

Solution Overview  
**ECOFICIENT®**



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# Solution Overview

# ECOFICIENT®

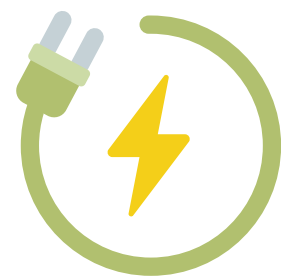
## OBSERVATION

- 110 TWh of waste heat potential in France, with one-third coming from the food industry (source: ADEME).
- According to the International Energy Agency (IEA), around 50% of global energy consumption is lost as waste heat, primarily from industrial processes and electricity production (IEA, 2023).
- 40% target for reducing greenhouse gas emissions by 2030 compared to 1990 levels (SNBC)
- 2050, carbon neutrality target (France 2030).
- Up to 50% of the fossil energy consumed by a boiler for steam production is used solely to maintain the network at the corresponding temperature and pressure, often well above the process requirements.

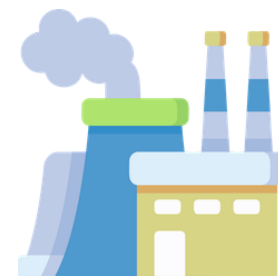
**ECOFICIENT®** is a 100% electric industrial solution, with a COP of 3–5, capable of heating and cooling processes from 6°C to 120°C (standard version). It is a needs-based system, avoiding the oversizing common in conventional equipment.

**ECOFICIENT®** is a solution tailored to needs, unlike the usual equipment offered by power range and therefore too often oversized. This is the result of an intelligent integration of proven technological components and solutions, with, at its core, an energy loop and patented energy storage systems.

The **ECOFICIENT®** solution ensures the production of thermal fluids precisely as needed, just-in-time, and at the expected temperature gradients. Our target market is production units in the food processing, cosmetics, pharmaceutical, and other industrial sectors that consume both heating and cooling. The ability to independently produce each thermal fluid allows us to work with both continuous and batch applications, thanks to our adaptable storage capacities.



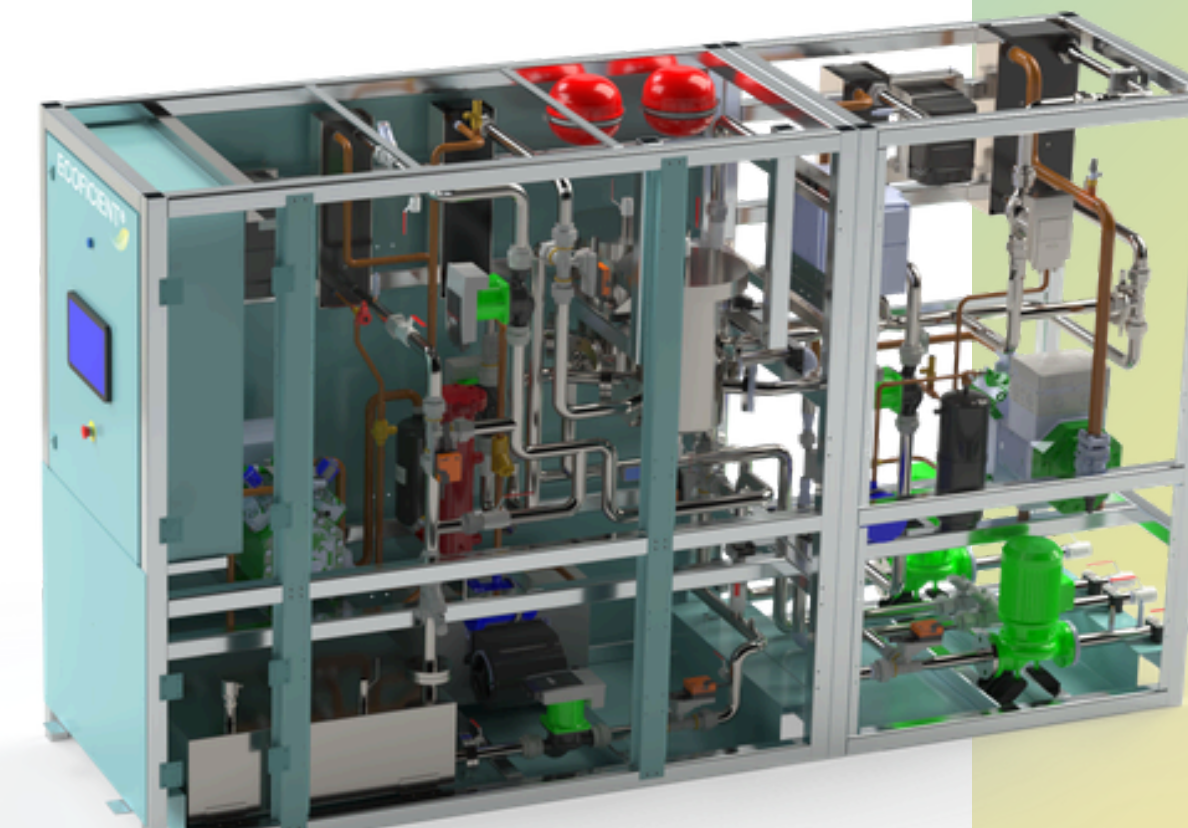
100%  
electric



0  
fossil fuels



100%  
energy savings (up to)

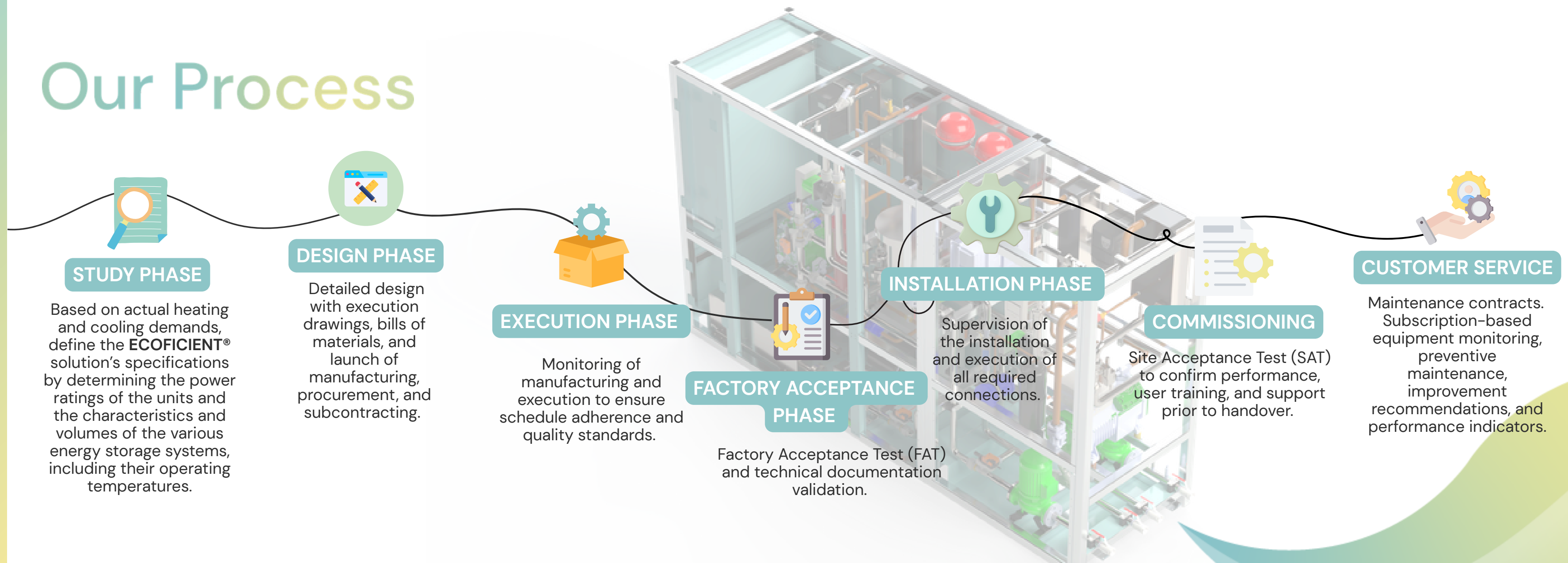


# Savoie Process

# Project Approach

1. **Audit** : Identify waste heat sources, particularly from cooling, and map hot and cold energy consumers.
2. **Analysis** : Assess energy and utility consumption to identify performance levers.
3. **Financial engineering** : Evaluate project relevance for Energy Savings Certificates (ESC) or other support mechanisms.
4. **Technical proposal** : Complete technical description including equipment power requirements and integration with on-site installations.
5. **Commercial offer** : Compilation of expected gains, performance commitments, and ROI calculation.
6. **Financing** : CAPEX or OPEX options, including third-party investment possibilities.
7. **Validation** : Validation of values and performance on our industrial pilot.

## Our Process



**ROI (Reliability, Performance, and Support)**

Up to ≤ 3 years (*without incentives*)

Up to ≤ 1 year (*with ESC/other schemes*)

**RELIABILITY**

Proven, robust technologies and expert partners.

**PERFORMANCES**

Improved profitability, productivity, and environmental impact; supporting energy transition via energy efficiency and decarbonization.

**LONG-TERM SUPPORT**

Integrated monitoring for performance supervision, preventive actions, and continuous improvement.

- Compressors: Piston or screw, low-pressure (≤ 20 bar), using HFO
- refrigerants: R1234ze (GWP\* ≤ 7) for chillers
- R1233zd (GWP\* < 1) for heat pumps
- Skids: Stainless steel or container-mounted.
- Assembly: Fully insulated and soundproofed.
- Automation: Integrated control and supervision.

**POWER**

10 KW TO 5 MW

**TEMPERATURE**

4°C TO 120°C

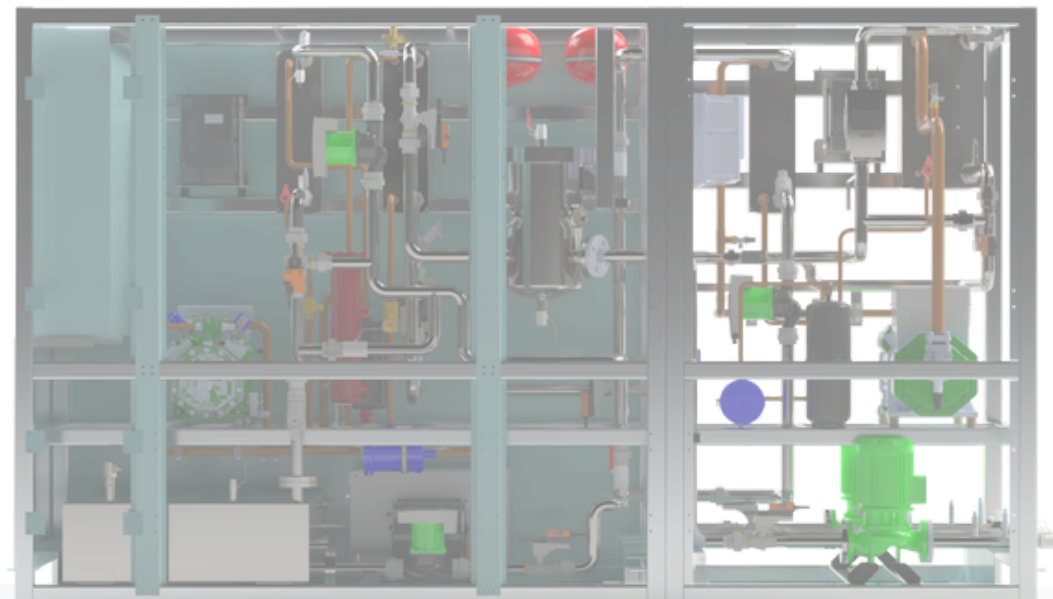
**STORAGE VOLUME**

0.1–20 m<sup>3</sup>

**COP**

3–5

\*Global Warning Potential



- Mechanical Vapor Compression (MVC) for >120°C.
- Alternative heat transfer fluids for <4°C (e.g., glycol water).
- Natural refrigerants: CO<sub>2</sub> R744, NH<sub>3</sub> R717, R290 propane, R600a isobutane.
- Data access and monitoring subscription.
- Cogeneration, renewable integration (PV, biomass, hydro, wind), and custom design.
- Cogeneration solutions with partners (Heat to Power, Power to Heat).
- Comprehensive partnership projects integrating renewable energy (RE) solutions such as photovoltaics (PV), biomass boilers, hydroelectric, or wind power, for self-consumption and/or shared short-circuit systems.
- Custom design and implementation upon request.

- Energy loop: Waste heat recovery and utilization from cooling.
- Intelligent energy storage for precise thermal management.

**ESC Certificates**

IND-UT-102, IND-UT-113, IND-UT-114, IND-UT-115, IND-UT-116, IND-UT-121, IND-UT-131, IND-UT-132, IND-UT-136, IND-UT-137, IND-UT-139, RES-CH-108.

**ADEME**

Project calls, Heat Fund, R&D programs.

**WATER AGENCY**

Financial incentives for efficient water management.

**FRANCE 2030**

R&D support for green tech and energy innovation.

**EU DIRECTIVE**

2012/27/EU : Energy efficiency and industrial waste heat recovery.



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