

From Molecules to Meals: INERATEC Delivers First Commercial Batch of e-Wax for Food Applications

A shipment of INERATEC MATERA® e-Wax marks an important milestone in the development of alternative edible fats, demonstrating how CO₂-derived molecules can support new pathways toward reducing the environmental footprint of food production.

San José, CA / Karlsruhe – Some innovations do not start with a new product. They start with a new way of looking at a molecule.

INERATEC has successfully shipped several tonnes of its MATERA® e-Wax to a U.S.-based innovator developing next-generation edible fats. The delivery marks the first time a full commercial batch of INERATEC's synthetic Fischer-Tropsch wax has been supplied for food-related applications, opening a new chapter for carbon-derived materials.

Produced from captured CO₂, green hydrogen and renewable electricity, MATERA® e-Wax was originally developed as a versatile industrial raw material. Yet its journey does not have to end in fuels, packaging or specialty chemicals. Through further processing, synthetic hydrocarbons can be transformed into edible fats, demonstrating how innovative chemistry can unlock entirely new value chains.

The opportunity is significant. According to the Food and Agriculture Organization (FAO), livestock supply chains account for approximately 14.5% of global anthropogenic greenhouse gas emissions. At the same time, expanding pastureland and feed production are among the leading drivers of land conversion and biodiversity loss worldwide. Independent research published in Nature Sustainability has further highlighted the potential of producing dietary fats through non-agricultural pathways, potentially reducing pressure on land, ecosystems and agricultural supply chains.

While conventional edible fats rely heavily on livestock production or land-intensive agricultural feedstocks, alternative approaches offer the possibility of decoupling fat production from resource-intensive farming. The result is not merely a different ingredient. It is a different way of thinking about how essential materials can be produced." said Maximilian Backhaus, CCO at INERATEC. "We often speak about defossilising aviation, shipping and the chemical industry. This project shows that the same carbon molecules can also contribute to reimagining food production helping with a step-change in its climate impact. Seeing our technology enable innovation in an entirely new sector is incredibly exciting for our team."

The milestone reinforces INERATEC's broader mission: transforming captured carbon into valuable products that support industrial decarbonisation. Whether a molecule ultimately ends up powering an aircraft, enabling a chemical process or helping create a new generation of food ingredients, the underlying principle remains the same: using renewable energy and captured CO₂ to build a more sustainable material future.

Sources

FAO (Food and Agriculture Organisation)

Statement: Livestock supply chains account for around 14.5 per cent of global anthropogenic greenhouse gas emissions.

Nature Sustainability (2023) – “Food without agriculture”

Statement: Chemosynthetically produced edible fats could be manufactured with significantly lower environmental impacts than conventional fat production.

IUCN – Exploring the Future of Vegetable Oils (2024)

Statement: The rising demand for vegetable and animal fats is a major driver of land-use change and biodiversity loss.

About INERATEC

INERATEC develops and builds modular power-to-X plants for the production of e-fuels and e-chemicals. The technology uses renewable hydrogen and CO₂ as feedstocks to produce synthetic fuels and chemical products, including e-kerosene, e-diesel, e-petrol and e-waxes. These products can help to reduce the use of fossil raw materials and fuels in sectors such as aviation, shipping and the chemical industry.

With ERA ONE, INERATEC operates an industrial power-to-liquid plant in Frankfurt for the production of e-fuels. The plant is designed for an annual production capacity of up to 2,500 tonnes of synthetic aviation fuel. Thanks to its modular design, the technology can be deployed at various sites.

INERATEC was founded in 2016 and is headquartered in Karlsruhe. The company is supported by international investors and industry partners. Further information is available at www.ineratec.com.

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