

Press Release

Vienna, 20 December 2023

AIT AND TAKEDA WIN THE FIRST NET-ZERO INDUSTRIES AWARD

The joint research project AHEAD received the "Outstanding Project" award

On 19 December 2023, the AHEAD (Advanced Heat Pump Demonstrator) research project was presented with the Net-Zero Industries Award in the "Outstanding Project" category at a ceremony in Vienna. The aim of AHEAD is to develop and demonstrate an environmentally friendly alternative to natural gas for supplying heat to industrial processes using a steam-generating heat pump. The new form of process heat supply has the potential to save 1,900 tonnes of CO₂ per year at Takeda's largest pharmaceutical production site in Vienna. In addition, the flagship project led by AIT with the biopharmaceutical company Takeda and the heat pump manufacturer SPH Sustainable Process Heat underpins Austria's leading role in high-temperature heat pump research and serves as a practical example for many other industrial companies that want to make their processes CO₂-free. AHEAD is part of the energy showcase region NEFI New Energy for Industry for the decarbonisation of industry and is funded by the Climate and Energy Fund.

Brigitte Bach, Spokeswoman of the Management Board, AIT Austrian Institute of Technology:

"The AHEAD project is a shining example of how the partnership between applied research and industry in Austria is taking innovative paths to jointly master the challenges of sustainable energy supply. Our research and innovations are driving forward sustainable and efficient technologies that make a decisive contribution to the decarbonisation of industrial processes and at the same time strengthen the competitiveness of industry."

Wolfgang Hribernik, Head of Centre for Energy, AIT Austrian Institute of Technology and NEFI Network Coordinator:

"We are delighted to receive the Mission Innovation Net-Zero Industries Award for our joint research work with Takeda. The AHEAD project sets new standards for climate-friendly heat supply to industrial processes. With the NEFI innovation network, we have the opportunity to scientifically support and test new key technologies such as these with industrial users. This reduces the technical and economic risk for companies on the path to decarbonisation."

Maria Löflund, CEO of Takeda in Austria and head of the production sites in Vienna:

"AHEAD should serve as a practical example for Takeda worldwide, the entire pharmaceutical industry and also for many other industrial companies and sectors that want to make their processes CO₂-free. That's why we invited over 30 representatives from other industrial companies to our Vienna site at an event in June this year to present the project to them and start a dialogue about sustainable projects. Only together can we make a noticeable contribution to combating the climate crisis more quickly."

Veronika Wilk, Project Manager AHEAD, AIT Austrian Institute of Technology: "The AHEAD project is an important milestone in the development of industrial heat pumps. The AHEAD system uses waste heat from the cooling supply to produce vapour and relies on heat pumps with natural refrigerants and vapour compressors. This system is therefore also highly transferable to other industries. AHEAD is intended to serve as a practical example for Austrian industrial companies that want to decarbonise their processes. The Mission Innovation Net-Zero Industries Award is a confirmation of our work and an incentive to continue our commitment to a more sustainable future."

Harald Erös, AHEAD project manager at Takeda: "The AHEAD research project plays a pioneering role and presents an environmentally friendly solution for the provision of steam for pharmaceutical processes. Until now, a considerable part of the process heat requirement in pharmaceutical production has been covered mainly by natural gas. However, this is no longer necessary as part of the AHEAD project, as an innovative heat pump system with 100% natural refrigerants is being implemented. Winning the Mission Innovation Net-Zero Industries Award emphasises that we are on the right track with AHEAD and are implementing a flagship project not only for Takeda, but for the entire industry."

Mission Innovation Net-Zero Industries Award honours pioneering projects

On 19 December 2023, the "Mission Innovation Net-Zero Industries Award" was presented for the first time in Austria in three categories. The categories are "Outstanding Project", "Best Innovator" and "Young Talents". The award recognises projects and individuals that make a significant contribution to reducing greenhouse gas emissions in heavy industry. It also aims to increase the visibility of current projects and solutions on the road to a climate-neutral industry. This is backed by the international "Net-Zero Industries" mission, which, under the leadership of Austria and Australia, promotes the development of key technologies for the industrial energy transition and aims to substantially accelerate global research, development and demonstration.

NEFI project AHEAD: Innovative high-temperature heat pump system

As part of AHEAD, the experts are developing an environmentally friendly alternative to natural gas for supplying heat to industrial processes using an innovative heat pump system. It consists of a steam-generating heat pump from SPH Sustainable Process Heat, which is adapted for the use of natural refrigerants and combined with steam compressors to generate steam at 11 bar(a)/184 °C. Furthermore, a concept for the dissemination of the AHEAD system for Takeda sites in Vienna and worldwide is being developed and the decarbonisation potential of this technology for the most important sectors (paper, chemicals and petrochemicals, food) in Austria is being investigated. The AIT experts are also developing an optimised operating strategy for the AHEAD system and the heat source with a comprehensive system model in order to operate the system with minimal energy requirements. The research project is funded by the Climate and Energy Fund and is part of the research initiative "NEFI - New Energy for Industry" as part of the Austrian innovation offensive "Energy Showcase Region" programme. <https://nefi.at/de/projekt/ahead>

Net Zero Industries Mission

Mission Innovation (MI) is a global initiative of 23 countries and the European Commission with the aim of accelerating innovation in the field of energy technologies. Seven missions work under the umbrella of the MI, each of which addresses an unresolved challenge in the field of renewable energies. The "Net-Zero Industries" mission is being jointly

led by Austria and Australia. The first solutions should be commercially available and competitive by 2030. The mission is focussing on projects in emission-intensive sectors. <https://mission-innovation.net/missions/net-zero-industries-mission/>

More information about the project partners:

AIT Austrian Institute of Technology: <https://www.ait.ac.at/energy>

Takeda: [Takeda Austria - Better Health, Brighter Future](#)

SPH Sustainable Process Heat: <https://spheat.de/>

NEFI New Energy for Industry: www.nefi.at

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