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(57) Abstract :

The present invention discloses an AI-powered framework for optimized smart electric grid operations comprising an AI optimization engine (101), reinforcement learning-based control module (102), anomaly detection unit (103), consumer interaction interface (104), communication network (105), distributed energy resources (106), and central grid management system (107). The framework enables real-time forecasting, dynamic load balancing, renewable integration, and anomaly prevention. It enhances efficiency, stability, and sustainability of smart grids while empowering consumers with active participation tools. This invention provides a scalable, adaptive, and reliable architecture for next-generation power infrastructures.

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