Fraunhofer ISE: Lab Energy Storage Application and Innovation

Electrical storage systems are a key component of the energy system. The "Center for Electrical Energy Storage" at Fraunhofer ISE with its advanced equipment and industry-oriented pilot systems offers a unique infrastructure for a broad-range of R&D Services along the entire battery value chain. With our equipment in the "Lab Energy Storage Application and Innovation", we can simulate storage-supported energy systems and control them with the help of energy management systems. This enables us to offer our partners an optimal environment for developing and qualifying management strategies for storage systems.

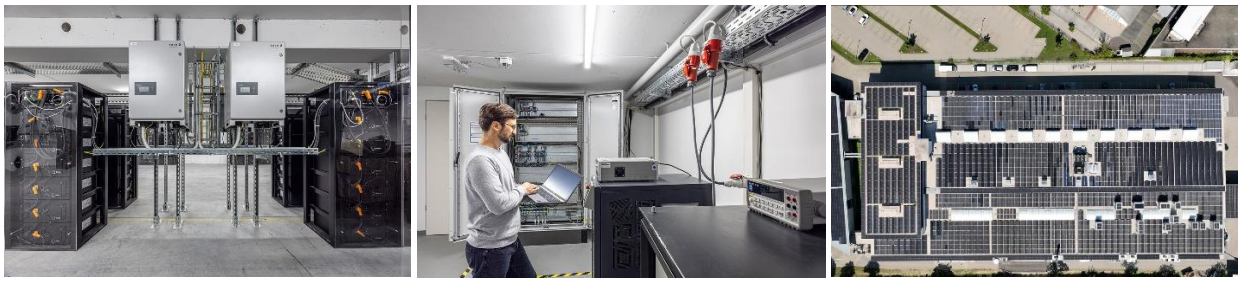

Image: Laboratory facilities at the Center for Electrical Energy Storage. Our R&D services range from materials and production technology through battery testing up to systems research, design and operation.

- **Development and Testing of Management Strategies for Storage Systems**
  Storage systems can be used for a wide range of applications. Some of these applications are already established and widely used. However, there is often a lack of suitable management strategies, which means that the full potential of the storage systems is not realized. By combining different algorithms and using prediction-based algorithms and artificial intelligence, storage systems can be operated much more efficiently. With the help of our laboratory, we support you in
    - Developing algorithms and transferring them into real applications.
    - Integrating management strategies into OpenEMS or any other EMS system.
    - Evaluating existing management strategies in terms of their functionality and performance.
- **Replication of Any Energy System**
  Storage systems are usually part of an energy system consisting of further technical components. The interaction of these components plays a crucial role for storage operation. We can simulate these storage systems and also emulate different components in our lab. In our laboratory environment, we can,
    - Reproduce generators (e.g. PV systems, Wind power plants) and electricity load profiles with the help of electronic sinks and sources.
    - Integrate real and simulated storage systems into the system.
    - Control the components with an energy management system using a control algorithm.
    - Test and qualify management strategies using specific stress situations.
    - Replicate stand-alone systems to emulate off-grid energy systems or to simulate a power outage.
- **Living Lab for Testing Management Strategies for Storage Systems**
  The "Center for Electrical Energy Storage" offers not only all the services in the field of battery cell and system research but also the opportunity to test management strategies on a real large-scale storage system. The following components can be integrated into the control system via a central OpenEMS instance:
    - Two Li-ion storage units with a total capacity of 836 kWh and an output of 560 kW
    - A PV system facing east and west with a capacity of 873 kWp
    - A fast-charging station with a buffer storage and a total charging capacity of 300 kW
    - Electronic loads and sinks for emulating further consumers and producers

> Click Here < ***to receive more info on this TechFlash.***

[To Unsubscribe the Fraunhofer TechFlash please click here]

Kindly get in touch with us if you are interested in this technology or require further information.
Thanks and Regards,

Ms. Anandi Iyer
Director, Fraunhofer Office India

Mr. Sanmati Naik
Sr. Manager - Energy (RE), Fraunhofer Office India
405-406, 30 MG Road, Bengaluru – 1
e-Mail: sanmati.naik@fraunhofer.in
Tel: +91 80 40965008/09, Mob: +91 7996425980
www.fraunhofer.in www.fraunhofer.de