

# COMET PROJECT ECHODA

## ECHODA – ENERGY EFFICIENT COOLING AND HEATING OF DOMESTIC APPLIANCES

**Main location:** Austria (Styria)

**Other locations:** Germany, Italy, Netherlands

**Thematic area:** Energy



### Thematic focuses

- Development of innovative concepts for the cooling cycle of domestic appliances with cooling or heating demand and their components
- Energy efficiency optimization of the refrigeration cycle for domestic appliances
- Sustainability considerations of domestic appliances

### Planned realisation and outcomes

ECHODA (Energy Efficient Heating and Cooling of Domestic Appliances) aims at developing innovative concepts for household appliances, for both those with cooling as well as heating demand, pushing energy efficiency and sustainability to a new level. The key system that has been identified to have the most potential therein is the refrigeration/heat pump cycle. Starting from the already very mature development status of today's systems, top-notch research is required to reveal hidden potentials and, thus, enable significant reduction of CO<sub>2</sub> emissions and the ecological footprint for these billionfold used products, while staying economically feasible. The research scope starts at component level, where the refrigerant compressor still offers potential regarding both energy efficiency as well as acoustic behaviour. The findings of the component level research will culminate in the system assessment development for refrigerators/freezers as well as heat-demanding household appliances such as dishwashers, washing machines or hot/cold water kitchen taps. The aim is to have a means at disposal for the assessment of measures for energy efficiency enhancement with respect to their additional (economical and ecological) costs. Additionally, the potential of all measures shall be shown via demonstrators, where an energy consumption reduction of 20% for refrigerators/freezers and 50% for dishwashers/washing machines (by using heat pumps) is targeted. Apart from system-level sustainability analyses via state-of-the-art Life Cycle Assessment methods, also the control of the system will be a main research topic.

The COMET project ECHODA should enable a significant step forward in small refrigeration/heat pump technology, both economically as well as ecologically and should enable the substitution of several millions of electric heaters with heat pumps, resulting in significant energy savings. With scientific and industrial partners from Austria and the EU, the project strengthens and further expands Austria's and Europe's role in the field of refrigeration and heat pump research & development in a global context. The goal is to maintain the core industry in Austria and in its neighbour states and compete against international competition and the associated cost pressure. By collaborating with various actors along the value chain, synergies are to be leveraged to successfully implement the project and achieve a positive impact on economy and environment. Additionally, the research competence in Austria in the field of domestic appliances is demonstrated and further established.

## COMET FACTSHEET

### Selected company partners (max. 10):

1. Nidec Global Appliance Austria GmbH
2. Infineon Technologies Austria AG
3. TDK Electronics GmbH & Co OG
4. ec2t GmbH

### Selected scientific partners (max. 5):

1. Graz University of Technology
2. Montanuniversität Leoben

### Selected international<sup>1</sup> partners (max. 5):

1. BSH Hausgeräte Gesellschaft mbH
2. Electrolux Italia SpA
3. Quooker International B.V.

**Duration:** 01.01.2024 – 31.12.2027 (4 years)

**Staff employment:** 10 FTE/a, thereof 8 scientists

**Management:** Michael Lang, Project lead

**Contact:** Institute of Thermodynamics and Sustainable Propulsion Systems  
/ TU Graz

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[www.ffg.at/comet](http://www.ffg.at/comet)

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<sup>1</sup> Partners with headquarters outside Austria