

Further expansion of the KIT's bioliq[®] pilot plant

The bioliq[®] process developed at the Karlsruhe Institute of Technology (KIT) enables the production of fully synthetic diesel and petrol from straw and other residues that accumulate in agriculture and forestry. Following the first and second expansion stages, the KIT is now able to move on to the next two stages, involving gas purification and fuel synthesis at the pilot plant. The German and Baden-Württemberg governments are providing a total of 11 million euros in funding for the expansion of the pilot plant on the KIT campus.



Reactor for the production of bioliqSynCrude[®] on the northern KIT campus – the first stage of the bioliq[®] process
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Synthetic fuels, which are also referred to 'biomass-to-liquid fuels' are produced from residues such as straw and wood waste. These residues can neither be used for the production of food and feed,

nor do they require extra cultivation areas. The KIT's four-tier bioliq® process is used to produce fuel that is superior to traditional biofuels and even to mineral oil products. The KIT's Vice President for Research and Innovation, Dr. Peter Fritz, recently received confirmation from State Secretary Gert Lindemann of the German Federal Ministry of Food, Agriculture and Consumer Protection (BMELV) that the expansion would be financially supported with funds of more than 10 million euros. The money comes from the German government's "Investment and Amortisation Fund", which provides funding for mobility-related research and development activities under the government's "Konjunkturprogramm II". "The bioliq® process developed by the Karlsruhe Institute of Technology appears to have many advantages over other biomass-to-liquid methods. Therefore, I am very pleased to announce that we are now able to complete the construction of the pilot line," explained Gert Lindemann, State Secretary at the German Federal Ministry of Food, Agriculture and Consumer Protection speaking in Berlin.

In addition, the Baden-Württemberg Ministry of Economics is supporting the bioliq® process with a total of 1 million euros from the EU's "Regional Competition and Employment Fund" (EFRE) that provides funding for innovative strategies for regional competitiveness.

Several process steps to convert straw into spirit



From straw to spirit: bioliq® process for the production of fuels from biomass
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In a decentralised first step, biomass is converted into a transportable liquid intermediate product of high energy density using so-called fast pyrolysis (bioliqSynCrude®). The bioliqSynCrude® decentralised production method has the advantage that the intermediate product does not have to be transported over long distances. Agriculture and forestry can thus tap into new sources of income. The pyrolysis pilot plant on the northern KIT campus is already operational. The plant for the second stage, i.e. the gasification of bioliqSynCrude® in a high-pressure entrained flow gasifier and the production of synthesis gas, is currently being built on the northern sector of the KIT campus. In future, this step and other subsequent steps will take place in large-scale production plants.

The subsequent synthesis process involves the use of the intermediate product dimethylether that is converted into hydrocarbons with petrol and diesel characteristics. The fuels are thus considerably cheaper to produce than was possible using previous methods. "Once we have implemented all the stages, the KIT will also have a bioliq® filling pump," highlighted Dr. Peter Fritz.

The Karlsruhe Institute of Technology (KIT) is a public corporation and institution of the state of Baden-Württemberg that fulfils the role of both a university (the former University of Karlsruhe) and a research institution of the Helmholtz Association (the former Karlsruhe Research Centre).

KIT is an institution of internationally outstanding research and education in the natural and engineering sciences. It currently has 8000 employees, 18500 students and an annual budget of 700 million euros. KIT focuses on the knowledge triangle of research, teaching and innovation.

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