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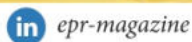
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## ENERGY INFRASTRUCTURE RENEWABLES INTEGRATION AND SMART GRIDS

Implementing smart grids from generation to consumer appliances is crucial for a sustainable energy future. This transition is urgent to reduce environmental impact, optimise operations, enhance reliability, cut costs, and improve efficiency.



## INDUSTRY ANALYSIS- WIRES AND CABLES

systems. These technologies offer enhanced durability, environmental resistance, and longer lifespans. Innovative products like high-voltage direct current wires made of recyclable materials mitigate safety risks. Smart monitoring and predictive maintenance systems revolutionise cable network management, enabling real-time identification and resolution of potential issues. Cybersecurity investments are vital as urban networks become interconnected, influencing the development of specialised cables that can withstand automation and manufacturing processes," says Sawhney.

### Advancements in cable technology

Advanced cable solutions enhance smart grid characteristics, including dynamic grid optimisation, cybersecurity, and renewable integration. They are crucial in integrating renewable sources like solar, wind, and hydropower plants. Medium- and high-voltage power cables facilitate efficient electricity transmission, minimising losses and ensuring reliability. High-voltage onshore cables enable grid development and upgrades. Underground and submarine installations enhance renewable system efficiency.

Singh shares that advanced cable advancements, such as green heat-resistant and hybrid cables, are crucial for the development of smart grids and renewable energy integration. These cables enable stable transmission of variable renewable energy inputs, maximising renewable utilisation. They support smart grid technologies by enabling real-time data and communication. They are made from eco-friendly materials for safety and sustainability, ensuring a robust, reliable, intelligent power grid.

"Advanced cables with embedded communication capabilities enable seamless integration and coordination within the smart grid, supporting real-time data exchange for dynamic load management and optimising power distribution. These high-capacity, low-loss cables transmit renewable energy from remote sites to urban centres, maintaining grid stability by balancing intermittent renewable sources with traditional power supplies. Investments in cable technology enhance urban network safety and reliability and are crucial for the evolution of smart grids and renewable energy integration," Vinay Rathi, Director, Gloster Cables emphasises.

### Investing in smart technologies

Investing in smart cable technology is essential to move fast towards smart cities in a real manner. While sharing his views on investing in smart tech, Gaurang Punjabi, Sr. Technical Analyst at WAA Cables, shares, "At WAA Cables, we use advanced cable technology to

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*"Investing in advanced cables supports smarter, better connected, and sustainable urban operations."*



Manjit Singh,  
Executive Director,  
KEC International

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*"Advanced cables are binding for ambitious, smart city projects and India's clean energy goals."*



Bhushan Sawhney,  
Executive President and Chief Business Officer,  
Polycab India

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*"Advanced cable technologies maximise transmission efficiency while maintaining grid stability."*



Gaurang Punjabi,  
Sr. Technical Analyst,  
WAA Cables

“

*"High-temperature superconducting cables enhance power quality and sustainability in urban infrastructure."*



Vinay Rathi,  
Director,  
Gloster Cables

ensure smart cities' power quality and environmental sustainability by enhancing efficiency and reliability. Digitalisation has enabled real-time monitoring and predictive maintenance, optimising energy use, and reducing environmental impact."

While proceeding with the advancement, we must not forget about India's clean energy goals and the need for green and smart cables that offer energy efficiency and safety to fulfil them; hence, concentrating on green cables is the key step towards sustainability.