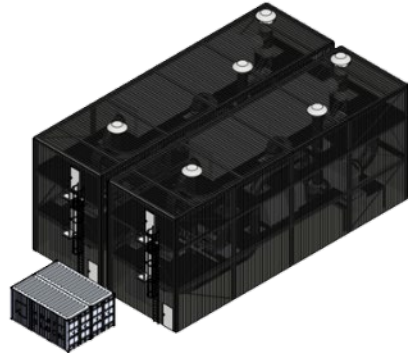
PEPSICO



- Snackshop in the Netherlands
- 1 mio chipsbags per day
- 8 european countries
- 24/7 frying process at 300°C
- Eneco engaged to serve with alternative energy source



PepsiCo project



2 units (70MWh)
—————→
under construction

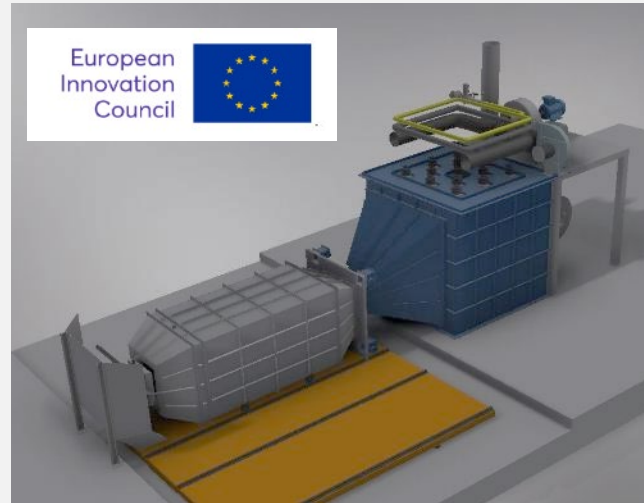
- Green power from **Eneco** is converted to 800°C heat.
- Kraftblock system realizes conversion, storage and heat transfer to thermal oil.
- Included is the worldwide largest commercial high-temperature storage (70 MWh respectively > 150MWh).
- Existing infrastructure is used, only gas-fired boiler is replaced.



- 25MW boiler is ,replaced‘
- 4.5m m³ natural gas saved
- 8,500t of CO₂ avoided in first step (2 out of 5 modules)
- 98% of emissions are avoided when project is finished



Recycling flare gas



- Using burned flare gases
- 100 GWh/a for reuse
- 9,300t of CO₂/a reduced
- Storage at 1,200°C
- **Under execution**

Unique energy source

- Steel, chemical, oil & gas, biogas industry
- Huge untapped potential of dozens of TWh in Europe





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