

FOCUS AREA 04

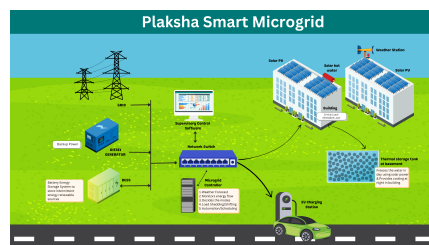
Smart Microgrids

A campus-scale living laboratory for resilient, digitally enabled and low-carbon electricity systems.

Campus-wide Smart Microgrid Testbed

IVCCE is developing a campus-wide smart microgrid at Plaksha University to enhance energy efficiency, improve reliability, and advance sustainability. The microgrid integrates distributed energy resources including rooftop solar PV, energy storage, and controllable loads to meet campus energy demands while reducing dependence on the utility grid and diesel generators. Designed as a living laboratory, the system supports research, innovation, and education in sustainable energy technologies, while generating real-world operational insights.

The project also aligns with the Ministry of Power's Indian Energy Stack (IES) vision by embedding digital intelligence into the microgrid to explore interoperable, secure, and scalable energy systems capable of enabling demand-side flexibility, peer-to-peer energy interactions, and integration with national digital energy platforms.



Smart microgrid infrastructure and the Plaksha Smart Microgrid architecture

Expected Impact

The microgrid is expected to significantly lower the campus's carbon footprint and energy costs through energy storage integration, demand-side management, and intelligent controls, while establishing a scalable and resilient architecture for smart campuses. Beyond infrastructure, the initiative aims to support capacity-building programs for campus, building, and large-facility Energy Managers, equipping them with skills in data analytics, AI, ML, and IoT. By training professionals capable of deploying smart energy management practices at scale, the project will contribute to national decarbonization goals and advances the development of a digital public infrastructure for the power sector envisioned under the Indian Energy Stack.