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○ New project

○ Project operational

○ Project update



## Tapping into the power of salt to deliver renewable heating and cooling as-a-service from waste heat

*In Toulouse, France, Water Horizon takes waste heat from an incinerator and delivers renewable heating and cooling to a sports and leisure centre 15 kilometres away. This is made possible by a mobile battery system: With its patented Move Heat To Cold (MH2C) technology, Water Horizon provides an on-demand heating and cooling service, charging the customer for the energy used.*

*The project received the 2025 SET Alliance Efficiency-as-a-Service Innovation Showcase Award.*

### Region

Europe

### Sector

Commercial / Industry

### Retrofit or new

Demonstration project\*

### Project size

2 thermal batteries of 1MW

### Technology

Mobile Thermochemical storage

### Investment required

€5 Million (€2.5 million grant from the Innovation Fund)

### Collaborating entities



Funded by the European Union  
Emissions Trading System  
Innovation Fund

Funded by the European Union. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or the European Climate, Infrastructure and Environment Executive Agency (CINEA). Neither the European Union nor the granting authority can be held responsible for them.

\*In this project the batteries are connected to the existing heating and cooling system, shifting the energy source.

## Background

Waste heat produced as part of industrial or energy generation activities, represents a reservoir of thermal energy that is often not exploited. In France alone, waste heat makes up to 118 TWh of energy every year, equivalent to a quarter of France's total electricity consumption, which is mostly being lost. Whilst this energy can be used to provide heating in and around a facility, for farther locations, thermal energy loss along pipe infrastructure makes this ineffective.

To address this issue and expand the benefits of waste heat geographically, Water Horizon has developed a unique mobile battery system relying on the thermochemical properties of salt. The company's "Move Heat to Cold" or "MH2C" technology can recover waste heat, store it, and transport it to distant sites, making cleaner and more efficient cooling and heating accessible to consumers without the need for upfront investment in energy infrastructure.

## The Need

The SETMI treatment centre, in the Saint-Simon district of Toulouse, processes approximately 240,000 tons of waste annually, producing electricity and heat.

A significant amount of this heat is recovered through urban heating networks, however the mismatch between supply and demand profiles between production limits the recovery, resulting in a part of the heat being lost and released into the air.

On the other side of the Garonne River, 15 km from the incinerator, the busy Alex-Jany Sport Centre contains both a swimming pool and an ice rink, requiring heating and cooling all year round.

*"Industrial waste heat in Europe is equivalent to 100 nuclear reactors warming the air for nothing all year long. There is an absolutely massive and untapped energy potential waiting to be recovered."*

*-Jean-Emmanuel FAURE, CEO and Founder of Water Horizon*



## The Solution

Water Horizon uses thermochemical energy storage based on hygroscopic salts, as the core of its MH2C battery technology. The batteries are charged using waste heat, where heating the hydrated salt releases water vapour and stores thermal energy in a reversible chemical reaction.

Once charged, batteries can be transported to the customer site, where re-exposing the salt and the water triggers a double reaction: 1) water automatically evaporates, extracting heat from winding water pipes, hence producing cooling; 2) the salt re-hydration releases the stored heat. In this process, salt does not wear out; it simply changes state (hydrat-

ed/anhydrous) as part of a virtually endless cycle. The MH2C technology captures waste heat in the 100°C–200°C range and converts it into useful energy that can be redistributed as heating or, primarily, cooling down to -10°C.

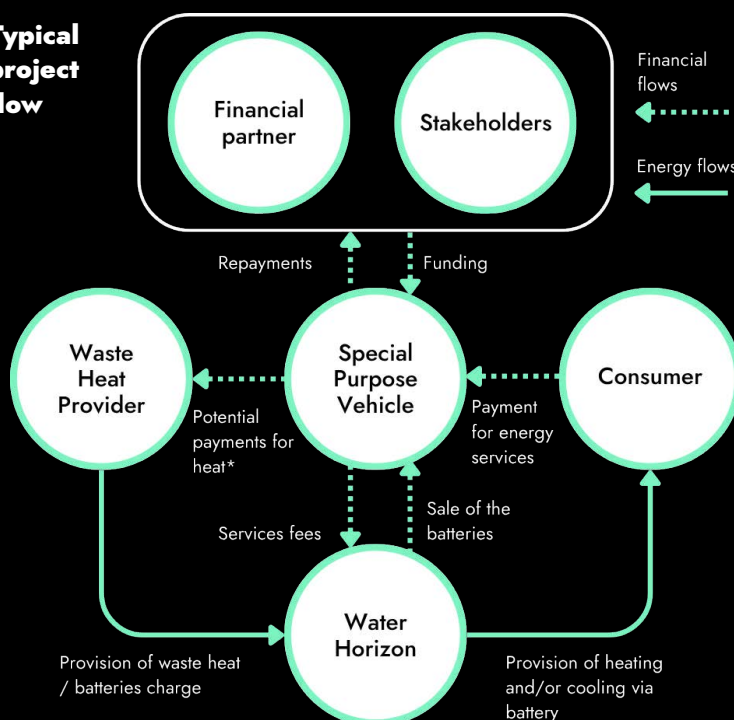
In the case of the Alex-Jany center, waste heat from an incinerator is used to charge the salt-based batteries, which are then discharged to heat the swimming pool while providing cooling for the adjacent ice-skating rink. On-site, Water Horizon built “sub-stations” that connect the batteries to the existing equipment on both sides, making the solution compatible with any waste heat and cooling systems.

In Toulouse, this solution has reduced electricity consumption for cooling by a factor of ten and replaced the previous gas-based heating system.

## About the CaaS Contract

Recognising that the MH2C solution requires significant infrastructure and the know-how to operate it, Water Horizon designed a practical offering for its clients: it sells the heating and cooling required by facilities per units of use. Customers pay a fixed price (€/MWh), dependent on a feasibility study to understand factors such as load, distance from waste heat source, and amount of recoverable energy. Water Horizon remains the owner of the equipment, and the fees paid by the client count as operational expenditures, off their balance sheet. In this pilot project, the assets are financed by Water Horizon with the support of the European Commission, which covered 50% of the total cost.

### Typical project flow



\*depends on projects

### CaaS benefits:

- **Monthly payments based on consumption and no upfront investment**
- **MH2C battery infrastructure is installed at the client's premises and can deliver energy immediately**
- **Provides easier and cost-effective way to decarbonise, reduce energy and maintenance spendings, and comply with latest energy regulations**



## Further benefits

Beyond delivering benefits to the sports centre, the Water Horizon solution also allows the incinerator operator SETMI to increase energy efficiency which translates into lower taxation. The project supports compliance with decarbonisation regulations and establishes its sustainability leadership.

In total, with low distance and low carbon transport, the project supports the avoidance of 1400tCO<sub>2</sub>/year according to estimations made thanks to the CINEA Methodology for GHG Emission Avoidance Calculation.

Additionally, the MH2C also supports local job creation for the mobile battery operators delivering the energy by road to the clients.

## Next Steps

In Europe, industrial theoretical waste heat recovery potential accounts for nearly **920 TWh (usable as heat), while the Carnot potential (convertible into electricity or other types of power) has been estimated at 279 TWh**. To put it into perspective, the EU's total **nuclear production in 2024 nearly reached 650 TWh** via approximately 100 active reactors.

Recovering and storing this heat offers a major opportunity to supply buildings with sustainable heating and cooling.

Water Horizon is looking at further leveraging these untapped resources by establishing its own battery assembly plant. This initiative will also bolster European industrial autonomy and capacity while contributing significantly to achieving the EU's long-term objectives for decarbonisation and energy efficiency. The company recently closed a multimillion fundraising round and has developed further projects for greenhouses in Bessières and the fishing port of La Rochelle, France.

## Contact Information

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