Iot based smart energy grid

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Smart grid and IoT technologies will significantly help reduce the consumption of energy through data management and green communication, as intelligent and smart lighting will be used to monitor energy usage easily, and weather adaptions can be done immediately to meet the demands of consumers [4-6].

Renewable energy resources and green communication through smart grid IoT technologies (such as solar cells, microgrids, automation systems, and offshore wind turbines) will play a vital role in a clean future, as they produce less carbon dioxide emissions, they are much more fuel efficient, and they are less demanding on batteries [5,6].

The net-zero transmission discussion at COP26, Glasgow, aims at moving towards renewable and sustainable resources to reduce environmental emissions [7]. With the shift towards electric vehicles and hydrogen-related fuels, IoT technology such as smart sensors, alongside smart grid, will be helpful in providing immediate access to charging stations by collecting real-time data about traffic congestion and peak hour availability [7,8].

In order to meet the growing needs of food production, the worldwide deployment of IoT technologies (such as wireless sensor networks, using Artificial Intelligence) is the future of the agriculture industry. IoT technologies will significantly improve the detection of crop pests, diseases, etc. while raising the quality of produce [9].

In recent years, technological improvements have improved healthcare quality. The deployment of IoT and smart grid has shifted the industry towards digital health, e-health, m-health, and better diagnostics [10].The use of IoT Technologies and smart grid in smart cities reduces the time and effort needed for monitoring and controlling systems. These technologies are beneficial in finding solutions to existing global challenges such as energy crises, food shortages, and rising costs of living through proper resource management and waste minimization.

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