

OCT 18, 2019

Tides of change: making biofuels from seawater

Scientists at the University of Manchester in the UK have made a breakthrough in the production of biofuels, using synthetic biology to make the next generation of bio-based jet fuels from seawater.

The researchers, who are led by Professor Nigel Scrutton, director of the Manchester Institute (MIB) and supported by US-based international maritime research agency Office of Naval Research Global (ONR), is using synthetic biology to identify a more efficient method of producing biofuel.

They have discovered that the bacteria species *Halomonas*, which grows in seawater, provides a viable microbial chassis that can be engineering to create high-value compounds. This means that products like bio-based jet fuel could be made more economically using production methods similar to those used in the brewery industry.



The breakthrough behind this new method is the ability to re-engineer the microbe's genome to change its metabolism and create different types of high-value chemical compounds, such as renewable fuel.

“Effective biofuels strategies require the economic production of fuels derived from a robust microbial host on a very large scale – usually cultivated on renewable waste biomass or industrial waste streams – but also with minimal downstream processing and avoids use of fresh water,” explained Scrutton. “With *Halomonas* these requirements can be met, so minimising capital and operational costs in the production of these next generation biofuels.”

The research could have considerable implications for the wider biofuels industry, as Dr Kirk Malone, director of commercialisation at MIB, explained: “In the case of the jet fuel intermediates we are bio-producing, they are chemically identical to petrochemical derived molecules, and will be able to ‘drop-in’ to processes developed at China Lake.”

Malone added that bio-production in seawater would avoid the ethical concerns surrounding biofuels production of the fuel vs food debate.

Patrick Rose, science director for ONR Global in London, added: “It is possible to replicate the exact same molecules we harvest from crops to make high value compounds by exploiting this biological process by taking the genes out of the plant and inserting the information into bacteria. With this engineering feat, there is no dependence on environmental factors and an increased level of reliability in the product.”

The platform developed by the University of Manchester is unique in that the bacteria grow in seawater. The management of the system and its durability also promises a long life span for continuous production.



ALL SEARCH NEWS



BIOETHANOL NEWS

Oct 31, 2019

Vertimass awarded up to \$1.4 billion to optimise renewable jet fuel

Biofuels producer Vertimass has been chosen by the US Department of Energy's (DOE) Bioenergy Technology Office (BETO) to receive up to \$1.4 billion (€1.25 billion) to optimise its renewable jet fuel. The funding will help Vertimass commercialise its 'green' catalyst technology that converts ethanol into

BIOETHANOL NEWS

Oct 30, 2019

US ethanol association supports ethanol retailers in Mexico

The American Coalition for Ethanol (ACE) has shared technical information with prospective retailers in developing a market for ethanol in Mexico. The association's senior vice-president Ron Lamberty recently spoke at the first technical ethanol information forum held in Juarez, Mexico near El Paso in the US state of

green catalyst technology, that converts ethanol into renewable jet fuel, which is compatible with current jet... [\[Read More\]](#)

BIODIESEL NEWS

Oct 30, 2019

Air BP promotes sustainable aviation fuel at industry event, expands offering to Swedish airport

Aviation fuel provider Air BP has highlighted the use of sustainable aviation fuel (SAF) at the recent NBAA-BACE industry event in Las Vegas, US. The company highlighted how solid waste from homes and businesses, including packaging, paper, textiles and food scraps that would otherwise go to landfill or incineration, can be converted into sustainable fuel for aircraft. Air... [\[Read More\]](#)

BIOETHANOL NEWS

Oct 29, 2019

Minnesotan ethanol producer to pay \$53,000 fine for environmental violations

Winthrop, Minnesota-based ethanol producer Heartland Corn Products has agreed to pay a civil penalty of \$53,000 (€47,842) for a number of environmental violations at its facility. The fine, which will be paid to the Minnesota Pollution Control Agency (MPCA), covers a variety of violations that came to light when the company carried out its own environmental audit... [\[Read More\]](#)

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Oct 29, 2019

New coalition led by Maersk to explore use of lignin, ethanol blend as marine fuel

A.P. Moller – Maersk has joined forces with Wallenius Wilhelmsen, BMW Group, H&M Group, Levi Strauss and Marks & Spencer to explore LEO, a blend of lignin and ethanol, as a potential future sustainable shipping fuel. The LEO Coalition, which also includes Copenhagen University, will consider the environmental and commercial viability of LEO fuel for shipping... [\[Read More\]](#)

BIOETHANOL NEWS

Oct 28, 2019

Maersk, Lloyds Register promote ethanol, biomethane as net zero fuels for shipping

A new study carried out by shipping line A. P. Moller – Maersk and classification society Lloyds Register has confirmed that the best way to decarbonise shipping is to find new sustainable energy sources. Based on market projections, the best positioned fuels for research and development into net zero fuels for shipping are alcohol (ethanol and methanol), biomethane... [\[Read More\]](#)

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Oct 25, 2019

New service from Gulfstream offers carbon

forum held in Juarez, Mexico, near El Paso in the US state of Texas. The forum was one of many to be run... [\[Read More\]](#)

BIODIESEL NEWS

Oct 29, 2019

Hawaii's Hamakua Energy inks biodiesel supply contract with Pacific Biodiesel Technologies

Pacific Current and Pacific Biodiesel Technologies have signed a biodiesel supply contract to increase the use of locally sourced renewable fuels and advance energy independence and security in Hawaii. Under the terms of the agreement, Pacific Biodiesel Technologies, which owns and operates a biodiesel refinery on Hawaii, will supply biodiesel for Pacific Current's... [\[Read More\]](#)

BIOETHANOL NEWS

Oct 29, 2019

USDA, National Sorghum Producers to quantify sorghum sustainability for ethanol production

US industry association the National Sorghum Producers (NSP) has partnered with the US Department of Agriculture's (USDA) Natural Resources Conservation Service (NRCS) in Kansas, US to quantify sorghum sustainability in a key American ethanol production region. The partnership will be carried out through a conservation collaboration grant that will document sorghum... [\[Read More\]](#)

BIODIESEL NEWS

Oct 28, 2019

United invests \$40 million in sustainable aviation fuel, other decarbonisation initiatives

US airline United Airlines has committed \$40 million (€36 million) to accelerate the development of sustainable aviation fuels and other technologies to decarbonise the aviation industry. Earlier this year, the airline agreed to purchase up to 10 million gallons of sustainable aviation fuel (SAF) over the next two years. It now plans to collaborate with other environmentally... [\[Read More\]](#)

POLICY NEWS

Oct 28, 2019

EIA data: US EPA refinery exemptions reduced renewable fuel blending requirements in 2018

On 9 August 2019, the US Environmental Protection Agency (EPA) announced that it had granted 31 Renewable Fuel Standard (RFS) Small Refinery Exemptions (SRE) for the 2018 compliance year, or four fewer than were approved for the 2017 compliance year. As of October 2019, two SRE applications were pending. The SRE waivers effectively reduced the amount of biofuel required... [\[Read More\]](#)

BIODIESEL NEWS

Oct 25, 2019

National Biodiesel Foundation awarded

offsets, promotes sustainable aviation

General Dynamics' subsidiary Gulfstream Aerospace has launched a new service underlining its commitment to sustainability, which provides operators with the option to offset carbon emissions from their flights. Participants in the scheme will pay an annual fee based on aircraft utilisation to fund projects and actions that generate an equivalent reduction in carbon... [\[Read More\]](#)

BIODIESEL NEWS

Oct 24, 2019

SIMEC expands biofuel power venture with acquisition of Fleetsolve

GFG Alliance company SIMEC has acquired UK-based Fleetsolve, as part of its plans to deploy biodiesel generators. Fleetsolve has experience developing, operating and maintaining biofuel-powered combined heat and power (CHP) generation equipment. Under the terms of the deal, SIMEC will take full ownership of Fleetsolve, as well as its sister company Fuelsolve. The... [\[Read More\]](#)

BIODIESEL NEWS

Oct 24, 2019

Neste to power Finnish production facilities using renewable wind energy

Renewable diesel producer Neste has signed a long-term wind power agreement with clean energy company Fortum, to power two of its production sites in Finland with wind energy. Neste will purchase around 70% of total production at the Kalax wind farm, which is currently under construction in Närpes, Ostrobothnia in Finland, for a contract period of 12 years. Total... [\[Read More\]](#)

national Biodiesel Foundation awarded funding for biodiesel project

The National Biodiesel Foundation has received a grant from the US Environmental Protection Agency (EPA) for its 2020 National Clean Diesel Project, which will see the replacement of three snowploughs that will operate on biodiesel. The project, which is run in partnership with Iowa Department of Transportation (DOT), Optimus Technologies and Renewable Energy Group... [\[Read More\]](#)

POLICY NEWS

Oct 24, 2019

Renewable fuel, agriculture coalition challenges EPA's small refinery exemption process

A coalition of renewable fuel and agricultural trade organisations in the US has filed a petition with the Court of Appeals for the District of Columbia Circuit, challenging the process by which the US Environmental Protection Agency (EPA) exempted certain small refineries from Renewable Fuel Standard (RFS) exemptions for 2018. In contrast to previous years, the EPA's... [\[Read More\]](#)

BIODIESEL NEWS

Oct 22, 2019

NBB strengthens presence in California with new West Coast office

The National Biodiesel Board (NBB) has opened its new West Coast office, to be led by California Air Resources Board (CARB) division chief Floyd Vergara, in the US state of California. The expansion will strengthen the association's presence on the US West Coast, where climate programmes are an important market driver for low-carbon fuels such as biodiesel and renewable... [\[Read More\]](#)

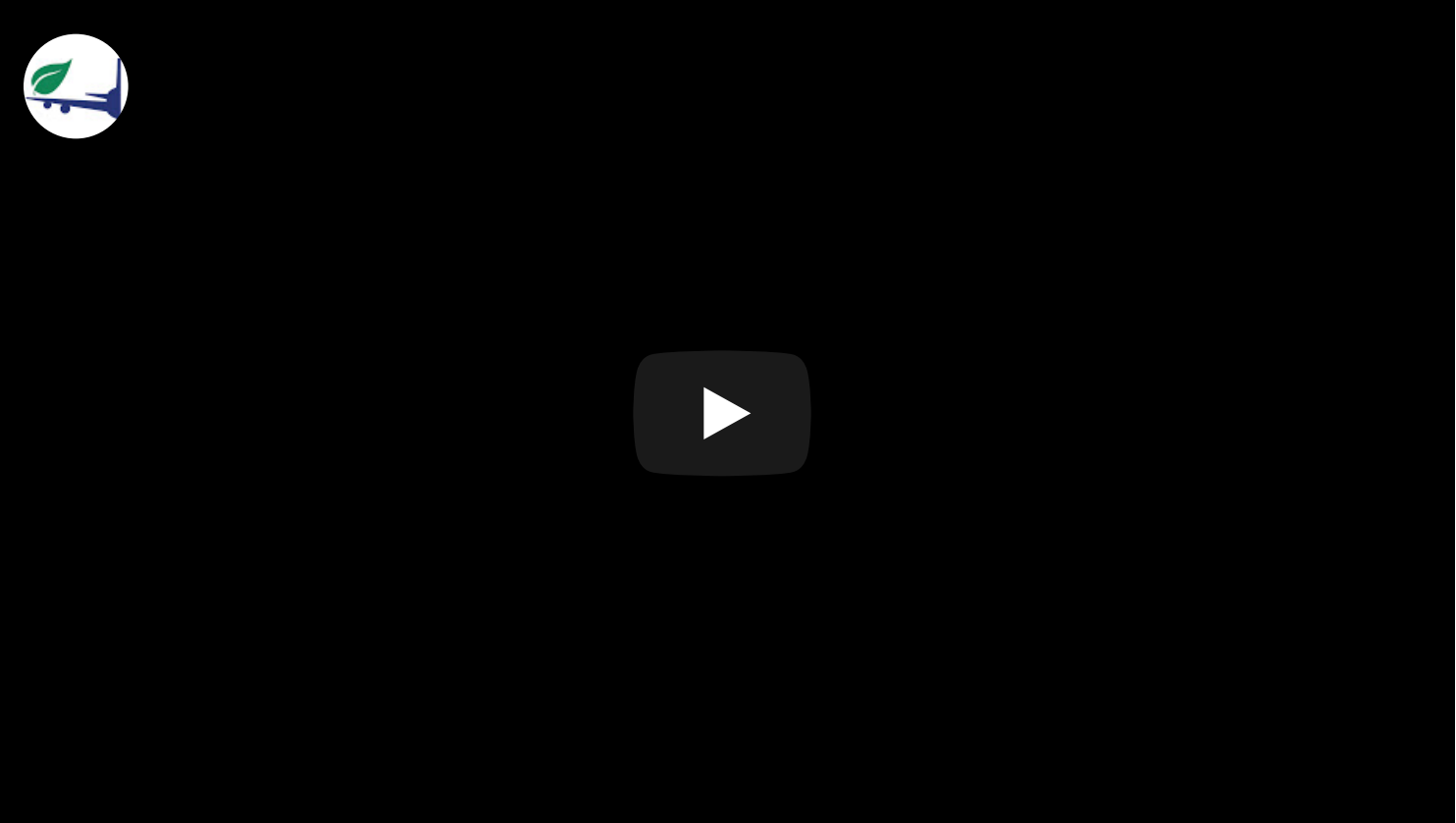


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