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Investigating next generation of accelerators : the KITTEN test facility for sustainable research infrastructures

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To efficiently and reliably enable the operation of future large-scale research facilities, it is indispensable to conduct multi-area and multi-disciplinary research, taking into account in the facility design not only scientific aspects, but also energy-related challenges. At the Karlsruhe Institute of Technology (KIT), the innovative research laboratory KITTEN has recently been developed, connecting two of the largest research infrastructures at KIT : the particle accelerator KARA, and the energy research facility Energy Lab 2.0. The goal of KITTEN is to study in a comprehensive and multi-disciplinary way novel solutions for improving the energy use in particle accelerators, and, in general, in any energy-intensive research infrastructure. The questions to be addressed in the joint research encompasses the impact of new grid architectures, the integration of various storage technologies, novel efficient hardware, control strategies, and the seamless integration of renewable energy sources. This presentation will introduce the KITTEN research infrastructure and will describe the current research activities at KIT, that have been developed in the direction of energy efficient and sustainable research infrastructure.

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