Technologies and Strategies for Net-Zero Energy Buildings.

(Article 1 of 7) | Operations-Team | June 2023

We develop advanced hi-tech solutions, aiming the least impact on the environment

NetZero-Blog Klimaire-HVAC

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The methodologies delineated in the subsequent series of seven articles, which range from passive architectural design to judicious selection of energy-efficient apparatus, demonstrate that the pursuit of net-zero energy design is attainable through familiar techniques and commercially available technologies. Furthermore, accomplishing this does not necessarily entail increased expenditure. Despite the multitude of tactics available, the core concept remains straightforward: optimize the building's energy efficiency such that the reliance on locally-sourced renewable energy is modest and economically feasible.

Construction Envelope and Architectural Considerations. (Article 2 of 7)

When conceptualizing a net-zero energy building, several architectural elements demand consideration. These encompass building orientation, fenestration, reflection of the external surface, shading, and selection of interior finishes.

Employment of Passive Design Methodologies. (Article 3 of 7)

These strategies facilitate the maintenance of a congenial environment within buildings by utilizing natural daylight, ventilation, heating, and cooling, thereby negating the dependence on energy-intensive building equipment.

HVAC Systems in Net-Zero Energy Buildings. (Article 4 of 7)

The realization of a net-zero energy HVAC system necessitates a strategic collaboration between the design, ownership, and construction teams to fulfill heating and cooling requisites whilst ensuring energy efficiency.

Implementing Lighting and Daylighting Strategies. (Article 5 of 7)

This design tactic exploits natural sunlight to furnish regulated, superior lighting, thereby reducing electrical lighting loads, conserving energy, and mitigating cooling efforts.

Management of Plug Loads. (Article 6 of 7)

In a commercial building, plug loads typically account for over a third of the total energy consumption. As buildings evolve to become more energy-efficient, managing plug load energy has emerged as a critical aspect in striving towards ambitious energy goals and achieving a net-zero status. The resources offered here can guide building owners in deploying strategies to reduce plug load energy consumption and accomplish their specific plug load energy targets.

Design and Equipment for Efficient Kitchen Operations. (Article 7 of 7)

Considering a kitchen is one of the most energy-intensive spaces within a building, operating it efficiently requires meticulous attention to appliances, design, and ventilation.