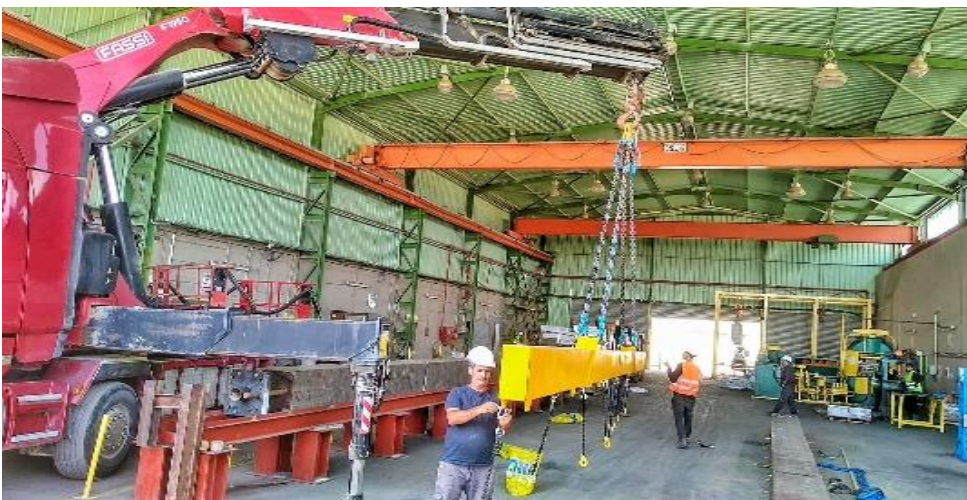




Multi source thermal energy storage

December 2020

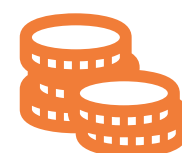
About



2012
Founded



Patented
Technology



\$70m
Capital Invested






Office & Manufacturing: **Israel**
Projects: **US, Italy, Brazil, Israel**



Avi Brenmiller,
Chairman & CEO



Technology

-  Thermal Storage
-  Heat Exchanger
-  Steam Generator



PATENTED



Clean

Environmentally friendly materials



Modular

1MWh-1000MWh



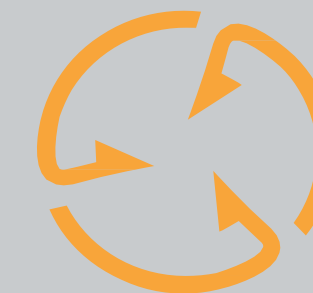
Lifetime

30+ Years
Simple O&M



Performance

Unlimited cycles
3% daily losses



Hybrid

Connects different energy sources

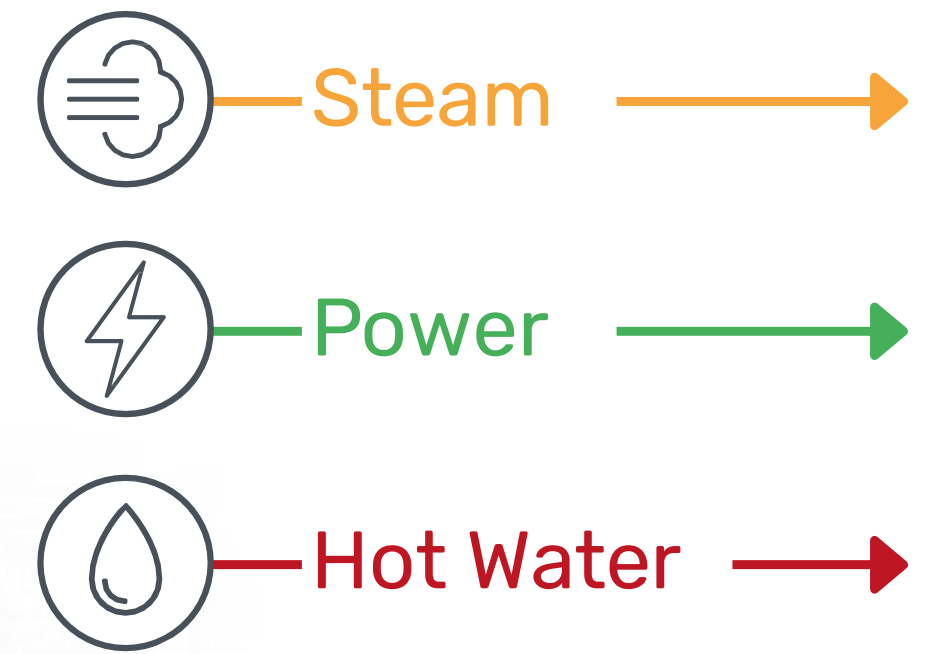
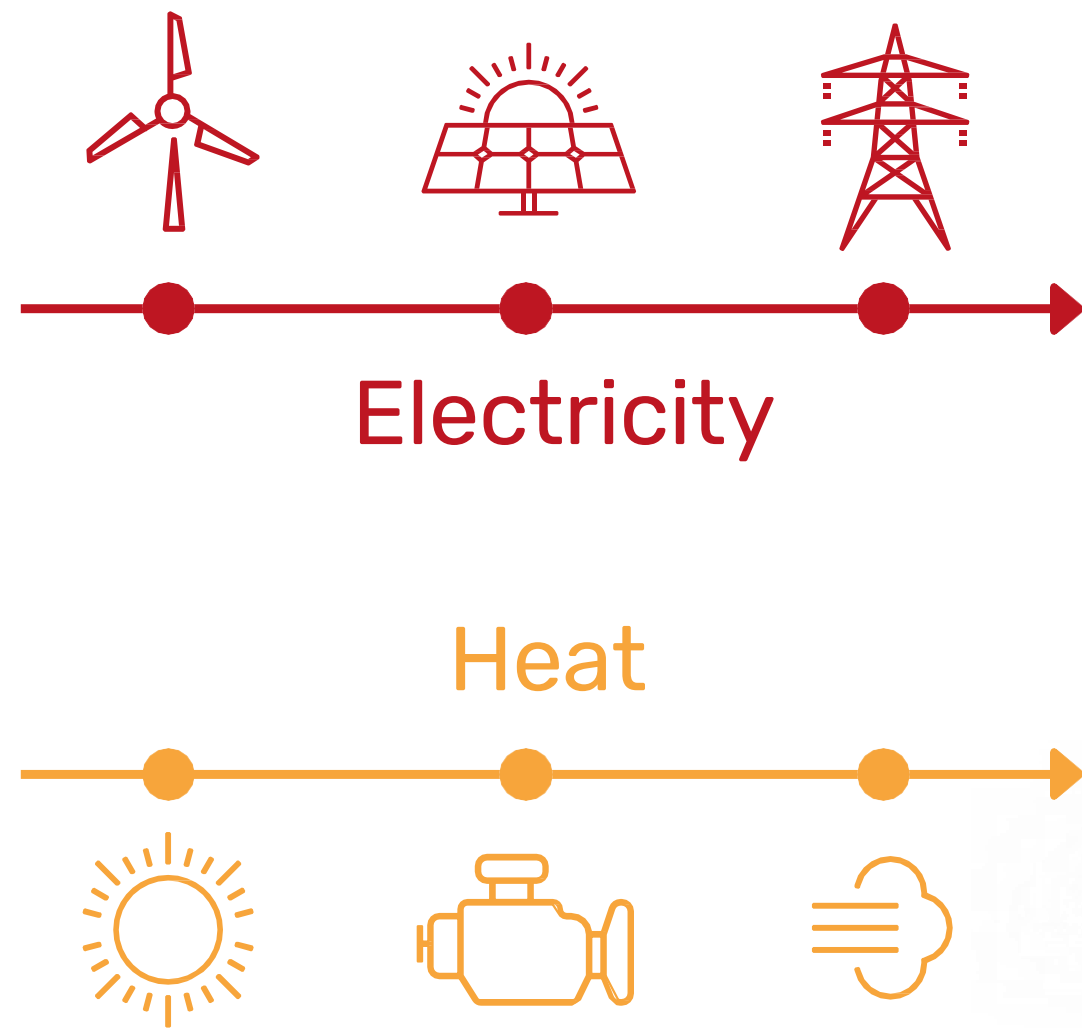


Economic

low investment
quick ROI



Technology



Products

Industrial TES **bGen 2.0**

- 4m modules
- 1-10 MWh
- Hot water, air or steam up to 180°
- Unmanned operation



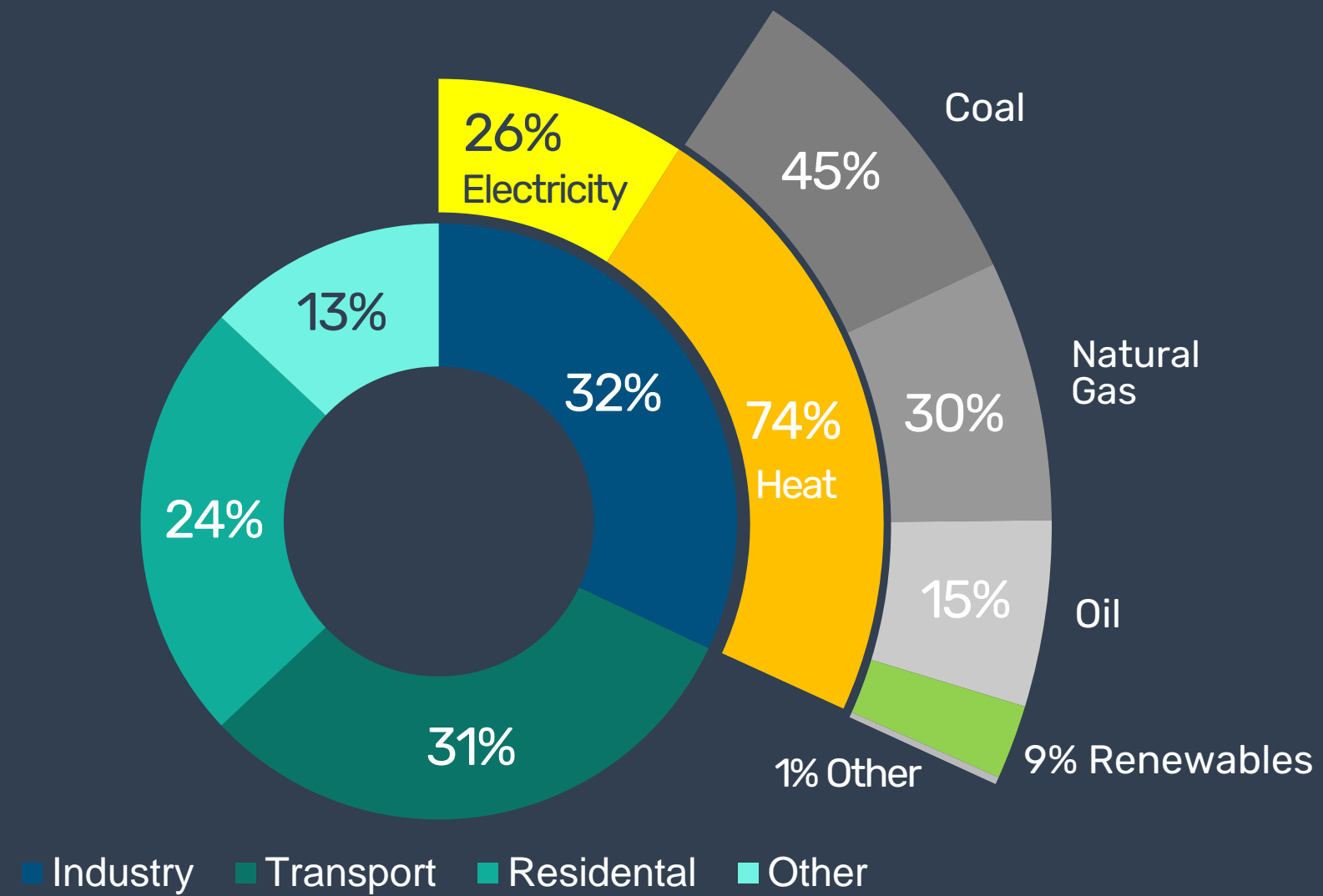
Utility TES **bGen 1.0**

- 12m modules
- 10-1000 MWh
- 180°-500° steam
- Simple and low cost O&M

Markets

Industrial heat

Global Energy consumption by sector



* International Energy Agency – Renewable Energy for industry, Nov 2017

Power

Flexible operation of thermal power plants



Storage based Heat Recovery



IDF 1MWh TES

- ▶ TES charged from diesel genset exhaust
- ▶ Delivers hot water on demand
- ▶ Annual diesel savings of 36,000 Liters and 112 Tons of CO₂
- ▶ ROI 3 years
- ▶ Delivered June 2020



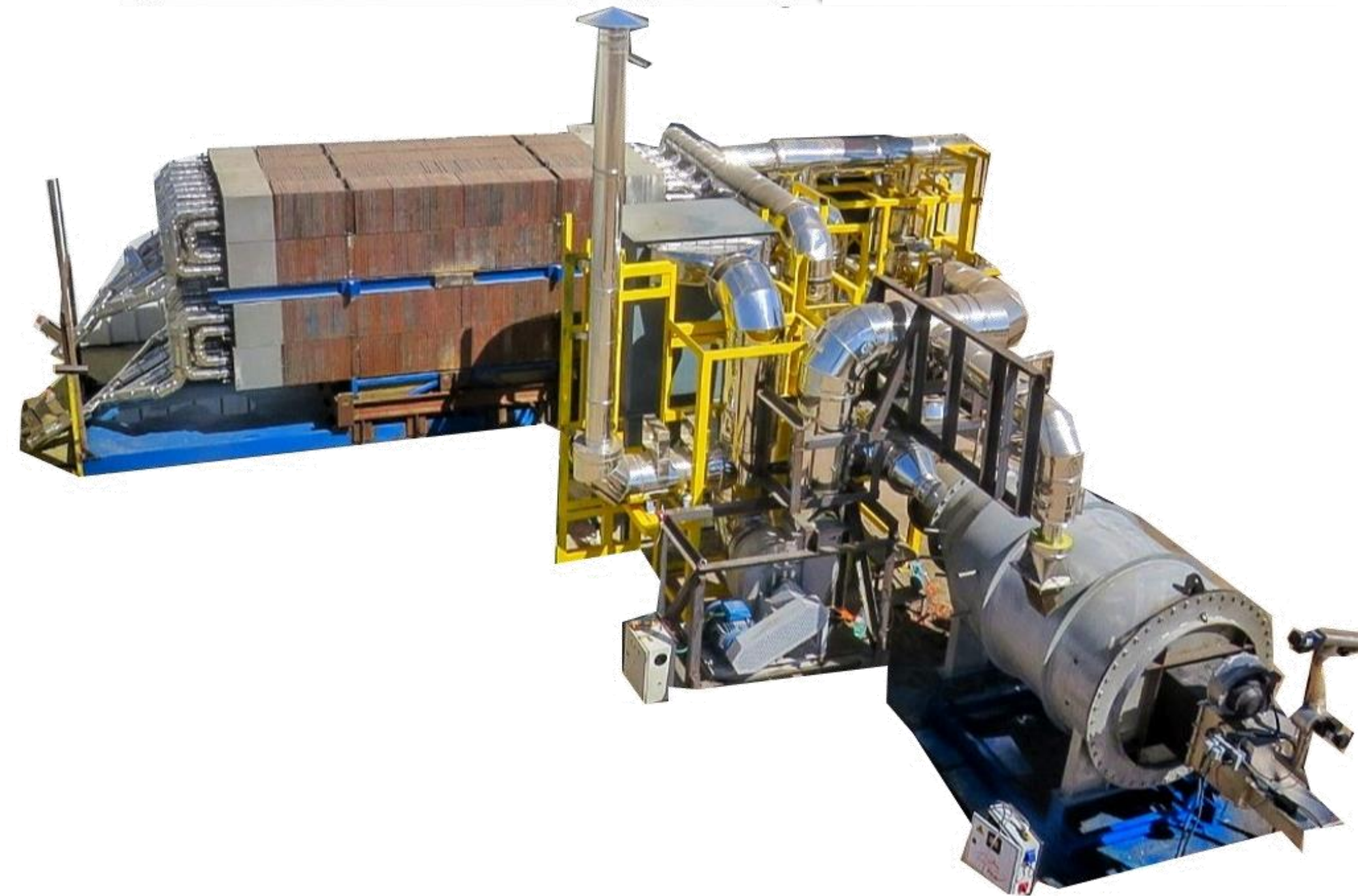
Storage based industrial heat



FORTLEV 2MWh TES

- ▶ TES charged from biomass (wood chips)
- ▶ Delivers hot air on demand
- ▶ 60% fuel savings, 100% emission reduction
- ▶ ROI 4 years
- ▶ Delivery 2021

FORTLEV



Storage based Co-generation



NYPA 1MWh TES

- ▶ TES charged from turbine's exhaust heat
- ▶ Delivers hot water on demand
- ▶ 25% fuel savings and emissions reduction
- ▶ Delivery 2021



Capstone Turbine partners with NYPA and Brenmiller Energy in storage project

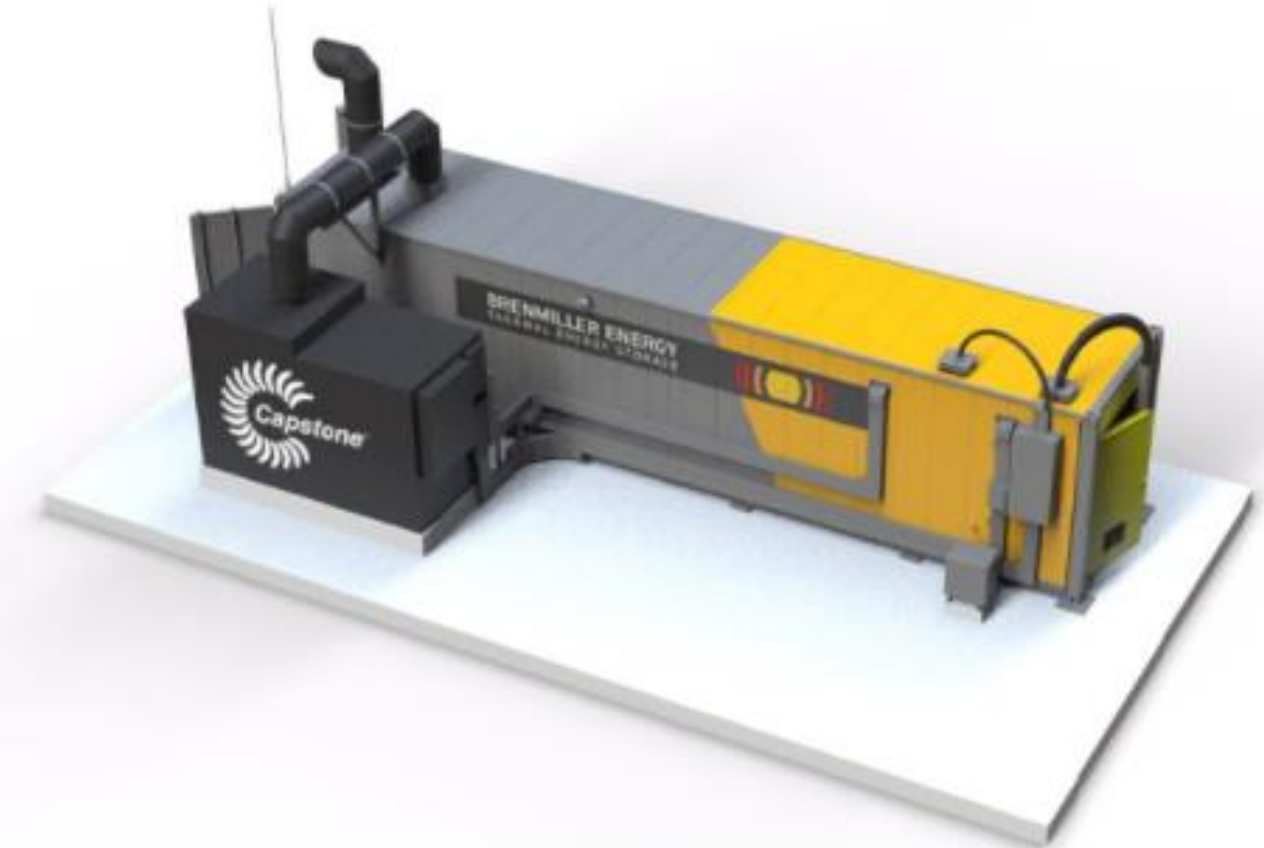


Bioenergy International

Heat & Power

April 6, 2020

In the United States (US), Capstone Turbine Corporation, a leading clean technology manufacturer of microturbine energy systems, has recently announced that it has partnered with the New York Power Authority (NYPA) and Brenmiller Energy on a thermal energy storage project for Purchase College, State University of New York (SUNY).



Capstone Turbine has partnered with the New York Power Authority (NYPA) and Brenmiller Energy on a groundbreaking thermal energy storage project for State University of New York (SUNY) Purchase College (image courtesy Capstone Turbine).

Storage for renewables



Rotem1 75MWh TES

- ▶ Charged from CSP and Natural Gas
- ▶ Delivers electricity to grid
- ▶ 5MW solar field +16 hours of storage capacity
- ▶ 20 years PPA with Israel Electric Corporation
- ▶ Green bonds purchased by Apple inc.
- ▶ Commissioning 2021



חברת החשמל
Israel Electric



Storage for CCGT



ENEL 23MWh TES

- ▶ Energy shifting
 - ▶ Charged with excess steam at off-peak
 - ▶ Delivers steam at peak
- ▶ Increasing maximum load and reducing minimum load
- ▶ Reducing ramp-up time
- ▶ Optimizing revenue streams & ancillary services
- ▶ Delivery 2021



HOME / SUCCESS STORIES / BRENMILLER: NEW FLEXIBLE AND SUSTAINABLE TECH FOR ENERGY STORAGE

Brenmiller: new flexible and sustainable tech for energy storage

Published on Monday, 11 November 2019



<https://startup.enel.com/en/stories/a201911-brenmiller-sustainable-tech-energy-storage.html>



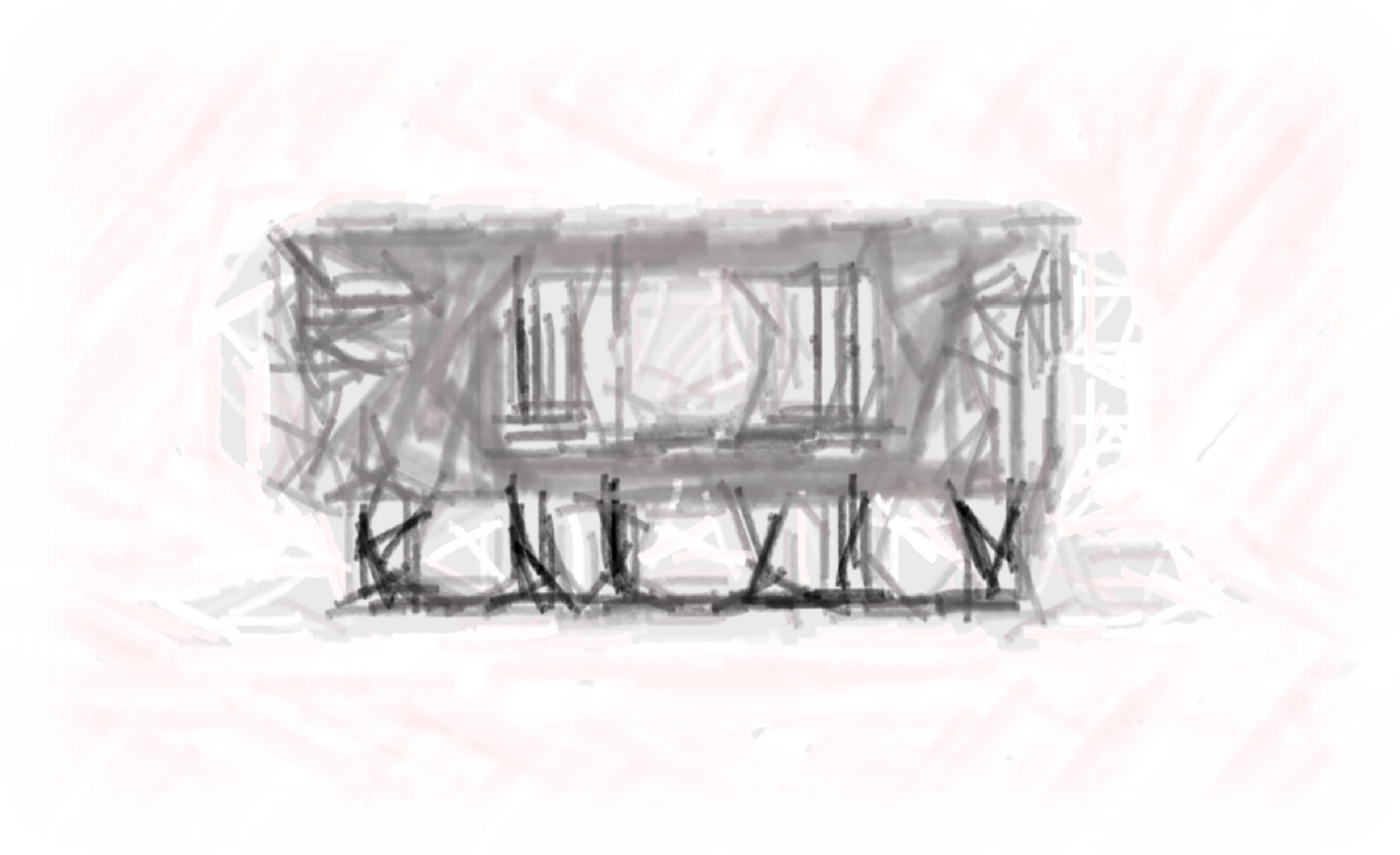
Manufacturing

- ▶ 1000MWh manufacturing capacity in Dimona, Israel
- ▶ EIB to finance a new automated production facility in Israel
- ▶ Manufacturing plant is under development in Brazil



Next Generation

- ▶ Received grant from the Israel Innovation Authority to develop high temperature TES (over 900°C)
- ▶ Improved efficiency and reduced cost





Thank you