

Three Systems of the Energy Internet



Article Overview

The Energy Internet is structured around three major systems: the energy system, the information system, and the energy management system, which together enable intelligent, distributed, and efficient energy networks.

1. Energy System

The energy system forms the physical backbone of the Energy Internet, encompassing all electricity generation, storage, and consumption devices. It integrates distributed energy resources such as solar panels, wind turbines, microgrids, energy storage units, and electric vehicles. This system supports bidirectional energy flow, allowing prosumers (consumers who also produce energy) to both consume and supply electricity. Its design emphasizes flexibility, scalability, and reliability, enabling real-time energy transactions and efficient utilization of renewable energy sources .

2. Information System

The information system is responsible for the collection, transmission, and processing of data across the Energy Internet. It leverages technologies like the Internet of Things (IoT), cloud computing, big data analytics, and software-defined networking to monitor energy production, consumption, and storage in real time. This system ensures coordination between distributed energy resources, supports predictive analytics for demand and supply balancing, and enables secure communication for energy trading and operational control

Article Content

Feb 06, 2026

Energy Internet

As an integration of energy technology and information communication technology, "Energy Internet" is the new driving

Jul 29, 2025

Energy Internet: Systems and Applications | Springer Nature Link

This textbook provides an ideal resource for students in advanced graduate-level courses and special topics in energy, information

Nov 10, 2025

Energy Internet, the Future Electricity System: Overview, Concept ...

In this is paper, we have presented the Energy Internet as a future evolution of a transitioning electricity system

Jun 12, 2026

Energy System Architecture Incorporating the Internet of Energy ...

Thanks to digitalization, it is possible to reduce costs during the operation of the energy system and achieve its

Jul 30, 2025

Energy Internet: Redefinition and categories

Zhou et al. 10 suggest that the EI can be divided into three levels: (1) Physical infrastructure: a multi-energy

Sep 03, 2025

Overview of Energy Internet | Springer Nature Link

In 2004, The Economist first proposed the construction of an intelligent, automated, and self-healing Energy Internet

Jan 20, 2026

Advancing the Energy Internet: Innovations and Solutions for a ...

The Energy Internet represents a transformative paradigm integrating advanced power systems, distributed

Oct 30, 2025

Key Technologies for the Energy Internet | Springer Nature Link

Energy Internet (often reflects Internet plus energy) is a novel energy network that interconnects the power system

Dec 31, 2025

The Emerging Energy Internet: Architecture, Benefits, Challenges, and ...

Energy Internet is a concept proposed to harness, control, and manage energy resources effectively, with the help of

Apr 19, 2026

Energy Internet: A Novel Green Roadmap for Meeting the Global

This paper describes the basic features and the key structure of Energy Internet, proposes a hierarchical model, and presents key

Oct 09, 2025

Background

A PES sponsored conference, IEEE conference on Energy Internet & Energy Systems Integration (IEEE EI²), was launched in 2017

Feb 12, 2026

Smart Grid to Energy Internet: A Systematic Review of Transitioning ...

Energy Internet represents a radical transformation of traditional electricity system by orchestrating real-time

Jun 15, 2026

(PDF) The Emerging Energy Internet: Architecture ...

The Internet of Energy (IoE) is a distributed paradigm that leverages smart networks and distributed system

Apr 04, 2026

Internet Thinking for Layered Energy Infrastructure

With inspirations from the Internet, in this chapter, a layered infrastructure for the future Energy Internet system is

Jun 22, 2026

A comprehensive overview of framework for developing sustainable energy ...

Abstract Energy Internet (EI) envisions a future energy system with sustainable concerns of efficiency, economy and

Jul 08, 2026

Towards next generation Internet of Energy system: Framework and

The integration, security and energy management challenges may deviate the performance of the IoE technology that

Nov 14, 2025

Energy Internet: Redefinition and categories | Energy Internet

The concept of "Energy Internet" (EI) has been widely accepted by both academic and industry experts after more than

Aug 29, 2025

What is Energy Internet? Concepts, Technologies, and

Internet-of-Things concepts are evolving the power systems to the Energy Internet paradigm. Microgrids (MGs), as the

Dec 07, 2025

Energy Internet, the Future Electricity System: Overview, Concept ...

Energy Internet, a futuristic evolution of electricity system, is conceptualized as an energy sharing network. Its features, such as plug

Aug 08, 2025

Energy Internet: Redefinition and categories | Energy Internet

In this paper, we propose the redefinition of EI, based on a comprehensive literature review, some latest trends and

Jul 03, 2026

Energy Routing Protocols for Energy Internet: A Review on Multi

The Energy Internet (EI) is transforming power networks by integrating Smart Grids (SGs), Distributed Energy

Sep 17, 2025

Smart Grid to Energy Internet: A Systematic Review of Transitioning ...

The concept of Energy Internet has emerged from the limitless possibilities of energy sharing networks formed by

Jan 29, 2026

What is Energy Internet? Concepts, Technologies, and Future Directions

The climate change crisis, exacerbated by the global dependency of fossil fuels, has brought significant challenges. In the medium to

Feb 02, 2026

A Survey on Energy Internet: Architecture, Approach, and Emerging ...

Energy crisis and carbon emission have become two seriously concerned issues universally. As a feasible solution,

Nov 03, 2025

Construction of energy internet technology architecture based on ...

Based on the general system structure theory, first, complex system of energy internet technology system should be

Dec 22, 2025

Construction of energy internet technology architecture based on ...

Mainstream research only divides the complex system of energy internet into three systems: energy grid system, value

Oct 17, 2025

A comprehensive review of Energy Internet: basic concept ...

Abstract With the intensifying energy crisis and envi-ronmental pollution, the Energy Internet and corresponding patterns of energy

Mar 12, 2026

What Is Energy Internet? Concepts, Technologies, and Future Directions

System complexity: An EI structure is built on multiple systems, which makes design, control, and optimization of the entire multi

Mar 04, 2026

Energy internet or comprehensive energy network?

What needs to be developed from the concept of "Smart Grid" is that: when renewable energy sources are absolutely

Nov 27, 2025

Energy Internet: A Novel Green Roadmap for Meeting the Global Energy ...

Energy Internet has caught an attention of the global academic community, and it is being implemented actively. This paper

May 10, 2026

Energy Internet Technology | Springer Nature Link

Energy Internet is a multi-network system with power system as the core, based on the internet and other cutting

May 31, 2026

Recent advancement of energy internet for emerging energy

This article deals with a thorough investigation of the energy internet towards future emerging technologies for energy

Oct 24, 2025

Energy Internet: Redefinition and categories

In this paper, we propose the redefinition of EI, based on a comprehensive literature review, some latest trends and driving forces in

Feb 18, 2026

The Energy Internet

Integrating renewable energy with Internet connectivity can help to sustain economic development and reduce poverty without

Oct 27, 2025

Centralized, decentralized, and distributed control for Energy Internet ...

There are three major control methods, namely, centralized, decentralized, and distributed control methods. This chapter discusses

Jan 23, 2026

Energy Internet: Redefinition and categories

Energy Internet (EI) is an energy ecosystem, with physical layer, information layer and value layer combining energy

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