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newsletter bifa Umweltinstitut GmbH

bifa Umweltinstitut

Development of a recycling concept for reversibly operated fuel cells

Start of the joint project PreFuCell

Reversible solid oxide fuel cells (r-SOC systems) are among the most promising technologies in the context of the sustainable energy transition.

These systems can be used in different operating modes depending on the current supply and demand situation in the electricity grid. The flexible operating modes make it possible to provide electrical energy during bottlenecks and to store surplus electricity in times of overproduction in the form of chemical energy carriers using power-to-gas. In this way, r-SOC systems perform an important function as long-term storage, especially during periods of low wind and low sunlight.

Advantages of r-SOC technology

The main technological advantages of r-SOC technology lie in its comparatively high efficiency, the possibility of using different gases (e.g. hydrogen, natural gas, biogas) in fuel cell operation, and the integration of renewable energies by converting surplus energy from solar and wind farms into storable chemical fuels. These can be used again at a later point in time, for example when there is low feed-in from renewable sources, to generate electricity.

Reverion GmbH is a spin-off of the Technical University of Munich and was founded in 2022. Based >>

>> in Eresing (Landsberg am Lech district), the company develops highly efficient, reversible small power plants based on r-SOC.

PReFuCell joint project

As part of the three-year PReFuCell joint project, the four project partners Reverion, Technical University of Munich (Chair of Energy Systems), smk and bifa are working to further increase the efficiency and cost-effectiveness of r-SOC technology. In addition, in line with the principles of a circular economy, a life cycle assessment is being conducted to determine whether r-SOC systems can act as CO_2 sinks when biogenic feedstocks are used, thereby enabling negative emissions.

The recycling of raw materials at the end of a plant's service life is of central importance for the implementation of a circular economy. In the PReFuCell project, bifa is therefore taking on tasks in the circular economy work package. In particular, bifa is analysing the recyclability of r-SOC stacks and their peripherals at the end of their service life and, as part of a feasibility study, is developing a recycling process for the improved integration of r-SOC systems into the circular economy. In the process, new recycling options are being identified, evaluated and prepared for transfer into practice. Further focus is placed on evaluating the resulting material flows in the context of product and waste law. The newly developed recycling concept is supplemented by a comprehensive life cycle assessment.

The project partners in the PReFuCell joint project.

The Federal Ministry for Economic Affairs and Energy is funding the PReFuCell joint project with a total of 4.861 million euros.

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MaKoSaTex

Municipal strategies for sustainable used textile collection

In the MaKoSaTex project, the bifa Environmental Institute is working with the Technical University of Augsburg (THA) to develop specific recommendations for Bavarian municipalities on the collection and recycling of used textiles.


The aim is to establish a sustainable municipal waste textile collection system in Bavaria.

The project is being carried out on behalf of the Bavarian State Ministry of the Environment and Consumer Protection (StMUV) and is linked to the Bavarian Circular Economy Strategy (BayKWS).

The reason for this is a profound change in the market and system

While the separate collection of used textiles has long been considered a successful model in Germany, fast fashion, declining quality and increasing quantities are increasingly leading to economic and technical challenges. Since 1 January 2025, public waste disposal authorities have been obliged to collect used textiles separately across the board. The planned introduction of extended producer responsibility (EPR) further increases the strategic pressure to act.

MaKoSaTex is therefore systematically analysing the current situation in Bavaria: challenges facing public waste disposal authorities, market and material flow developments, and national and international EPR >>

>> models. This is based on a survey of all Bavarian public waste disposal authorities and interviews with stakeholders in the textile value chain. This identifies key problem areas – from quality losses and a lack of recycling capacity to financing risks and acceptance issues.

In a moderated dialogue process with local authorities and practitioners, practical and economically viable measures are developed on this basis. In addition, ecological potential, particularly for greenhouse gas and resource savings, is assessed. The aim is to achieve sustainable municipal waste textile collection in Bavaria.

Event

At the 27th Bavarian Waste and Landfill Days on 25 March 2026 at the Kongress am Park in Augsburg, Prof. Dr. Nadine Warkotsch will give a presentation on 'Used textiles as a source of raw materials – measures for a functioning circular economy'.

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Smartline PV – Project meeting in Rome

Development of flexible tin perovskite solar modules with customisable colours for façades and roof tiles

At the end of February 2026, the Smartline-PV project consortium met in Rome to update project coordinator Dr Thomas Rath (Graz University of Technology) on the progress of the work packages.

bifa Umweltinstitut GmbH was responsible for the work package 'Life cycle assessment, ecodesign and circularity' in the EU-funded Horizon Europe project. bifa's work focused on preparing and conducting the first workshop, 'Early identification of social, environmental and regulatory pitfalls for the production of lead-free perovskite PV modules,' on 8 October 2025 in Freiburg.

First workshop in Freiburg.

Dr Janknecht (TÜV Rheinland) gave an overview of product testing and the regulatory framework. In group work, value chains were visualised and social, economic, and ecological impacts were discussed. The aim was to minimise environmental risks and achieve a high level of public acceptance for the technology.

The project resulted in two bifa publications on 'Ecodesign Guidelines' and 'Environmental Risk Assessment', which are to be presented at EUPVSEC in September 2026. They provide insights for the sustainable development of new photovoltaic technologies.

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BRIEFLY INFORMED

Event

IFAT Munich on 4–7 May 2026
The world's leading trade fair for water, sewage, waste and raw materials management

IFAT is the world's most important trade fair for innovations and services in the fields of water, sewage, waste, and raw materials management.

We look forward to welcoming you to our stand. Take advantage of this opportunity for a personal exchange. Tell us about your concerns and find out what's new about bifa's services.

4th Regional Future Conference on Hydrogen

The Augsburg hydrogen technology region is making noticeable progress

On 11 February 2026, the Regional Hydrogen Advisory Board invited companies, local authorities and other interested parties to the Regional Hydrogen Future Conference at the Swabian Chamber of Industry and Commerce in Augsburg for the fourth time.

National speakers and practical best-practice examples were presented alongside regional projects and companies from the hydrogen technology region. Together, they discussed the potential, fields of application and successful uses of hydrogen technologies.

With more than 200 participants at the last event, the Regional Hydrogen Future Conference has established itself as a central platform for exchange, knowledge transfer, and networking between companies, research institutions, political decision-makers, and municipal actors.

The aim of the conference was to bring together hydrogen technology companies, industrial users, logistics, research and local authorities around the future topic of hydrogen.

Speaker for the morning session.

bifa was represented by Prof. Nadine Warkotsch (Managing director). Together with Prof. Dr. Dr. hc Hans Ulrich Buhl (FIM Research Institute for Information Management), she welcomed the participants and moderated the event.

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Project launch in Merzig

Strategic climate adaptation

The bifa Environmental Institute is supporting the district town of Merzig in developing an integrated concept for sustainable climate adaptation and natural climate protection.

The aim of the collaboration is to systematically prepare the district town for the consequences of climate change – from increasing heat stress and periods of drought to heavy rainfall. Due to its location on the Saar River, Merzig has already been affected by flooding in the past.

Flooding on 17 May 2024: the Saar River floods the district town of Merzig.

Climate adaptation measures for the district town

To begin with, we analyse existing data and plans, carry out a thorough climate risk analysis, and prioritise relevant areas of action. Based on this, we develop an implementation-oriented overall strategy with clearly defined adaptation goals, a temporal roadmap, and a spatial allocation of tailored measures. A particular focus is placed on nature-based solutions that strengthen climate adaptation, biodiversity, and quality of life in equal measure.

With over 15 years of experience in municipal climate adaptation consulting, bifa combines scientific expertise with practical implementation, and participatory process design.

Is your city or district prepared to adopt a strategic and funding-compliant approach to climate adaptation? We support you from the analysis all the way to implementation.

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