

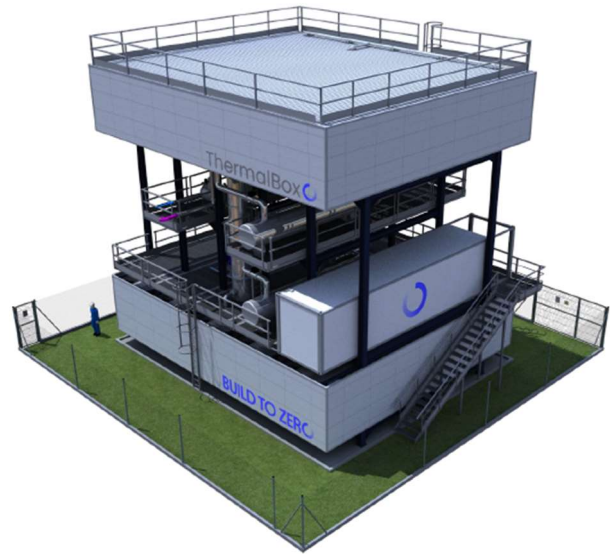
ThermalBox® - Developed and designed by BUILD TO ZERO

As renewable energy source becomes the most cost-effective option for electricity generation worldwide, it is crucial to scale up energy storage systems rapidly. These systems are essential for addressing the variability of solar power and avoiding energy waste through curtailment.

The ThermalBox® technology is designed to integrate renewable energy sources efficiently. By storing excess energy during generation periods, ThermalBox® enables peak shaving, helping to counteract the “duck curve” effect of electricity demand and prices.

A game-changing product to decarbonize industry process

The ThermalBox® combines power-to-heat technology by running Klöpper-Therm molten salt heaters with thermal energy storage. By utilizing direct electrical heating of a circuit of molten salts, ThermalBox® generates 100% decarbonized process heat, in the form of steam or heat transfer fluids. A reliable and sustainable way to reduce carbon emissions and join to a cleaner future.

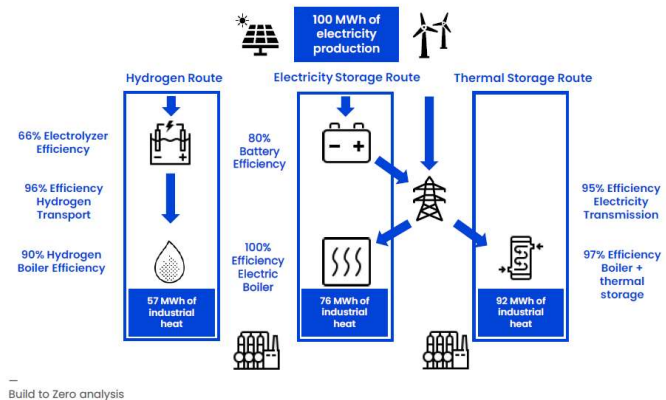


Designed to replace fossil fuel boilers

ThermalBox® is the innovative solution designed to replace fossil fuel boilers. Engineered for uninterrupted operation, it flawlessly delivers a continuous heat output of 2.5 to 10.5 MWt across standard configurations. This corresponds to producing 2 to 15 ton/h of slightly superheated steam (+10 °C) within a process pressure range of 10 – 20 barg.

Decarbonizing industrial heat with renewable electricity

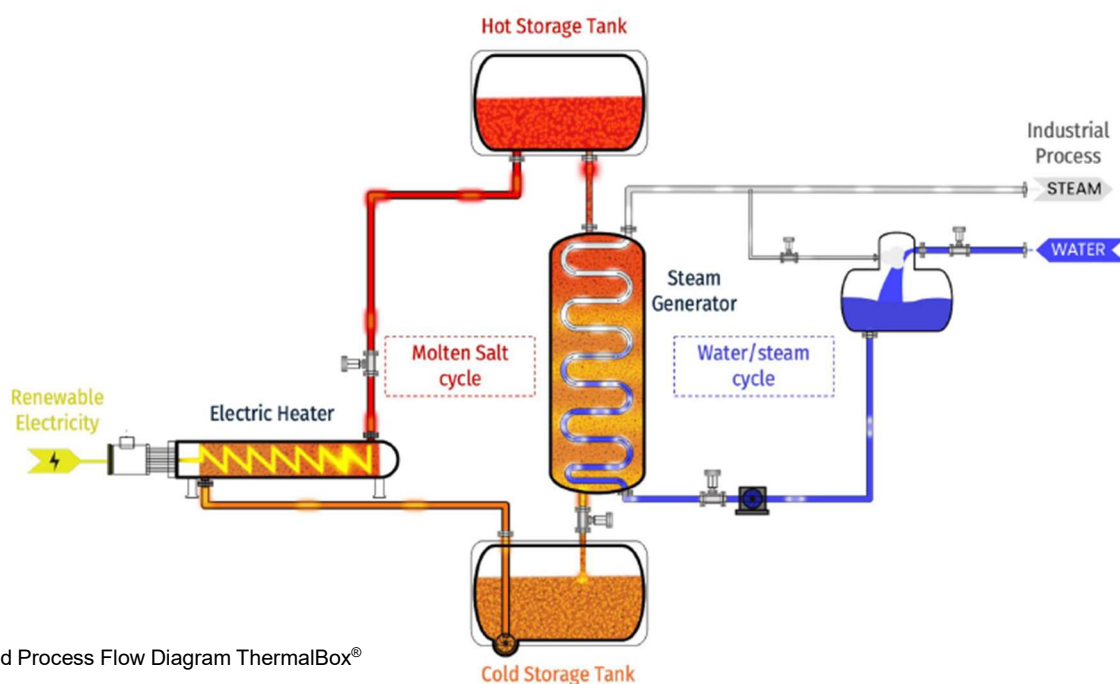
ThermalBox® stands as the unparalleled leader in efficiently decarbonizing industrial heat through the utilization of renewable electricity. When comparing alternative methods, the difference in efficiency becomes strikingly clear. Producing hydrogen and applying it in a hydrogen boiler achieves an efficiency of c.57%. An electric boiler combined with a battery offers a higher efficiency of c.76%. Nonetheless, it is ThermalBox® that eclipses them all, boasting c.92% efficiency for heat production.



Redefining thermal storage with unique design features

ThermalBox® sets itself apart with its innovative design, comprising two circuits that can operate either together or independently, tailored to renewable power source availability and process requirements. This unique capability allows for seamless integration of renewable energy sources while ensuring continuous heat production. Notably, ThermalBox® is designed to enable simultaneous charging and discharging, allowing to provide demand-side flexibility to the electricity network.

Operating at atmospheric pressure, ThermalBox® employs gravity for the circulation of molten salt, effortlessly transferring heat from the hot to the cold tank. This simple yet robust design enhances ease of operation and ensures secure functioning in the event of any system failures.



Simplified Process Flow Diagram ThermalBox®

Key Benefits:

- **100% decarbonized process heat**
Through electrification with a renewable energy source: hybridized on-site, PPA, and from a renewable grid.
- **Modular, adaptable & scalable**
ThermalBox® can be customized for various industries and applications by combining standard components such as tanks, heaters, and evaporators.
- **Cost-competitive & quick payback**
The Levelized Cost of Heat (LCOH) efficiently competes with that of fossil fuel boilers, ensuring a fast return on investment.
- **40 years of 24/7 thermal energy storage**
ThermalBox® offers 6 to 12 hours of storage, allowing for fully flexible intraday operation with no limitations on charge or discharge cycles. Molten salts have a proven operational lifespan of over 20 years and are certified for 40 years.
- **Safe, flexible & digitally controlled**
Remote monitoring, control applications, and plant control systems enable real-time demand flexibility services to the electricity network.