



Press Release

Stuttgart, 22 April 2021

The fabric from which the future is woven

ZSW launches project for CO₂ separation using fabrics

In starting work on the CORA research project, the Centre for Solar Energy and Hydrogen Research Baden-Württemberg (ZSW) wants to lay the foundations for achieving the climate targets more quickly. CORA – short for CO₂ raw material from air – is the name for a technology which is being developed to allow carbon dioxide (CO₂) to be extracted from the air and processed. Both industry and environment could benefit from this process. It is not possible to avoid CO₂ emissions completely, therefore CO₂ must be extracted from the atmosphere, stored or used as a raw material in a parallel economical and ecological process. The research results should therefore facilitate the replacement of the current fossil carbon sources (crude oil, natural gas and coal) based on the use of air as a renewable and virtually inexhaustible resource. The ZSW has joined forces with the German Institutes of Textile and Fiber Research (DITF), the Institute for Energy and Environmental Research Heidelberg (ifeu) and Mercedes-Benz Sindelfingen to work on this future technology.

The innovative technology for the CO₂ separation process is supposed to work by taking CO₂ from the atmosphere and separating it from the air with a mat made of cellulose fibres and amines (organic compounds) and processing it as a raw material. The question as to whether the mat of fibres being developed by the ZSW Stuttgart with the DITF is the fabric from which a climate-friendly future will be woven remains to be answered in the course of the project.

The cellulose fibres used as the backing material must extract a sufficiently large amount of carbon dioxide from the air to be commercially viable. The scientists involved in the project are therefore faced with the challenge of working with a tape of fabric which absorbs and desorbs CO₂ efficiently. This will run parallel to the development and testing of a tape apparatus system which will make it possible to desorb CO₂ in different zones of the running tape, and therefore in a continual process, and to make it available in concentrated form. The new process is being developed with the aim of achieving a noticeable decrease in the power consumption by dispensing with large air blowers and with a view to obtaining water as well as CO₂ during the desorption process.

The CORA project is scheduled to run for four years. "This is a relatively short time frame for the project, which is why we will be

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starting work on many steps in parallel,” said Ulrich Zuberbühler, CORA project manager at the ZSW. The work on developing the material and process is set to run alongside the industrial feasibility study, for example. The last step is especially important. Once the laboratory tests have been completed to show the separation of CO₂ from the air, the plan is to proceed directly to the concrete planning and evaluation phase at a Mercedes-Benz production site in Sindelfingen in preparation for the industrial roll-out. Questions will also be asked about the contribution that existing waste heat from factories can make to the capture of CO₂. Ulrich Zuberbühler can also imagine other possibilities for industrial use. “Our technology is interesting for many sectors of industry,” he added. The joint research project CORA receives around 1.8 million euro in funding from the Federal Ministry of Education and Research (BMBF).

The Zentrum für Sonnenenergie- und Wasserstoff-Forschung Baden-Württemberg (Centre for Solar Energy and Hydrogen Research Baden-Württemberg, [ZSW](#)) is one of the leading institutes for applied research in the areas of photovoltaics, renewable fuels, battery technology, fuel cells and energy system analysis. There are currently around 300 scientists, engineers and technicians employed at ZSW’s three locations in Stuttgart, Ulm and Widderstall.

In addition, there are 100 research and student assistants. The ZSW is a member of the Innovationsallianz Baden-Württemberg ([innBW](#)), a group of 12 non-university, applied research institutes.

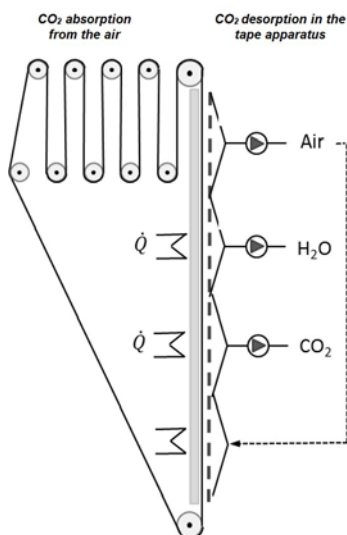
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The laboratory work on the promising CORA research project has begun. Photograph: ZSW



CO₂ absorption from the air and CO₂ desorption in the tape apparatus.
Diagram: ZSW

Photographs and diagrams are available from Solar Consulting or at
<https://energie.themendesk.net/zsw/>.