



# **Heat Decarbonization Unlocked by Disruptive Thermal Storage technology**



Investor deck  
July 2021

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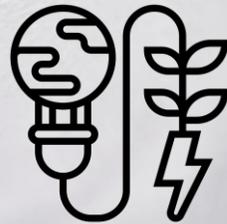
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# THE PERFECT STORM

**THE RIGHT  
TIME**



**THE RIGHT  
COMPANY**



**THE RIGHT  
TECHNOLOGY**

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## AT A GLANCE

**2012**

Founded

**>\$80M**

Invested in the company

**~100**

Employees

**4**

Pilots in US, Brasil, Italy and Israel



**2017**

IPO on TASE

**PATENTED**



## OUR PARTNERS



Israel Electric



## INVESTORS

Rani Zim



בית השקעות



מיטב דש

Avi Brenmiller

# OUR LEADERSHIP



**Avi Brenmiller, Founder,  
CEO & President**

Former CEO of Siemens CSP and Solel, and proud leader of the engineering team that developed bGen's novel technology, since 2012. Winner of "CEO of the Year for Small High-tech Companies" in 2007

# OUR TEAM OF PROFESSIONALS



**Mr. Eli Lipman**  
VP R&D.



**Mr. Rami Ezer**  
VP Eng.



**Mr. Avi Sasson,**  
VP Operations.



**Mr. Gilad Walker,**  
VP Projects.



**Mr. Nir Brenmiller**  
EVP Operations & Finance,  
Member of the Board.



**Mr. Doron Brenmiller**  
EVP Business & Sales,  
Member of the Board.



**Ophir Zimmerman**  
CFO.

# OUR LEADERSHIP



## **Reinaldo Garcia**

Reinaldo has served for more than 35 years in a number of global leadership roles at General Electric Company. He has a diverse background in general management, sales, services, product development, supply chain and finance. Throughout his extensive multi-industry experience, Reinaldo was known to drive important business transformation and deliver significant results. During his GE career, he has been based in the U.S., UK, France and Brazil.

### **Reinaldo's most recent leadership roles:**

- President & CEO, GE Grid Solutions, Paris, France (2016-2020)
- President & CEO, GE Latin America, Sao Paulo, Brazil (2011-2015)
- President & CEO, GE Healthcare International, Paris, France (2006-2011)

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# 2021 IS A TURNING POINT IN THE FIGHT AGAINST GLOBAL WARMING WITH SIGNIFICANT CARBON TAX AND REGULATION

**Biden's budget proposal calls for more than \$36 billion to fight climate change**

PUBLISHED FRI, MAY 28 2021-1:30 PM EDT | UPDATED FRI, MAY 28 2021-1:34 PM EDT

**EU to unveil new renewables targets, tax rules and carbon border adjustment this summer**

Europe and US push aggressive economic incentives to meet emission reduction targets.

**Eco-friendliness has evolved from “nice to have” to a financial growth engine**

Source: <https://www.cnn.com/2021/05/28/bidens-budget-proposal-calls-for-36-billion-to-fight-climate-change.html>

Source: <https://www.rechargenews.com/energy-transition/eu-to-unveil-new-renewables-targets-tax-rules-and-carbon-border-adjustment-this-summer/2-1-1015377>

Source: [www.whitehouse.gov](http://www.whitehouse.gov)

# Net Zero 2050

IEA released a detailed report on how to reach zero emissions in 2050, with practical steps in regulation, taxation, incentives and more. More and more countries and companies are joining the initiative.

SUSTAINABILITY

## Facebook Joins EU Climate Pact

The company is targeting 100% renewable energy and net zero emissions by 2030

## PepsiCo Pledges Net Zero Emissions by 2040

JANUARY 15, 2021 BY EMILY HOLBROOK

## Net Zero: Net-zero emissions targets become law in the EU

By iPolitics. Published on Jun 28, 2021 10:59am

Green

## U.K. Targets Gas in Next Fight Against Fossil Fuel Pollution

By Rachel Morison, Will Mathis, and Jess Shankleman

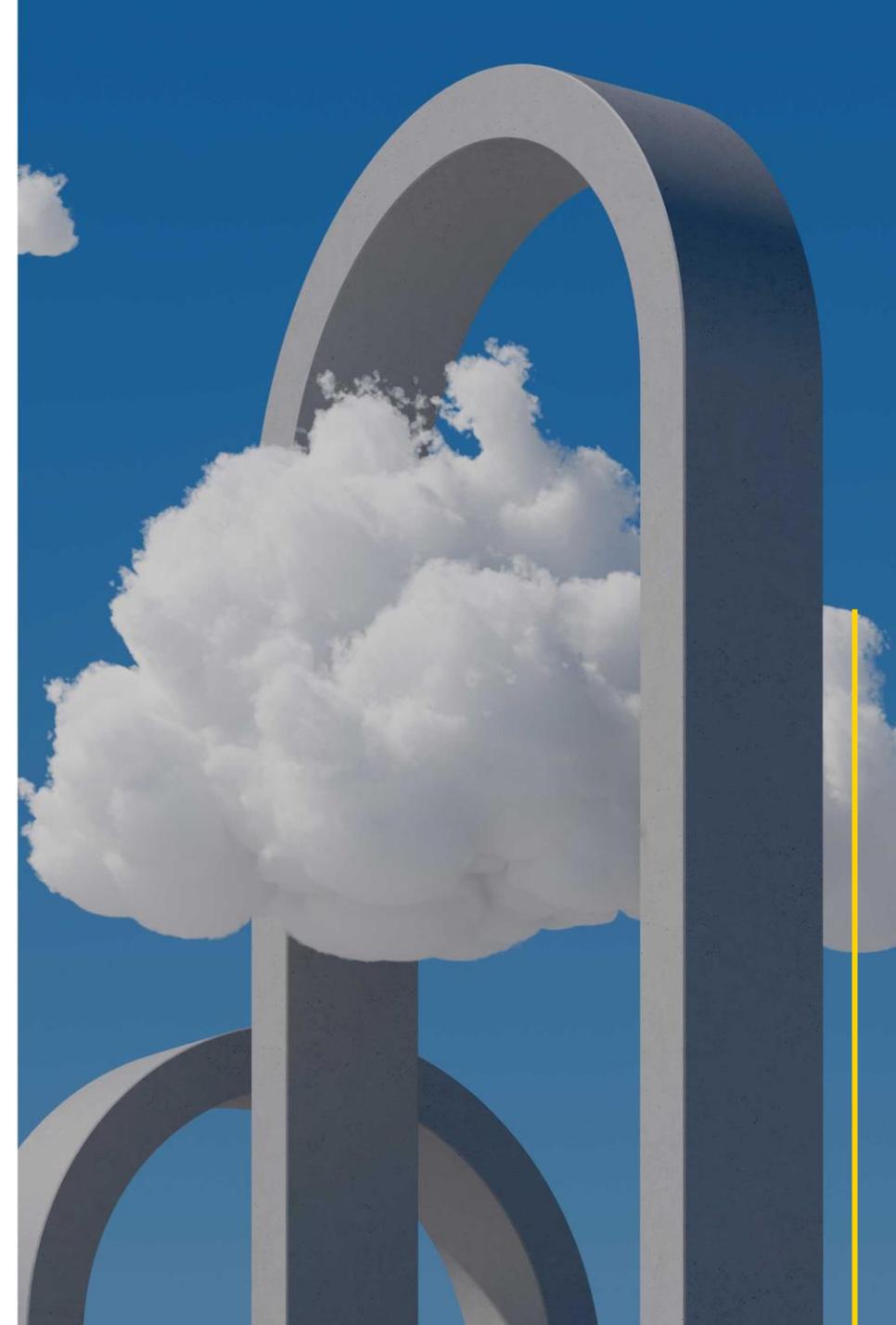
### Sources:

<https://www.bloomberg.com/news/articles/2020-12-14/u-k-targets-gas-in-next-fight-against-fossil-fuel-pollution>

<https://www.adweek.com/media/facebook-joins-eu-climate-pact/>

<https://www.environmentalleader.com/2021/01/pepsico-pledges-net-zero-emissions-by-2040/>

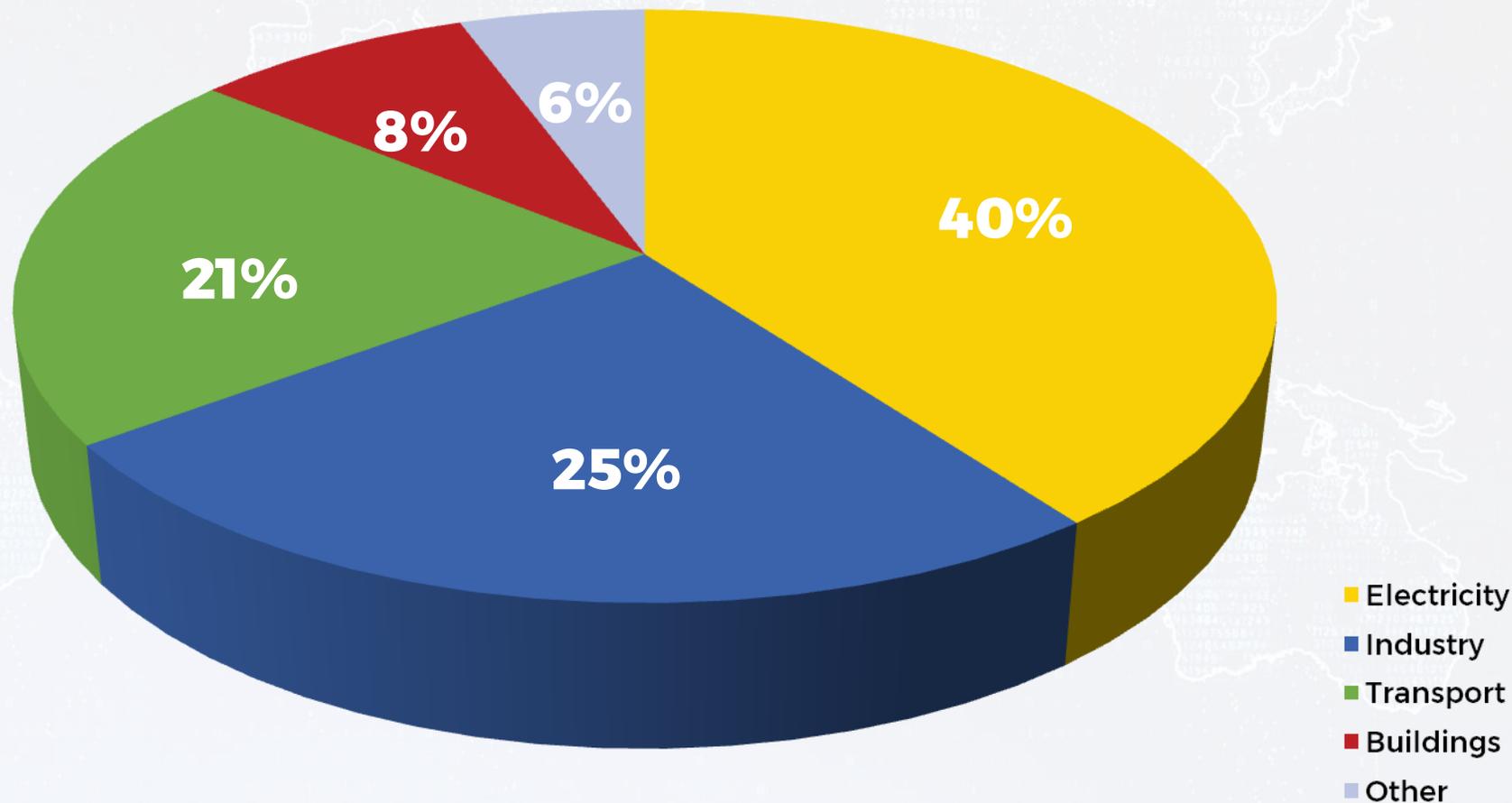
<https://ipolitics.ca/2021/06/28/net-zero-net-zero-emissions-targets-become-law-in-the-eu/>



# CO<sub>2</sub> Emissions in 2020

65% of emissions come from electricity generation and industrial facilities.

**Our target markets are thermal power plants and industrial heat.**



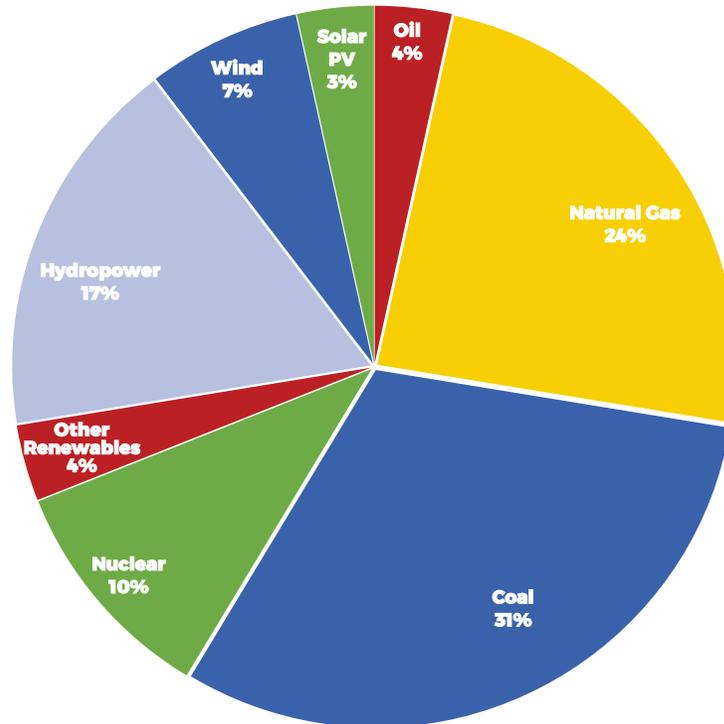
# The Electricity Market



Most of the electricity in the world is produced from fossil fuels, and will remain dominant for the next decades



To increase the percentage of electricity generated from renewable energies, thermal plants need to become more flexible.



**We provide a thermal storage solution that makes power plants more flexible**

- Enabling renewable integration through electrification
- Shifting energy from low tide to peak hours
- Shortening the ramp-up of the plants
- Reducing breakage and wear of plants equipment as a result of increased number of start-ups and shutdowns

**THE RESULT: A fast and safe transition to renewable energies**



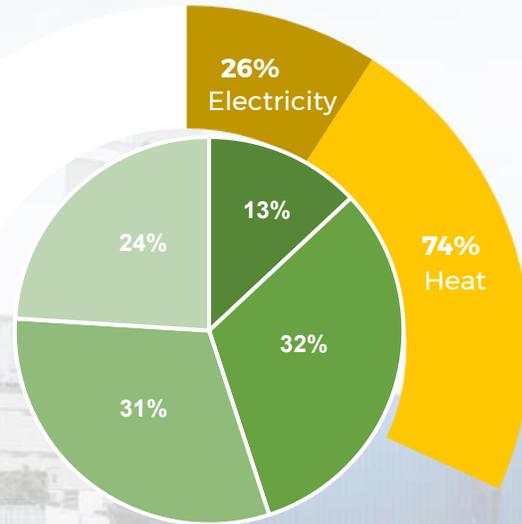
# Industrial Heat Market

## Global Energy Consumption

Industrial Heat accounts for

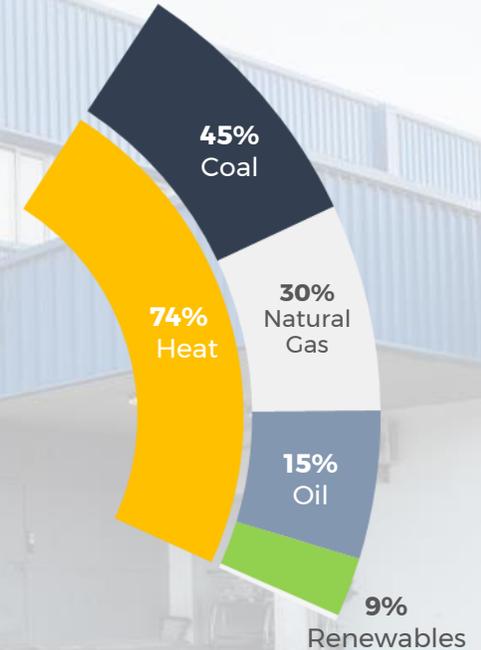
**1/4**

of global energy consumption



■ Other ■ Industry ■ Transport ■ Residential

## Industrial Heat is heavily based on fossil fuels



Approximately 75% of industrial energy is thermal, 90% of which is based on fossil fuels, as they are easily available, flexible and do not rely on solar or aeolic energy.



### Decarbonizing solutions:

- Electrifying the heat
- Increasing efficiency
- Shifting to clean fuels



### We make industrial heat cleaner

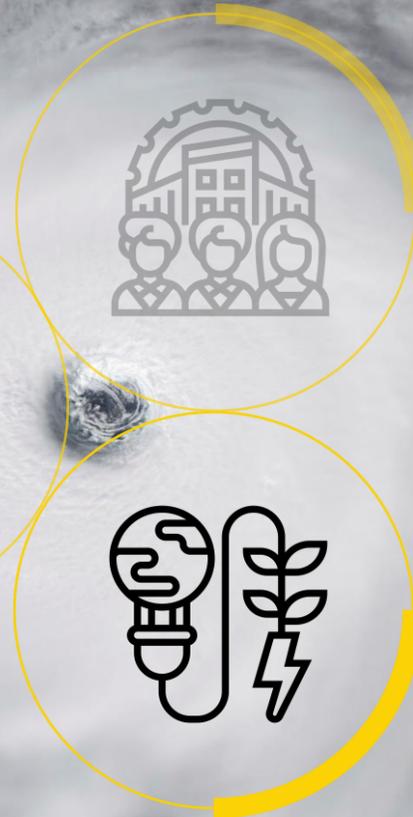
- Electric charging based on renewables during off-peak hours
- Heat recovery from generators and plant processes
- Shift to flexible biomass



Thermal storage is key for integrating renewables

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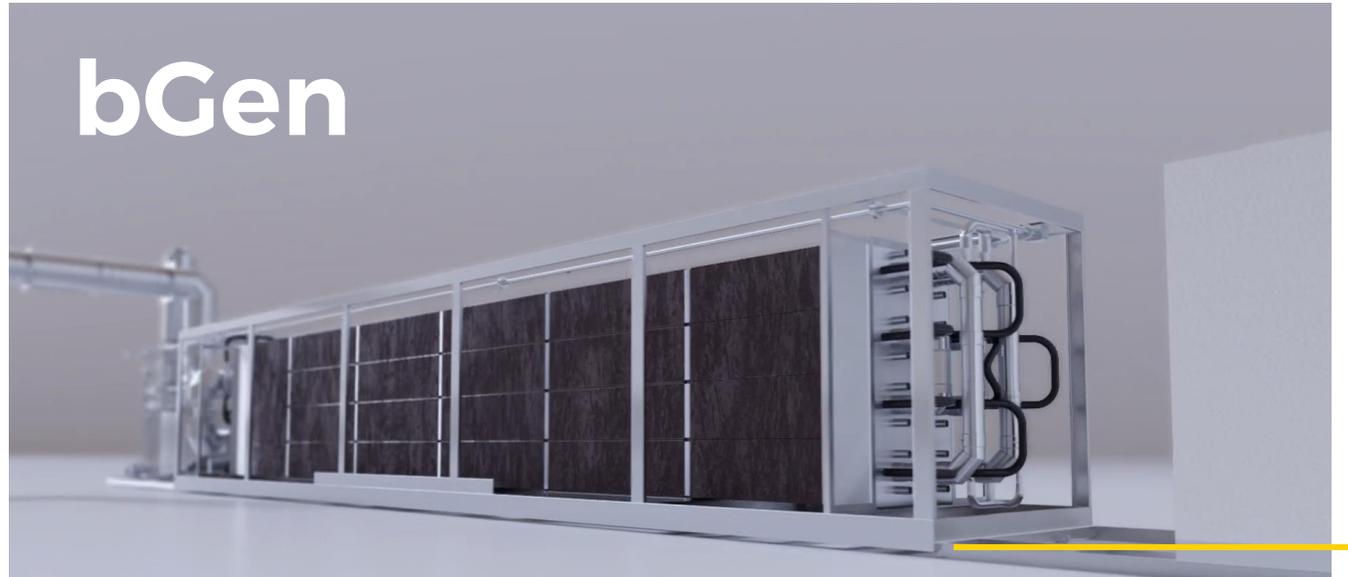
# OUR TECHNOLOGY

**BRENMILLER ENERGY**  
THERMAL ENERGY STORAGE



A patented heat battery based on natural crushed rocks, that creates a durable, inexpensive thermal storage solution with unlimited cycles, **enabling the transition from fossil fuels to clean energies**

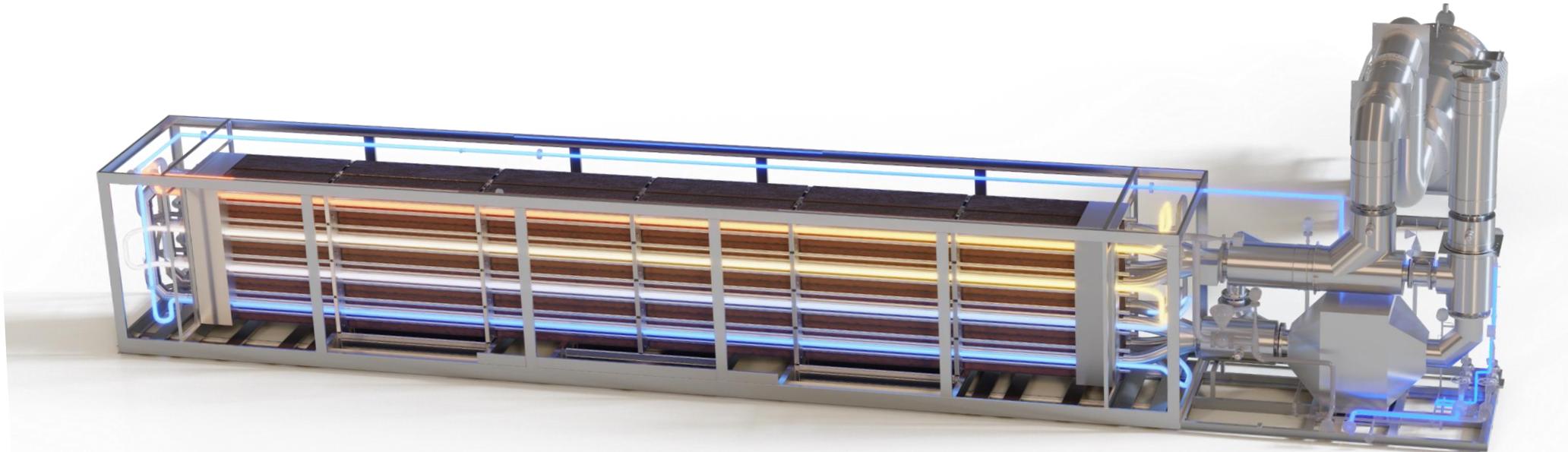
**bGen**



# Technology



-  Thermal Storage
-  Heat Exchanger
-  Steam Generator



Clean



1MWh-1000MWh



30+ Years

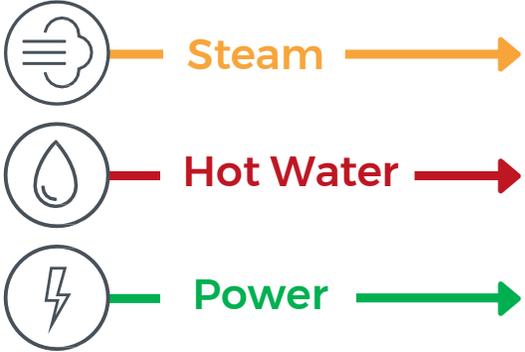
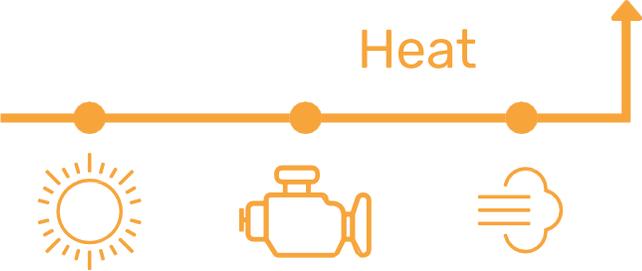
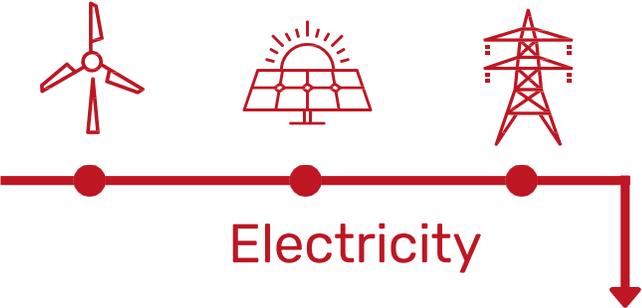


Unlimited cycles



Low-cost materials

# How does it work?



# Carbon-free heating for industrial and district heating projects



## Thermal Storage & Gas Turbine

Decoupling Heat and Power to optimize fuel efficiency and reduce emissions



## Thermal storage & Biomass System

Allowing flexible operation though continuous biomass combustion



## Thermal Storage & Diesel Engine

Utilizing waste heat from generator to provide hot water

# Reducing emissions in fossil power plants

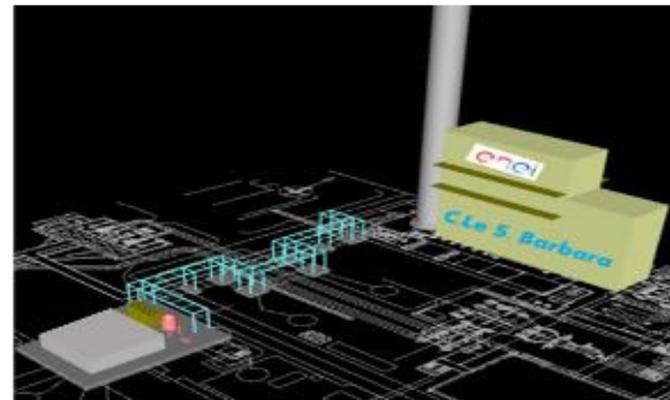
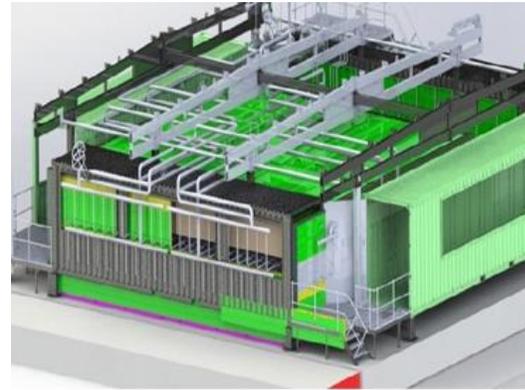
## Thermal storage project for EU's Largest Utility

24MWh Thermal storage at a 390MW  
combined cycle power plant in Florence,  
Italy

The storage allows energy to be diverted  
from daytime (low value) to evening (high  
value) and shortens ramp-up time

Manufacturing completed, estimated  
commission by Q4 / 2021

Project completion will enable acceleration  
of sales to power plant sector



# Business Models

1



## Energy As a Service

Providing carbon-free electricity and heat as a service, by replacing current fossil-based generation.

### Growth Engine

adding **carbon cost savings** to the service provided will increase revenues without additional investment

2



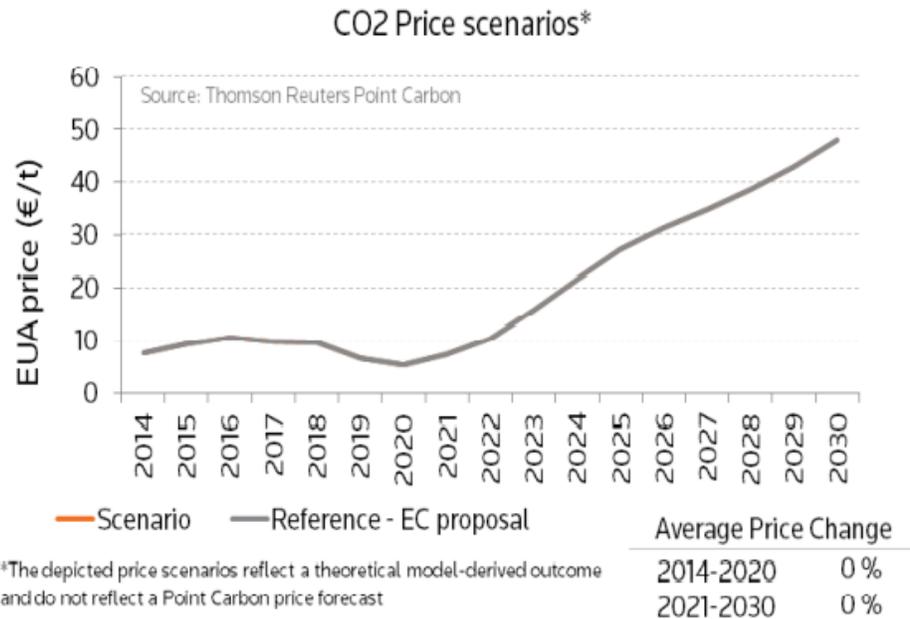
## Equipment sale with long term O&M service

Sale of bGen™ systems coupled with long term service agreements

### Growth Engine

Accesses to the client's unique energy usage **data** will enable recurrent sales

# DOUBLE IMPACT



#1

A thermal storage solution that allows the transition from volatile, polluting fuel to clean, cheaper energy on demand

#2

Green Credit – decreased emissions for companies



TECH

**Fiat Chrysler spent over \$300 million on green credits in Europe last year — mostly from Tesla**

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# Production

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Signed credit facility with EIB for automatic production lines



50 production-line employees were recruited for the plant



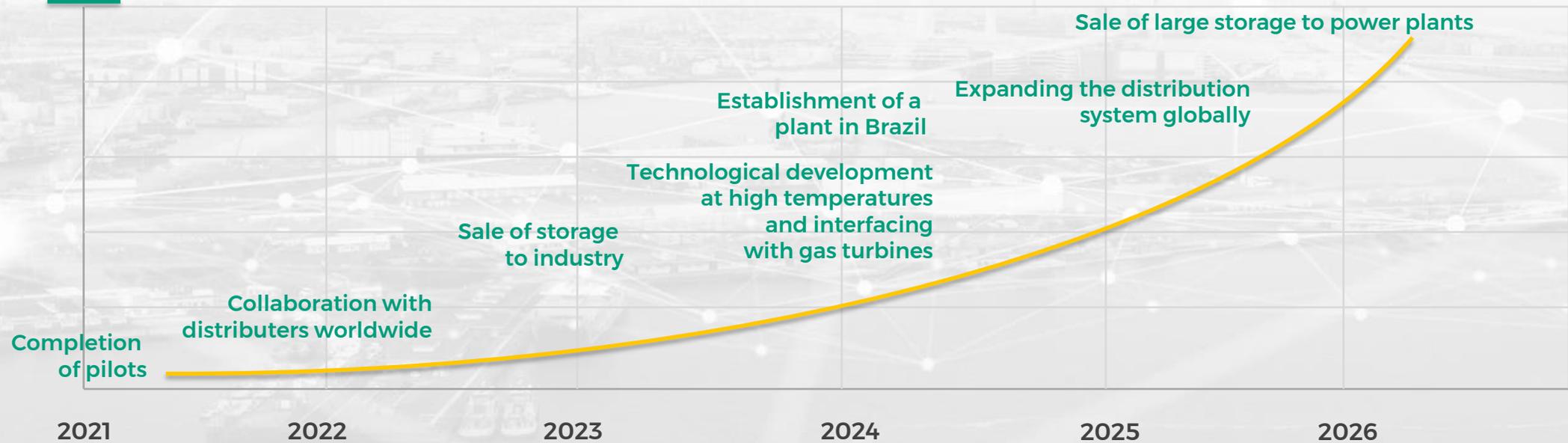
Planning construction of a manufacturing plant in Brazil in cooperation with FORTLEV



Investments made in automation and improved production capabilities

# Goto Market

## Revenue



\* The detailed information is forward-looking information according to section 32A of the Securities Law. The information may not be realized in the manner described and / or according to the schedules or to the extent described due to various factors listed in slide 2 of the presentation.

# Summary

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**Mature, innovative and leading technology for thermal storage**



Heat is the largest energy component in the world



Thermal storage is necessary to enable integration of renewable sources to supply stable steady heat



The company expects significant sales starting in 2022 and beyond positive cash flow during 2023



During 2021 the company will complete all the pilots with the strategic partners



BRENMILLER ENERGY

**THANK YOU**

