



Tender Notice

Request for Proposal – Microgrid Lab Equipment

(RFP-IITD AD-PD 26/044)

The Indian Institute of Technology Delhi – Abu Dhabi (IITD-AD) intends to procure a cutting-edge Real-Time Smart **Microgrid Simulation** and Power Hardware-in-the-Loop (PHIL) Research Platform to establish a world-class power systems and green energy research center (Microgrid lab) in the UAE. This high-fidelity platform will serve as a modular, open-architecture research backbone designed to support real-time Electromagnetic Transient (EMT) simulation of complex electrical networks alongside physical power hardware. The system will empower researchers, faculty, and advanced students to support academic and research activities while pioneering innovations in smart grid stability, cyber physical energy systems, and renewable energy integration. It will serve as a platform for teaching (UG & PG), hands-on training, experimental research, and the development of next generation power and energy technologies.

Brief Project Scope:

Project Overview	IIT Delhi Abu Dhabi seeks to procure a cutting-edge Real-Time Smart Microgrid Simulation and Power Hardware-in-the-Loop (PHIL) Research Platform to establish a world-class power systems and green energy research center (Microgrid lab) in the UAE. This high-fidelity platform will serve as a modular, open-architecture research backbone designed to support real-time Electromagnetic Transient (EMT) simulation of complex electrical networks alongside physical power hardware. The system will empower researchers, faculty, and advanced students to support academic and research activities while pioneering innovations in smart grid stability, cyber physical energy systems, and renewable energy integration. It will serve as a platform for teaching (UG & PG), hands-on training, experimental research, and the development of next generation power and energy technologies.
Objectives	• To establish a modular, open-architecture core real-time digital simulation engine supporting EMT network complexities of at least 120 buses/nodes. • To enable advanced Power Hardware-in-the-Loop (PHIL) and Controller Hardware-in the-Loop (CHIL) experimental capabilities. • To safely emulate grid disturbances, programmable sources/loads, and energy storage behaviours using a four-quadrant regenerative 5–10 kW power amplifier. • To facilitate advanced research into grid-forming and grid-following inverter control laws and high-throughput SCADA systems. • To provide a framework for developing high-fidelity Digital Twin state-matching workflows using industrial smart grid communication protocols (<i>Modbus TCP/IP, OPC UA, IEC 61850, IEEE C37.118 CMU</i>).



Scope	Procurement includes the supply, delivery, installation, low-latency loop calibration, software licensing, and commissioning of: 1. Core Real-Time Digital Simulation Engine: Supporting sub-microsecond CPU timesteps, nanosecond FPGA processing, and a large network solver license (≥ 500 bus execution). 2. Power Amplifier & Grid Emulator: A 4-quadrant regenerative 5 to 10 kW system with built-in Time-Delay Compensation (TDC/ITM) and a 2.5 kV fibre-optic galvanic isolation unit. 3. Modular DER Assets: A bidirectional programmable DC Battery Energy Storage System (BESS) emulator and an open-control research-grade inverter bench. 4. Premium Control Workstation: 14th Gen Intel i7 processor, 64 GB DDR5 RAM, 2 TB NVMe SSD, dual Gigabit Ethernet, and Windows 11 Pro. 5. Services: On-site technical training (including Digital Twin co-simulation workflows), a minimum 3-year comprehensive warranty, and local 24-hour engineer response support within the UAE.
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Confidentiality & NDA Requirement

The detailed RFP documents contain confidential information. Interested suppliers must download, complete, sign, and submit the **Non-Disclosure Agreement (NDA)** as an **Expression of Interest (EOI)**.

EOI / NDA Submission Deadline:
20th July 2026, 3:00 PM (UAE Time)

Signed NDAs should be submitted to: procurement@iitdabudhabi.ac.ae

Upon receipt of a duly signed NDA, eligible suppliers will receive the complete RFP package.

Key Procurement Milestones

Milestone	Date
NDA Publication / RFP Launch	Wednesday 15th July 2026
EOI & Signed NDA Submission Deadline	Monday 20th July 2026, 3:00 PM
RFP Document Release	Tuesday 21st July 2026
Clarification Questions Deadline	Thursday 23 rd July 2026, 3:00 PM
Clarification Responses Issued	Monday 27th July 2026
Proposal Submission Deadline	Monday 3rd August 2026, 3:00 PM
Intent to Award	Mid- August 2026

For further information, please contact procurement@iitdabudhabi.ac.ae.