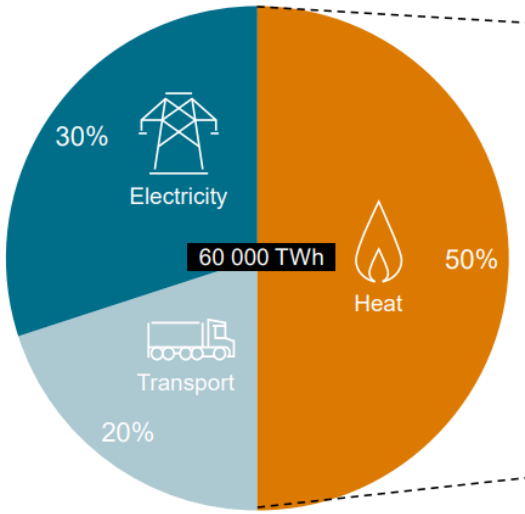
KRAFT
BLOCK

Thermische Speicher – Flexibilität für die Industrie

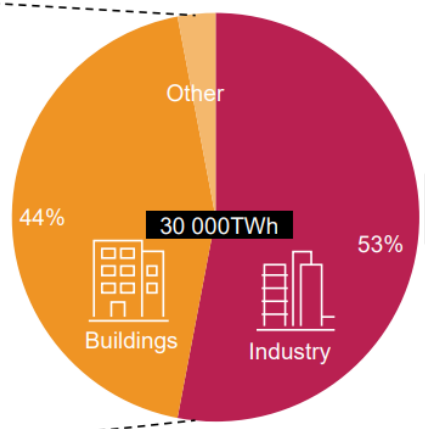
With Kraftblock’s thermal storage platform, industrial players gain full control over clean, high-temperature process heat — beyond fossil and grid dependency.

Industrial Heat is hard to decarbonize

Global energy demand by sector (% final energy consumption 2022)

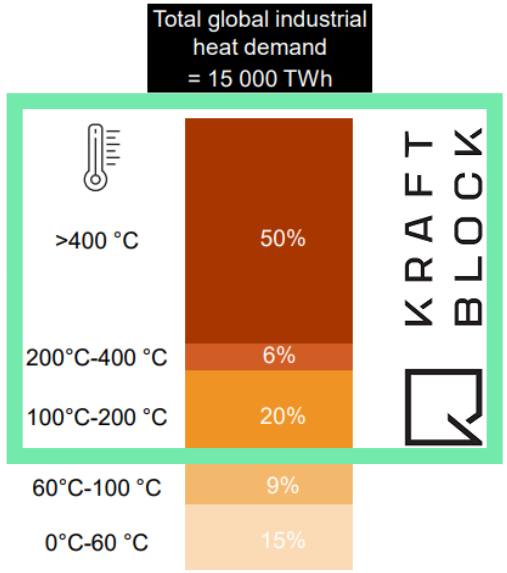


Global heat demand by sector 2022 (% final energy consumption)



Industry heat

Industrial heat demand by temperature (% final energy consumption 2022)



Note: Other = agriculture. Building heat is mostly < 100 °C.
Source: S&P Global Commodity Insights. International Energy Agency (IEA).

Heat is different

- Process heat makes up **~74% of industrial energy demand**
- Majority still comes from **fossil fuels** (gas, coal, oil)
- Electrification is complex without the ability to **store and control heat**
- Waste heat is often **unused or dumped** due to lack of storage

Reimagining Industrial Heat: Modular. Durable. Decarbonized

Company

Found:
2014

Team:
45 diverse &
multinational

Patents:
5 families
>70 patents

Language:
Megawatt

HTES System

- Storage platform up to 1,300°C
- Sustainable
- Modular & Scalable MWh - GWh
- Durable >30years
- Excellent Economics

Our Team

CEO
Martin Schichtel

CEA
Susanne König

CFO
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CCO
Florent Baudu

COO
Christian Gebhardt

VP Eng
Karsten Dieckhoff

From Lab to Industry: Proven & Scalable

2014

Technology development

Developing a sustainable and high-efficient storage material for high-temperatures.

2019

POC stationary in operations (TRL 7)

Installing the first proof of concept with 4.2 MWh capacity at a German ceramic manufacturer.

2020

POC mobile in operations (TRL 6)

Proving the first mobile appliaction with a CHP operator in Germany to replace gas with waste heat.

2024

TATA STEEL

20 MWh, gross in operations (TRL 8)

Commercial project in Steel industry to improve efficiency in a sinter plant. Fast payback time.

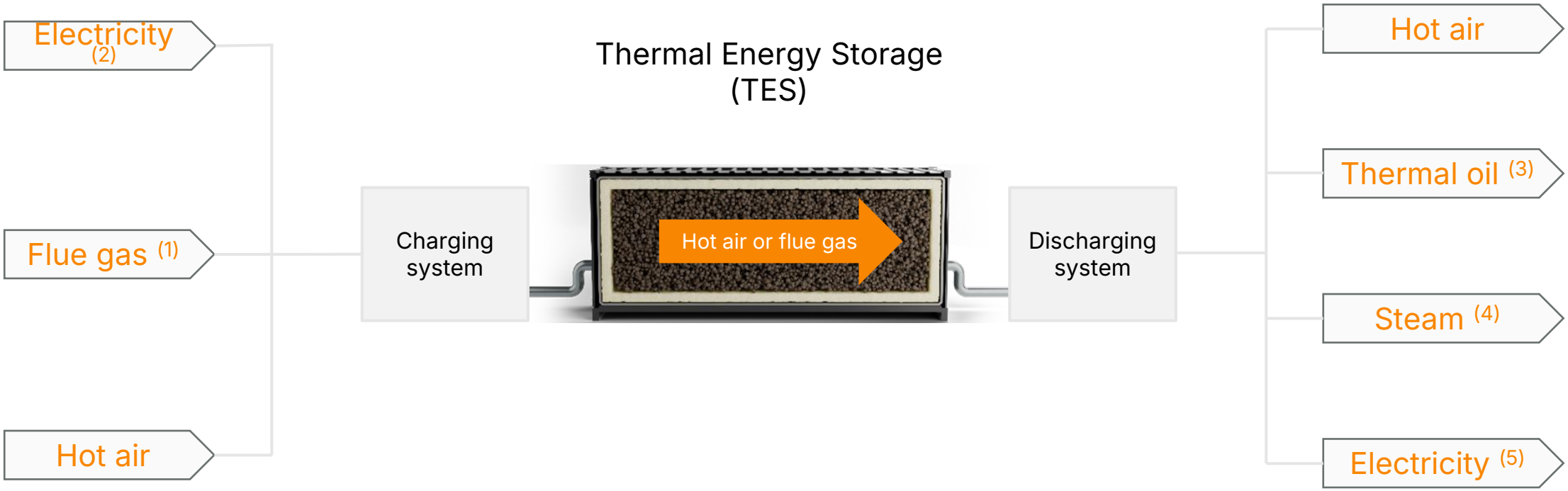
Finished 2025

Eneco PEPSICO

70 MWh / 150MWh under execution

Replacing natural gas completely at a PepsiCo food factory. Using renewable electricity as source.

Kraftblock Thermal Storage: Decouple, Decarbonize, De-Risk



(1) Pollutant (dust) to be checked
(2) PtH module required

(3) Specific heat exchanger required
(4) Steam generator required
(5) turbine required

HTES– Ready for TODAY

	Food&Bev.	Pharma	Pulp&Paper	Chemical	Glass	Cement	Aluminium	Steel
Calcination			✓	✓		✓	✓	✓
Bonding				✓	✓		✓	✓
Drying	✓	✓	✓	✓	✓	✓	✓	✓
Fluid Heating	✓	✓	✓	✓				
Heat treating					✓		✓	✓
Metal/glas melting					✓		✓	✓
Steam generation	✓	✓	✓	✓			✓	✓

electrification

Waste heat

KRAFT BLOCK

Storage innovation Kraftblock

Kraftblock can be charged by Waste-Heat, Electricity or CSP

Sustainable Material

Upcycled up to 85% (slags)

Tested for >**15,000 cycles**

Low carbon & energetic footprint. Fully recycáble

Storage Temp.: **<1,300°C**
(potential up to 2,000°C)

Sustainable and scalable thermal energy storage

Patented System
(5families,
>70patents)

Modular setup

Single unit: 20`` container (up to 12MWh capacity)

Scalable on 20`` container basis

High flexibility in setup/ design & operations

Discharging to steam (hp, lp between 125°C and 600°C), to thermal oil (up to 420°C) or hot air (up to 800°C)

Standard-Deployment

Premanufactured Modules

Storage containers are premanu-factured (single units, half- or quartershells) and get assembeled on
site. All units are based on a 6m-design and modular scalable.

Fílling Storage Material

Second step is filling the storage-material into the storage units as well as sealing the storage (incl. test on leakage and performance of insulation system)

Connect to Components

The Kraftblock storage then gets connected to the remaining units,
i.e thermal oil system of the customer, steam generator or hot-air system (integration)

Standard-Products

Size S

Capacity: up to 12MWh
Charge: up to 10MW
Discharge: up to 5MW

Footprint: 20ft. containers

Size M

Capacity: up to 150MWh
Charge: up to 50MW
Discharge: up to 25MW

Footprint: multiple 40ft.

Size X

Capacity: up to 300MWh
Charge: up to 150MW
Discharge: up to 50MW

Footprint: individual

KRAFT BLOCK

What Sets Us Apart?

Feature	Kraftblock	Conventional Systems
Max. Temperature	1,300°C	400-600°C
Modularity	☑	✗ (limited)
Scalable	☑	Often fixed
Flexible Design	☑	✗ (limited)
Independent Sizing	☑	✗
Bypass Capability	☑	Rare
Upgrades (adding Modules storage and/or components)	☑	✗

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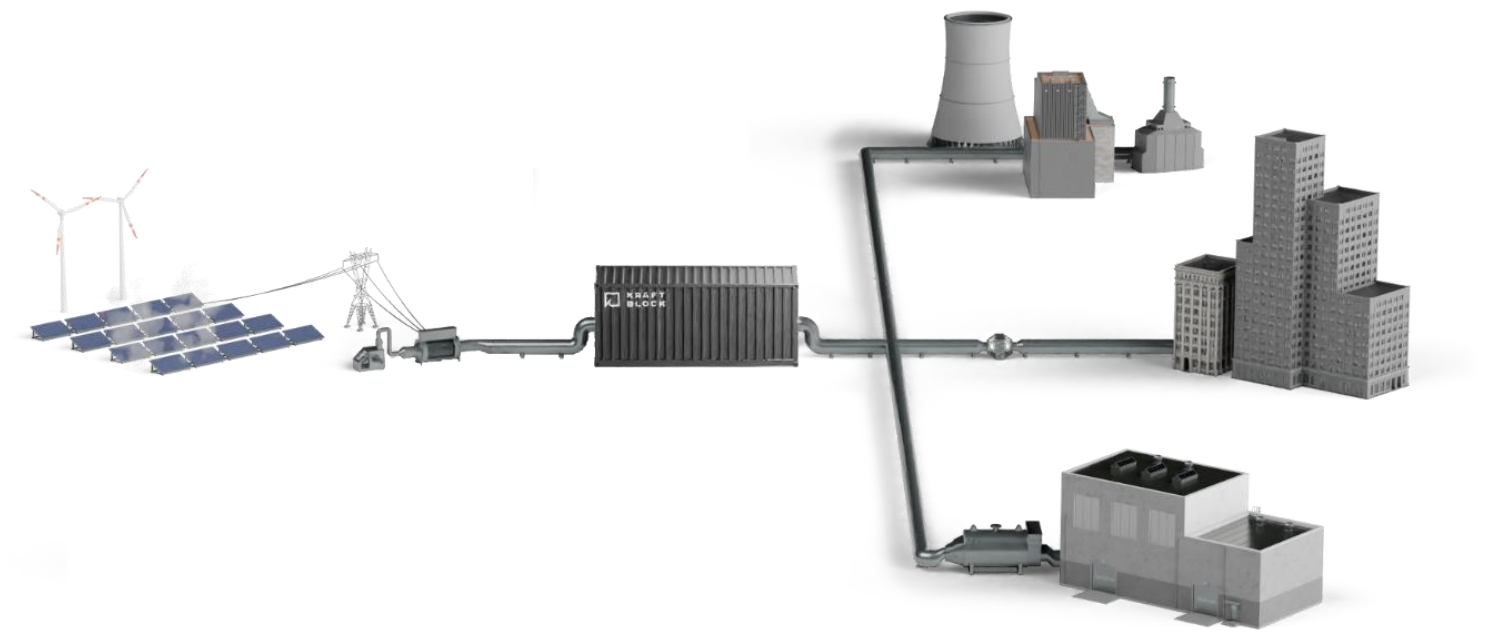
Net-Zero-Heat System

The Bridge between Renewables and Industrial Heat

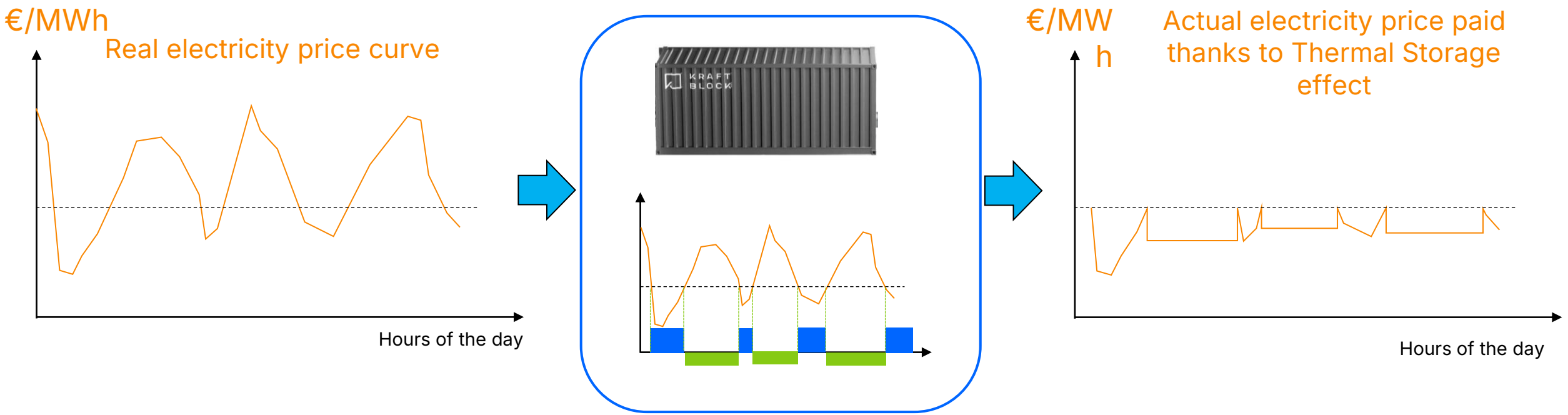


Krafblock TES Platform enables:

- **Conversion of electricity to stored heat** (Power-to-Heat)
- Store up to **1300°C** and discharge at each level below
- Flexible output: **hot air, steam, thermal oil**
- **Load-shifting & peak shaving** for grid optimization

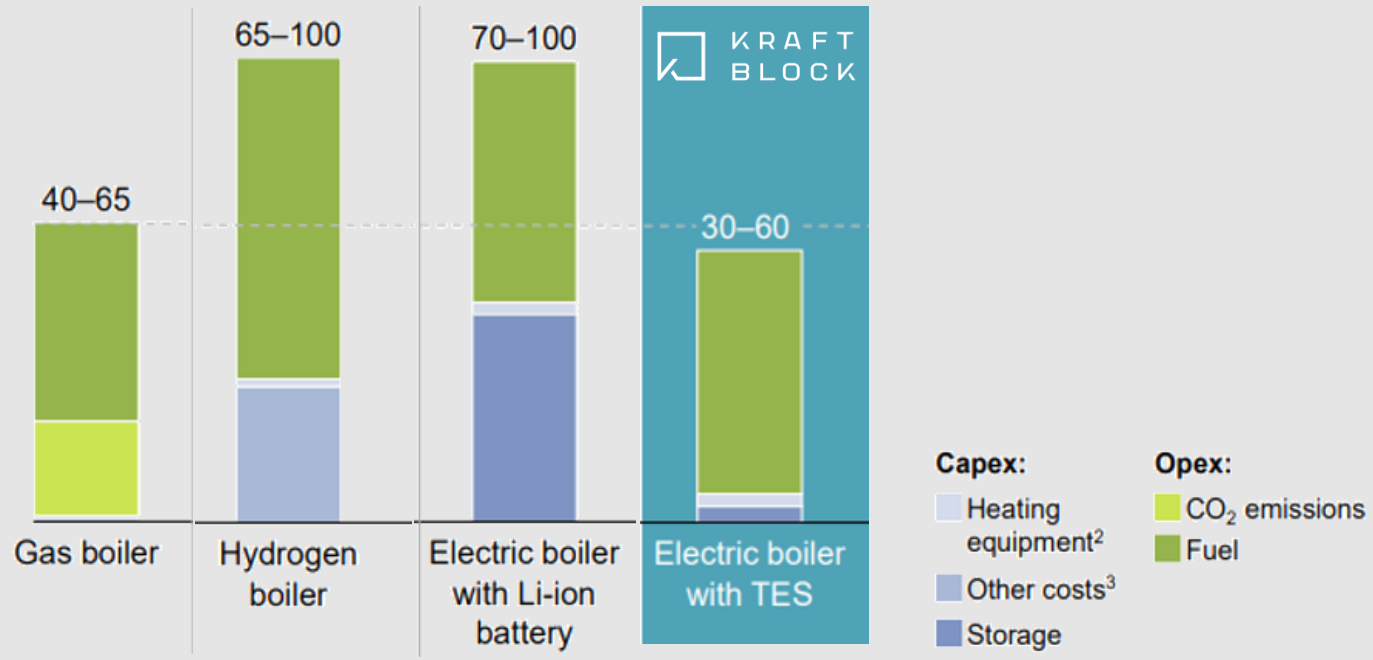
Typical user cases : Power to Heat

Prices of electricity endured without TESS → Benefit of the Thermal Storage → Prices of electricity optimized with TESS



Decarbonization without Disruption

Levelized Costs of Steam [US$/MWh] in dependecy of the heat generation

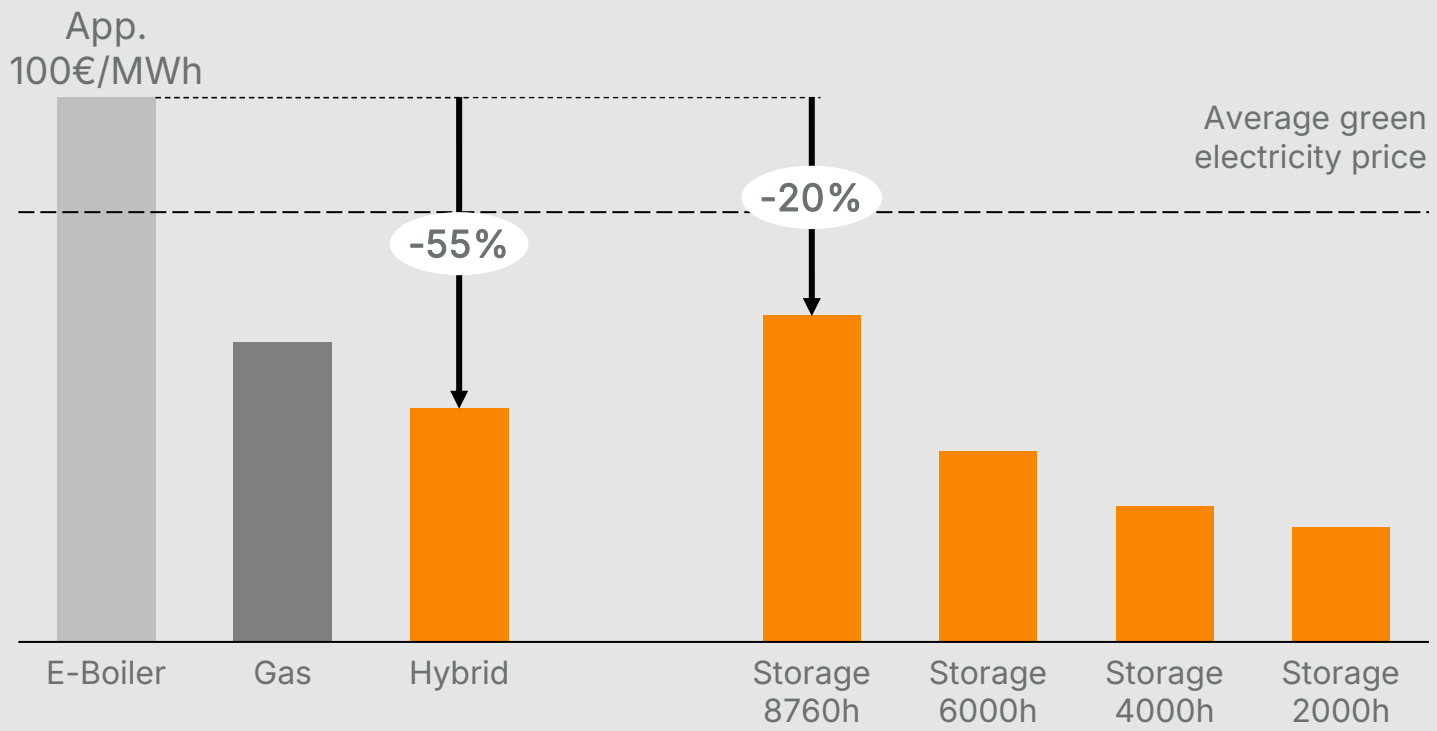


Krafblock TES Platform enables:

- **Clean heat**, same or even better performance
- Integrates with existing processes
- **Low LCOH** (Levelized Cost of Heat) using dynamic pricing
- Emission reductions up to **100%** (depending on electricity mix)

E-Boilers are Rigid. Storage is Smart – let's Start Hybrid

Marginal Cost of Steam €/MWh



Assumptions
TCO over 15years, app.80% reduced grid fees due to atypical grid usage, additional value by participation in flex-market

Additional potential

Combination with heat pumps

Combination with direct electrification

Upgrade-options
(add more pth and/or storage modules)

PepsiCo Project

PEPSICO

- Broek op Langedijk, NL
- 1 million bags of chips everyday
- For eight European countries
- Almost every emission in Scope 1 is burning gas for frying 24/7

Volt Project

PEPSICO

Eneco

First stage:

- App. 4.5 million m³ gas saved
- App. 8,500t of CO_2 avoided
- App. 50% of emissions are avoided

KRAFT BLOCK

Waste Heat Recycling System

Typical user cases : Waste Heat Valorisation

Offgas potentials

- Batch process with Heat generated
- Unstable heat generating process
- Waste heat

Process stabilization
Heat valorization
Process efficiency improvment

Reuse benefits

- Valorization of Heat in another process where heat demand not simultaneous with heat availability
- Stabilization of heat supply (improved efficiency of downstream process)
- Waste heat valorization

Tata Steel

TATA STEEL

- Installed
- Capacity: 20 MWh
- Very fast payback
- 2% energy efficiency boost of sinter plant
- Location: Jamshedpur, India

About the project

- Collecting waste heat from the sinter plant
- Operation: Sintering
- Application: NDA
- 30,000t of CO_2 per year reduced

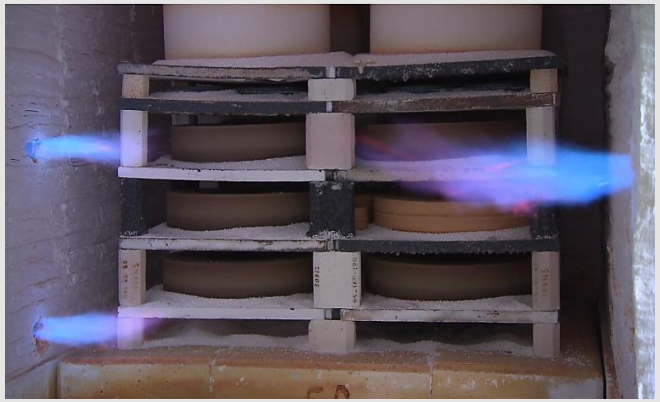
Comet Schleiftechnik

COMET
Made for Perfection

Manufacturer of technical Ceramics (abrasive disks)

- Installed: 2020
- Capacity: 4.2 MWh
- Charging/Discharging: max. 300kw
- Location: St. Ingbert, Germany
- Savings: 330t CO_2/year

About the project



- Collecting waste heat from a gas-fired kiln and preheating the kiln on various occasions
- Replicable in many batch processes

BUHCK: Making heat mobile

Mobile Storage

Kraftblock on a truck

buhck GRUPPE

Waste recycler

- Installing: 2021 (Summer)
- Capacity: 1.5 MWh
- Charging/Discharging: < 300kW
- Location: Hamburg, Germany

About the Project

- Recovering waste heat from a CHP in Hamburg
- Operation: Batch process
- Application: Substituting fossil fuels in industries, for construction drying, and more

Contact

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