

IMPLEMENTATION

This regulation requires project team to utilise innovative ideas and mechanisms that enhances energy efficiency and reduces overall energy demand. These ideas or new mechanisms shall not be from the requirements listed in the regulations.

Project team should explore various new and innovative technologies that not only reduces energy demand, but also can be seamlessly integrated into the project. Some examples for innovative or alternative technologies are given below:

Climate-Responsive Shading System

By using computer controlled dynamic shading systems, the shading devices are controlled based on the sun direction (fig. 505.01(1)). This not only reduces the building peak heat gain and cooling requirements, but also improves the natural light quality in interior spaces. Shading system integrated with project's BMS can aid in reduction of energy demand.



Fig. 505.01(1): Climate-Responsive Kinetic Facade

Radiant Cooling System

Radiant cooling systems cool the floor or ceiling of space to remove sensible heat from room and to provide comfortable temperature. Hydronic radiant system is a commonly used system, which utilises water to transport energy and where the temperature of the slab is controlled, to provide superior comfort. As heat transfer capacity of water is 3,400 times more than that for the same volume of air, radiant slabs can transfer energy much more efficiently than a forced-air system. This results in reduction in overall building energy consumption and demand.

Underfloor air distribution (UFAD) systems

Underfloor air distribution (UFAD) system is an innovative technology that uses underfloor plenum below a raised floor system to supply conditioned air directly into the occupied zone of the building through floor diffusers. Conditioned air can be delivered through supply outlets / diffusers located at floor level or as part of the furniture and partitions. As conditioned air is supplied directly into the occupied spaces, higher supply temperature can be maintained that results in reduced cooling demand and energy consumption. UFAD system benefits from the air flow pattern, wherein air from floor level gets returned through the return grills in ceiling level through natural buoyancy in the heat sources in the occupied space. Combining building's HVAC system with other possible mechanical and electrical services (modular cabling, network cable routing etc.) into one easily accessible service plenum under the raised floor, is also an added advantage for this system.