BFH is getting the solar industry fit for the future

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The solar energy industry needs to become more sustainable. As part of an EU research project, the Energy Storage Research Centre at Bern University of Applied Sciences is working together with European partners to improve resource efficiency within the solar industry.

Photovoltaics (PV), the technology to convert sunlight into electrical energy, is becoming increasingly important and already meets four percent of the electricity demand across Europe. Yet this fundamentally environmentally friendly energy creates one issue: an increasing number of used components from solar energy systems are ending up as waste. This places a burden on the environment and is a significant waste of resources. Both of these aspects are increasingly damages the commercial and image prospects of the solar industry.

Sustainable recycling models

Along with European academic and industrial partners, Bern University of Applied Sciences is currently trying to find solutions for optimising the ecological and economic balance sheet of the solar energy industry. The European Union is supporting the CIRCUSOL project as part of the "Horizon 2020" research programme. CIRCUSOL is focused on developing business solutions based on the recycling economy for the battery and solar module industry. Such business models create an incentive to extend the service life of products e.g. by the manufacturer of solar modules not simply selling them but rather managing them across the entire life cycle and through to recycling. In doing so, the manufacturer has a significant interest in extending the service life of the product and making it easier to recycle the raw materials. Under this model, the end users would no longer purchase a solar module but would instead buy the desired service (electricity) from a service company.

Technical innovations…

The European partners want to start the CIRCUSOL project in different locations to facilitate such sustainable models for recycling economies. PV modules must be designed in such a way that they are easier to repair or recycle than models currently available on the market. There is also a need to look for new approaches for energy storage systems e.g. improving the technology for restoring defect batteries. Furthermore, researchers have identified the deployment of used batteries in electric cars as offering great potential in terms of using resources more efficiently. Instead of disposing of them when they have lost 20 or 30 percent of their storage capacity, as is generally the case today, such batteries can still be used for many years – for example, as static energy storage systems in homes.

… and know-how of the industrial engineers

The research partners now want to work together to find out what it would mean for manufacturers and recyclers if such innovative technologies were used in PV modules and batteries. "Bern University of Applied Sciences will be active in several work packages of CIRCUSOL over the next four years," explained Dr. Stefan Grösser, Professor of Strategic Management and Organisation at the BFH. "We will create databases, develop ecosystem analyses and participate in pilot projects with BKW in the canton of Bern." Students will benefit from CIRCUSOL by addressing particular aspects during project work in their studies. Stefan Grösser states that BFH's position at the interface between engineering, business administration and data science is ideal: "Those are precisely the tasks for which we train industrial engineers."

Further information

Article in Spirit magazine Biel/Bienne in German
https://www.spirit.bfh.ch/de/aktuelle_ausgabe/focus/zirkulaere_geschaeftsmodelle.html

Go to film

https://www.youtube.com/watch?v=Uds9uVlY-qU

Project flyer

https://www.ti.bfh.ch/fileadmin/user_upload/ICTM_en_S5.pdf

www.euresearch.ch

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BFH Energy Storage Research Centre

The BFH Energy Storage Research Centre develops solutions for addressing energy supply in the future. These solutions will enable us to feed renewable energies from decentralised power producers into the supply grid and use electricity in place of fossil fuels in vehicles. The objective is to better exploit the potential of sustainable sources of energy such as photovoltaics and wind power.
The Strategy, Technology and Innovation Management research group at the Institute for ICT-Based Management addresses the development of management methods and tools for analysing, modelling, simulating and validating corporate ecosystems. A key aspect are publications on issues such as the diffusion of innovation, instruments for developing digital strategies and innovation management, as well as the use of simulation methods.
bfh.ch/energy und ictm.bfh.ch/stim

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The BSc in Engineering and Management Science is focused on new technologies, value networks and business models. The teaching content is selected from the fields of engineering, information technology and business administration and students learn how to convert ideas into specific projects or coordinate such projects.
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