



Light and structural laser welded battery cooler



Project summary:

Valeo Thermal Systems plans to build a new battery cooler production line for Electric Vehicles with significant reduction in CO2 emissions compared to the current state-of-the-art. 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 choosing the right aluminium material. This manufacturing process will reduce the thickness of the product, as well as the energy consumption by 50%, whereas the recyclability rate of the raw material used will be increased.

Key Figures:

Location: Žebrák, Czech Republic

Sector: Manufacturing of components for production of energy storage

GHG emission avoidance: 223,570 in t CO2eq

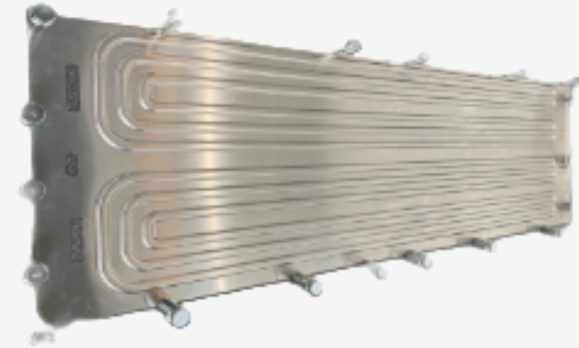
Amount of the Innovation Fund grant: 3 651 973.80 €

Relevant costs: 6 086 623 €

Starting date: 1st September 2022

Planned date of entry into operation: 2nd January 2027

Battery cooler



Participants:

Valeo Systemes Thermiques, country : France

Valeo Výmeníky Tepla s.r.o, country : Czech Republic

Valeo Térmico, country: Spain

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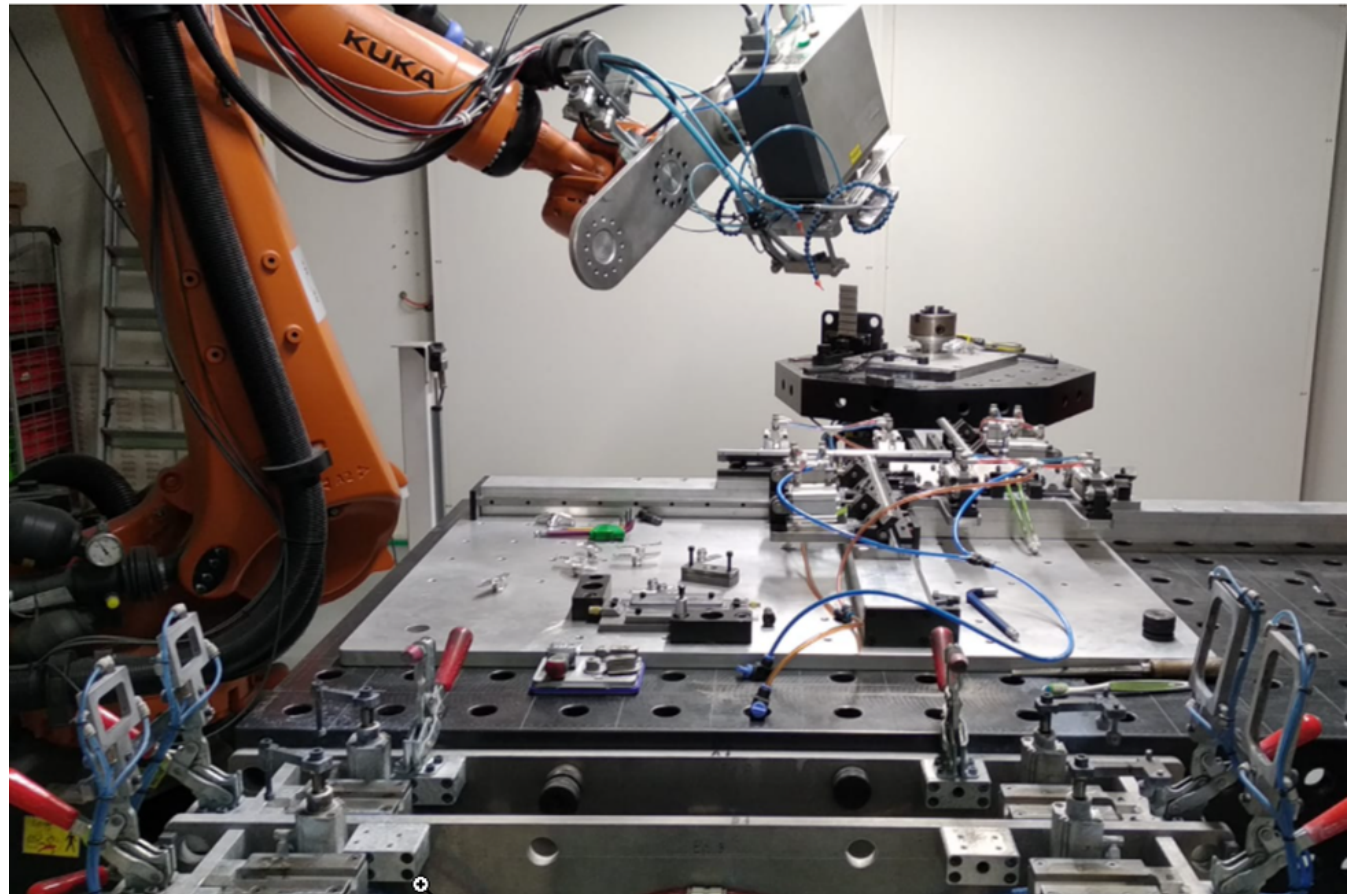
Technology:

Using laser welding technology for structural battery coolers eliminates energy-intensive brazing technology.

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 aluminum heat exchangers that need to assure liquid circulation with no leakage.

As it is an application for the automotive market with high volumes, quality and reliability requirements at a competitive cost, the project will demonstrate the maturity of this technology leading to potential use for other sectors, such as home appliances.

As from 2027 and over the span of ten years, the production of three (3) million units will result in the avoidance of 223,570 t CO₂eq greenhouse gas emissions.



Decarbonisation with the use of aluminium recycled materials for heat exchangers

The aluminium need for heat exchangers due to its conductivity properties and lightness is an emission challenge, because of the material's high CO₂ footprint (aluminium = 8.1 kg CO₂eq /kg).

This project will be a flagship because of the use of aluminium with 40% recycled content.

Furthermore, through the sustainable production with alloys (S5XXX,S6XXX), mechanical properties are enhanced. This allows for reduced material thickness and subsequently carbon footprint: 20% of aluminium weight are saved on each cooler.

Both aspects improve the carbon footprint at the upstream process, laser welding technology impacts in operations (50% reduction energy consumption) and the electrical vehicle in downstream process (final user), giving a very positive impact in circular economy.

This project will contribute to develop more affordable and sustainable electrical vehicles and to

extend their use in Europe reducing the total emissions of the transportation sector that is today one of the highest contributors.



Impact on the local or regional economy:

The new technology presents an immediate environmental improvement for the local area, workers and wildlife , since the combustion oven will be replaced with a laser welding system that does not burn any gas or fuel.

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 3800 kW for a gas furnace), allowing the technological shift to integrate itself within the EU Commission's energy savings plans.

The laser technology is a lighter process than the actual long furnace process. This advantage, together with a smaller and more scalable unit, allows for easy replicability to different Valeo sites and different sectors, simultaneously improving their material consumption, their energy requirement and their overall logistics.

The gains in efficiency and streamlining of the logistics with regards to Valeo's customers is expected, in the medium term, to be a noticeable improvement in the competitiveness of the entire value chain. Thus, allowing for more employment with less constraints in the positioning of the industrial activity, in turn initiating a virtuous cycle of jobs and industrial development for EVs in Europe.



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Innovation Fund

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