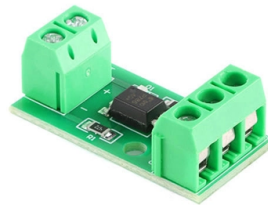


Digitalization and the Energy Internet



Article Overview

Digitalization is transforming energy systems into interconnected, intelligent networks, forming the foundation of the Energy Internet.

Overview of Digitalization in Energy

Digitalization refers to the integration of digital technologies—such as sensors, data analytics, artificial intelligence (AI), and the Internet of Things (IoT)—into energy systems to optimize generation, distribution, and consumption . This transformation enables energy systems to become more efficient, flexible, reliable, and sustainable, allowing energy to be delivered at the right time, in the right place, and at the lowest cost . It also supports the integration of renewable energy sources, enhances grid management, and improves demand-side flexibility .

The Energy Internet Concept

The Energy Internet is a vision of a highly interconnected energy system where digital technologies link physical energy assets with information networks. Through the Industrial Internet of Things (IIoT), operational technology (OT) and information technology (IT) converge, enabling real-time monitoring, predictive maintenance, and intelligent energy management . This hyper-connected ecosystem allows for decentralized energy production, electrification, and diversification of energy technologies, supporting a low- or zero-carbon future .

Key Applications and Benefits...

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Digitalisation can help integrate the (growing) share of renewable energy in the energy

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Internet of things, artificial intelligence, machine-based learning, digital twin and other developments will find their use in the energy

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The integration of digital technologies like Machine Learning (ML), Artificial Intelligence (AI),

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The Energy Internet

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Digitalization – the increased use of digital technologies – is key to integrating renewables into electricity systems,

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For more information, pricing, or custom solutions, please contact us:

Website: <https://www.chromadecksigns-eastrand.co.za>

Email: sales@chromadecksigns-eastrand.co.za

Phone: +32 2 318 5792

Address: Avenue Louise 500, 1050 Brussels, Belgium

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