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Investigating the effect of commercial nano coating material on heat reduction through a clear double glazed window

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The contribution from buildings towards energy consumption has steadily increased reaching figures between 20% and 40% in developed countries for both commercial and residential buildings. In countries with hot climate such as Kuwait, the major elements that causes such increase in energy consumption is the air conditioning system along with the type of glazing used for buildings. This is because the inner temperature increases from infrared heat radiation passing through the windows. For this reason, coating the window using nano technology would help in managing heat generated from radiations. In this work, a study was conducted experimentally on a 6x6x6mm double glaze window using a 500W heat source to determine the technical feasibility of applying single layer commercial nano coating, multi layer commercial nano coating, and commercial 30% shaded film. The results showed that applying a single layer of nano coating material reduced the overall heat transfer by roughly 7°C while with multi layer case; the heat transfer reduction was only 1.5°C less than the single layer scenario. The 30% shaded film has shown poor result, as it reduced only 1°C compared with the original sample. The final temperatures for the original sample, single layer nano coating, multi layer nano coating, and 30% shaded film are 40, 33.235, 31.535, and 38.644°C respectively.

Biography

Ali Al-Radhi has completed his Bachelor in Mechanical Engineering from Australian College of Kuwait (ACK). He has completed an internship at Kuwaiti Institution of Scientific Research (KISR). He works on nano-coating for enhancing buildings energy efficiency.

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