

PIENAAR ENERGY (PTY) LTD

Smart Microgrid and Smart Energy



Overview

Use smart microgrids to power communities with locally produced renewable energy—increasing self-sufficiency and reducing emissions at the same time. A new report by World Economic Forum and Accenture highlights a surge in energy-related patents, underscoring a shift from hardware to digital solutions, focusing on grid modernization, resilience, and customer-centric energy models. The world is not flat and neither is electricity load. Microgrids are enabled by integrating such distributed energy sources into the. This research proposal presents a comprehensive framework for developing AI-enhanced Internet of Things (IoT) systems to optimize predictive maintenance strategies and improve affordability in smart microgrids.

Smart Microgrid and Smart Energy



Smart Microgrids

Smart MicroGrids (SMGs) can be seen as a promising option when it comes to addressing the urgent need for sustainable transition in electric systems from the current fossil fuel-based centralised ...

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Review of Smart Microgrid Platform Integrating AI and Deep

Smart microgrids are emerging as a pivotal solution within this framework, offering localized energy management that aligns with sustainability goals. These systems leverage diverse distributed energy ...



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Advancements and Challenges in Microgrid Technology: A ...

The concept of microgrids (MGs) as compact power systems, incorporating distributed energy resources, generating units, storage systems, and loads, is widely acknowledged in the ...

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Smart Technologies Applied in Microgrids of Renewable Energy

In this context, the identification of smart technologies with the potential to support microgrid projects serves as a relevant reference for understanding the integration of this topic within ...

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12.8V 200Ah



50KW modular power converter



Microgrids , Project Regeneration

A smart microgrid is an assembly of storage batteries, distribution lines, and power sources like wind, hydro, geothermal, and solar--a simple concept with major implications for the future of clean energy.

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AI-Enhanced IoT Systems for Predictive Maintenance and Affordability

The integration of IoT and AI technologies in smart energy systems is rapidly transforming the landscape of energy generation, distribution, and consumption. As the world ...

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Review of Smart Microgrid Platform Integrating AI and Deep



AI-driven solutions, particularly DRL, provide adaptive, autonomous, and data-driven mechanisms for real-time decision-making and predictive control within microgrids.

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Integrated Optimization of Microgrids with Renewable Energy, Electric

Electric vehicles engage in energy trading via bidirectional transactions, diminishing dependence on grid power and enhancing energy efficiency. Simultaneously, demand response ...



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Microgrid energy management and monitoring systems: A

Microgrid (MG) is a small-scale grid that may unite consumers, conventional power sources, distributed renewable energy sources, and energy storage technologies to form a flexible, ...

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Reinvention of Energy Load Drives Innovation toward Microgrids and

The influence of artificial intelligence (AI)-enabled technologies was impacting nearly all smart-grid technologies, according to the WEF-Accenture report. Aside from "forecast and decision" ...

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