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## **Intelligent homes' technologies to optimize the energy performance for the net zero energy home**

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### **Highlights**

1. Intelligent homes and smart technologies are a vital strategy to optimize the energy performance.
2. The level of buildings intelligence will significantly contribute the improvement of energy performance
3. The renewable energy systems in such smart homes will be a cost-effective option.
4. A case study in Riyadh – Saudi Arabia about smart home's technologies was studied.
5. It was found that improves the energy performance by 37% better than ASHRAE standards for family villas sector

### **Abstract**

Nowadays the concept of intelligent homes and smart technologies are spreading out and becoming a vital strategy to optimize the energy performance. Specially that the internet is available to all our life aspects including educational system, health care, banking, commercial, industries, mobile applications, etc. The energy sector is one of the important domains to use the internet in the supply and demand sides. As the buildings consumes two third of electricity globally, the real-time monitoring, by using the internet, is one of the key factors to manage the energy consumption and to optimize the buildings' performance. Accordingly, the buildings' systems have utilized the information technology's revolution in the last decade in several manners. One of the very interesting synergies is that developing relationship between the energy monitoring and the Internet of Things (IoT) for most of buildings' sensors, energy meters and building automation systems. These new technologies interact effectively with the Smart Home

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