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Topic: The role of smart grid technologies in EV charging

#### Abstract

The world's energy transition faces a dual challenge: accelerating electricity demand and the need for grid modernization. Global power consumption is surging, driven by emerging technologies like EVs, which are reshaping load patterns and infrastructure requirements. For consumers, EV adoption hinges on two key factors—range and charging infrastructure—often outweighing traditional considerations for internal combustion vehicles.

This demand growth underscores the urgency for smart grid integration, where digitalization enables dynamic load management, renewable integration, and resilience. EVs exemplify this shift: they not only increase overall electricity demand but also introduce new volatility, requiring AI-driven grid optimization and distributed energy solutions.

The presentation highlighted how smart grids transform passive infrastructure into an intelligent network capable of:

- Balancing EV charging spikes with renewable generation
- Enabling bidirectional V2G (vehicle-to-grid) energy flows
- Future-proofing systems for electrification at scale

Conclusion: grid digitalization isn't optional. It is the backbone of a sustainable, electrified future.