



MANUFACTURING OF COMPONENTS FOR PRODUCTION OF RENEWABLE ENERGY OR ENERGY STORAGE

# INNOVATION FUND

Deployment of net-zero and innovative technologies

## Listlawelbattcool: Light and structural laser welded battery cooler

The Innovation Fund is 100% funded by the EU Emissions Trading System

### | Project Factsheet

Valeo Systemes Thermiques plans to build a new battery cooler production line for electric vehicles (EVs) that delivers significant reductions in CO2 emissions compared to the current state-of-the-art technology. The project will demonstrate that the current controlled atmosphere brazing process, which is highly energy intensive, can be substituted by a laser welding process when the right aluminium material is used. This manufacturing process will reduce the energy consumption by 50% as well as the thickness of the product, while increasing the recyclability rate of the raw material.

Laser welding technology is already used to weld the structure of the vehicle. The novelty of this project is to use this technology to produce aluminium heat exchangers that can assure liquid circulation for cooling with no leakage. The project will therefore demonstrate the maturity of this technology to meet these requirements, thus

#### COORDINATOR

VALEO SYSTEMES THERMIQUES SAS

#### LOCATION

Czechia

#### CATEGORY

Energy Storage (ES)

#### SECTOR

Manufacturing of components for production of renewable energy or energy storage

#### AMOUNT OF INNOVATION FUND GRANT

EUR 3,651,974

#### EXPECTED GHG EMISSIONS AVOIDANCE

223,570 tonnes CO2 equivalent

#### STARTING DATE

01 September, 2022

#### ENTRY INTO OPERATION DATE

31 January, 2027

#### FINANCIAL CLOSE DATE

30 September, 2024

leading to potential use for other sectors, such as home appliances. From 2027, and over the ten-year operational lifetime of the project, the production of three million battery cooler units will result in the avoidance of 223 570 tonnes of CO2 equivalent greenhouse gases emissions.

Aluminium is used for heat exchangers due to its conductivity properties and light weight. However, aluminium has a high CO2 footprint (aluminium = 8.1 kg CO2 eq / kg) which creates a challenge for decarbonisation. This flagship project will work to address this challenge through the use of aluminium with 40% recycled content, which reduces the CO2 footprint. The use of alloys (S5XXX, S6XXX) with more sustainable production also enhances the mechanical properties. This allows for reduced material thickness and subsequently reduced carbon footprint: using 20% less aluminium weight on each cooler.

The use of recycled aluminium and alloys also improves the carbon footprint in the upstream process; the laser welding technology reduces the

energy consumption by 50 % during production, and the use of an electrical vehicle instead of a conventional equivalent reduces the energy use in the downstream process (i.e., the end user). These factors combine to create a circular economy in the value chain, with a significantly reduced CO2 footprint.

In addition to the removal of the fuel consumption, the power requirements of the system will be lowered (the laser system consumes 100 kW compared to 800 kW for an electric furnace and 3 800 kW for a gas furnace), thus contributing to the EU Commission's energy savings plans. The laser technology is a lighter process than the current long furnace process. This advantage, together with a smaller and more scalable units, allows for easy replication in different Valeo sites and different sectors, simultaneously improving their material consumption, their energy requirements, and their overall logistics.

## | Participants

VALEO SYSTEMES THERMIQUES SAS

France

VALEO TERMICO SA

Spain

VALEO VYMENIKY TEPLA S.R.O.

Czechia