

The Intelligent Thermal Battery
Green Energy Storage

Heatventors Kft.

Kakas József

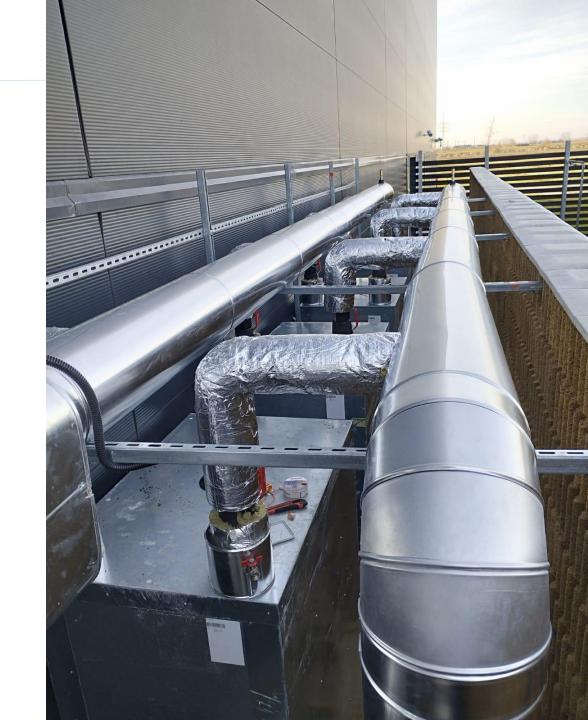
CEO





Challenges

- Heating&cooling 50% of energy consumption
- Decarbonisation
- 2 860 000 000 MWh / year waste heat in EU
- How to store?
- Energy efficiency





Solution

Thermal Battery with control system

Phase change material

High energy density





Benefits

- Efficiency increase
- Energy saving 20-50%, 5 years payback
- Waste heat recovery
- Renewable energy storage
- Space saving
- Operational safety
- Technical support





Structure

Storage

- Special heat exchanger
- Insulation: max 2% loss

PCM

- environment friendly, plant-based
- non corrosive
- over 10.000 cycles lifespan (25+ years)

Control system

- Charge discharge when most efficient
- Collects data
- Connection to building management systems





Operating conditions

- - 30 + 120 degree Celsius
- Liquid medium
- One battery one temperature
- No maintenance needed
- Electricity need (valves, pump, control)





Features

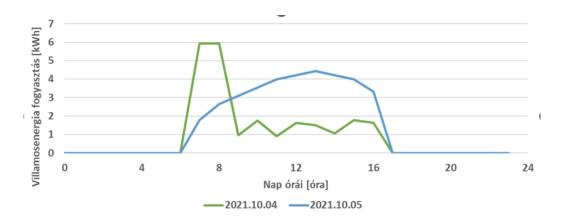
- Modular, no capacity limit
- Modules: 30 kWh, 60 kWh, 1,2 MWh
- 60 kWh, 2 m³, 1 m²
- On wheels, fits in elevators
- Outside- inside

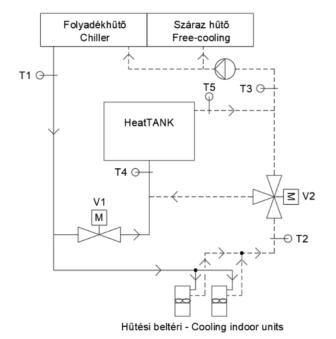




Office + laboratory

- Energy producer: chiller
- Purpose: energy saving in a cooling system
- Comfort + technology
- Cooling need:132 kW
- Storage capacity: 60 kWh
- Phase change temperature 9-9.5 °C
- Consumption: 90.000 kWh/ év
- Saving :cca 30%

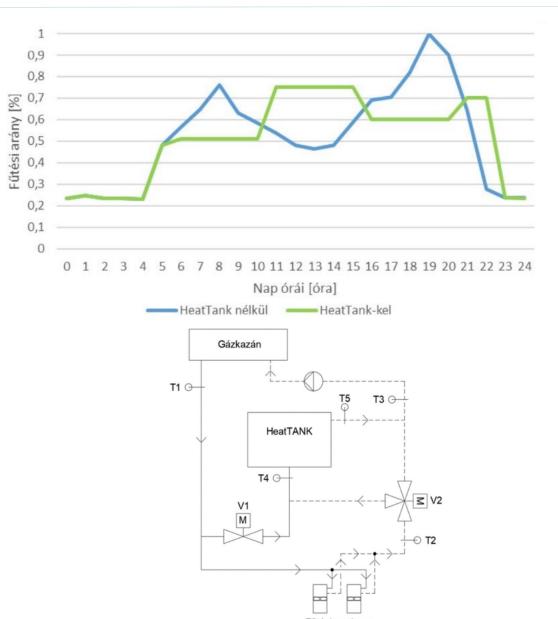






Hotel

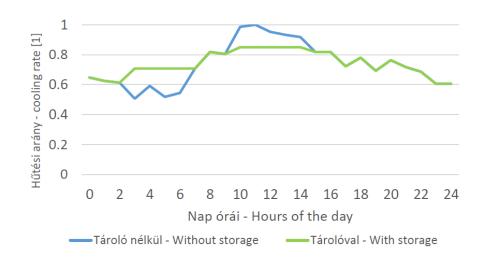
- Energy producer: gas boiler
- Purpose: energy saving in a heating system
- Comfort
- Heating need: 95 kW
- Storage capacity: 30 kWh
- Phase change temperature: 57-58,5 °C
- Consumption: 118.000 kWh/year
- Saving cca 20%

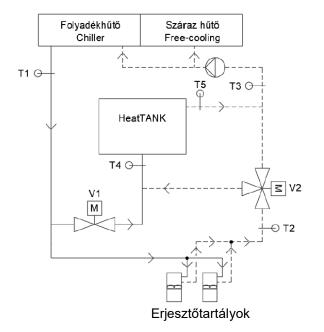




Vinery

- Energy producer:chiller
- Purpose: Energysaving in a cooling system
- Technology
- Cooling need:150 kW
- Storage capacity: 180 kWh (3*60 kWh)
- Phase change temperature 6 °C
- Consumption: 500.000 kWh/year
- Saving : cca 19%

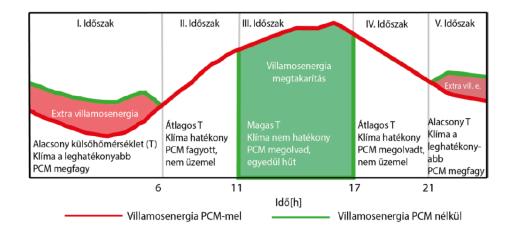


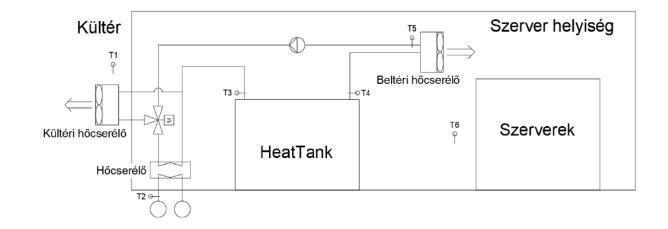




Data center

- System: split air conditioner + chiller + freecooling
- Purpose: Energysaving, operational safety
- Technology
- Cooling need: 12 kW
- Storage capacity: 60 kWh
- Phase change temperature 19-20.5 °C
- Consumption: 40.000 kWh/year
- Saving : cca 50%





Villamosenergia fogyasztás [W]



