# Construction industry innovates to meet clean energy goals and rising electricity demand



As various sectors strive towards achieving clean energy and sustainability goals, notably the U.S. government’s aim for at least a 50 per cent reduction in carbon emissions by 2030, the demand for electricity continues to surge, particularly within the construction industry. Projections indicate that electricity usage in this sector is set to increase by approximately 20 per cent by 2030. This raises a critical question for industry professionals—including contractors, designers, engineers, architects, and building owners—regarding how to simultaneously lower carbon emissions and reduce electricity demand during this period of heightened activity.

One significant approach gaining traction is the adoption of advanced technologies such as 3D printing and modular construction. These innovative methodologies have been highlighted in multiple reports as having the potential to transform the construction landscape. The advantages of 3D printing in particular extend beyond merely expediting on-site building processes. This technology facilitates the off-site manufacturing of building components, enhances design flexibility through the ability to incorporate sophisticated shapes and complex structures, and ultimately leads to lower greenhouse gas emissions compared to traditional construction practices. With careful consideration of challenges—such as size limitations, regulatory compliance, and effective planning for essential services like plumbing and electrical systems—3D printing has emerged as a viable solution in the quest for sustainable construction.

In addition to 3D printing, the construction sector is witnessing an enhanced reliance on robotics, drones, and modular wiring systems (MWS) to drive efficiency and reduce environmental impact. The integration of robotics in construction is anticipated to grow substantially. Robotic systems are already employed for tasks such as welding, surveying, mapping, and bricklaying, as well as for performing assessments in hazardous locations. For instance, Hilti’s Jaibot—a semi-autonomous robot—utilises Building Information Modeling (BIM) data to accurately drill holes for electrical and plumbing installations, thereby streamlining the construction process and minimising risk to human labourers.

Drones have also established themselves as invaluable tools within construction. Functioning as “digital construction assistants,” drones can document site conditions and track project progress in real time, offering a comprehensive aerial perspective that enhances data accuracy and operational efficiency. While traditional manual surveying might take a skilled team over an hour to cover five acres, drone technology allows even novice operators to survey up to 120 acres in just one hour. This remarkable efficiency leads to reduced labour costs and significantly accelerated timelines for project completion. Additionally, drones are utilised in assessing dangerous conditions—such as active worksite hazards or treacherous terrain—thereby safeguarding construction personnel.

Furthermore, the implementation of modular wiring systems represents a transformative shift in how electrical installations are approached in various types of buildings, including hospitals, educational institutions, and government facilities. MWS consist of factory-preassembled wiring components that supplant conventional branch circuit wiring methods. The deployment of MWS is not only cost-effective but also notably flexible and user-friendly. Reports suggest that utilising modular wiring can diminish installation time for electrical systems by as much as 75 per cent. This substantial reduction in time translates into decreased electricity demand and shorter overall construction timelines.

By harnessing these advanced technologies, the construction industry stands at a pivotal point where it can enhance operational efficiency and improve sustainability concurrently. As stakeholders explore the potential of 3D printing, robotics, drones, and modular wiring, the focus remains on addressing the demands of a growing electricity market while adhering to the ambitious carbon reduction targets set forth by state and federal governments.

Source: [Noah Wire Services](https://www.noahwire.com)

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