

## Thermal Performance and Environmental Assessment of Evaporative Cooling Systems: Case of Mina Valley, Saudi Arabia

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**Abstract :** This paper presents a detailed description of evaporative cooling systems used for space cooling in Mina Valley, Saudi Arabia. The thermal performance and environmental impact of the evaporative coolers were evaluated. It was found that the evaporative cooling systems used for space cooling in pilgrims' accommodations and in the train stations could reduce energy consumption by as much as 75% and cut carbon dioxide emission by 78% compared to traditional vapour compression systems.

**Keywords :** evaporative cooling, vapor compression, electricity consumption, CO2 emission

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