

This regulation requires implementation of various smart building techniques that incorporate the complete integration of following building systems, which dynamically interacts with building occupants and facility operators via smart infrastructure.

- Heating, Ventilation, Air Conditioning (HVAC) systems
- Lighting
- Small power equipment
- Energy and water meters
- Elevators
- Irrigation systems
- Security systems such as access control, surveillance etc.

This regulation requires project teams to explore a variety of innovations from the industry to reduce energy and water consumption. Following are some examples of potential technologies that can be incorporated in smart buildings.

Intelligent HVAC control

It functions like the building brain, where all systems and devices under HVAC systems are connected through Internet Protocol (IP) network. Operation of the building is continuously monitored, and informed decision is taken to improve building performance. For instance, if occupancy sensor detects no occupancy in an area, signal can be transmitted to ventilation system to turn off in that area. The system also includes automatic detection of faults in HVAC devices and prompts for maintenance procedures to building facility team. This system can also be user interactive, wherein occupants can interact remotely with the HVAC control system. Interaction could be to remotely control the comfort temperature settings or to view and analyse the consumption patterns.

Smart Lighting

The sensors embedded into the building's lights detect building users and allows the users to adjust light levels via a software application. Another possible usage of smart lighting system is to integrate the system with window shade control system. Lighting system would perform an automated comparative analysis on the air conditioning energy use and determine if it is more feasible to shade the windows and turn the lights on.

Real Time Analysis

Analytical software can be used to monitor and control energy and water consumption in real time. The real time analysis platform will also interact with building control systems to analyse and predict the consumption and costs of energy and water, as well as the comfort needs of building occupants. The software program includes a server infrastructure to connect smart meters, collect, store and analyse energy and water data, share results of the analysis to the end-users. Results can be shared through a visual representation of the building's energy and water consumption. It can also offer insights in identifying operational abnormalities and in identification of areas with highest consumption. Using previous trends, building operators can predict future patterns and adjust building operations.

Plug Load Management

Typical plug load are those that are plugged into a standard wall outlet throughout the buildings. This includes computers, televisions, monitors, refrigerators and similar equipment. This excludes major end uses like heating, ventilation, air conditioning (HVAC), lighting, water heating and so on. By integrating smart technologies, plug load control can avoid wastage of energy. This is determined by analysing the operation of devices connected and switching off the power to that equipment. Smart controls can also be programmed to turn on or off equipment, based on set schedule. Plug load management can be effectively and efficiently controlled either remotely or through smart internet infrastructure.