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Corrigendum: Effects of window films in thermo-solar properties of office buildings in hot-arid climates

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KEYWORDS

CO₂ footprint, energy saving, illuminance, kernel density estimation, office building, solar window film

A Corrigendum on

Effects of window films in thermo-solar properties of office buildings in hot-arid climates

by Sedaghat A, Abbas Oloomi SA, Malayer MA, Alkhatib F, Sabri F, Sabati M, Salem H, Zafar WJ, Mostafaeipour A, Issakhov A, Jahangiri M, Techato K and Chowdhury S (2021). *Front. Energy Res.* 9:665978. doi: 10.3389/fenrg.2021.665978

In the published article “Sedaghat, A., Sabati, M., Alkhatib, F., Oloomi, S. A., Sabri, F., Salem, H., Zafar, W. J., & Malayer, M. A. (2021). Climate change and thermo-solar patterns of office buildings with/without window films in extreme hot-arid climate of Kuwait. *Solar Energy*, 217, 354–374” was not cited in the article. The citation has now been inserted in the following Figure and Table captions: **Figure 3, 4, 5, and 13** and **Table 2, 4, 6, 7, and 8**.

In the published article, there was an error in [Figure 7] as published. Information month “July” was missing. The corrected [Figure 7] caption appears below.

“FIGURE 7 | Histograms and kernel density estimation (KDE) of temperature (T) and relative humidity (RH) for three DHT22 sensors on the interior glass surface of windows during the month of July 2019; (A–C) 3MN20 windows, and (D–F) DG windows.”

In the published article, there was an error in **Figures 8–12** as published. Information month “July” was missing. The corrected [Figures 8–12] captions appear below.

“FIGURE 8 | Combined kernel density estimation (KDE) of temperature (T) and relative humidity (RH) for three DHT22 sensors on the interior glass surface of windows during the month of July 2019; (A–C) 3MN20 windows, and (D–F) DG windows.”

“FIGURE 9 | Histograms and kernel density estimation (KDE) of temperature (T) and relative humidity (RH) for three DHT22 sensors on the façade and interior wall surface of offices during the month of July 2019; (A–C) 3MN20 windows, and (D–F) DG windows.”

“FIGURE 10 | Combined kernel density estimation (KDE) of temperature (T) and relative humidity (RH) for three DHT22 sensors on the façade and interior wall surface of offices during the month of July 2019; (A–C) 3MN20 windows, and (D–F) DG windows.”

“FIGURE 11 | Temperature and humidity (max-mean-min) for three DHT22 sensors on the interior glass surface of the offices with double glazing (DG) and 3M Neutral 20 (3MN20) windows during the month of July 2019; (A–C) temperatures, and (D–F) humidity variations.”

“FIGURE 12 | Façade and interior air temperature and humidity for three DHT22 sensors for the offices with double glazing (DG) and 3M Neutral 20 (3MN20) windows during the month of July 2019; (A–C) temperatures, and (D–F) humidity variations.”

A correction has been made to [Abstract] [Page Number 1] This sentence previously stated:

“Here, histograms and the kernel density estimation (KDE) of temperature/humidity were analyzed and compared for the two offices with/without 3M Neutral 20 window films. Two floors of the same building consisting of 31 offices were also modeled and simulated to study energy saving and CO₂ footprint reduction using various window films.”

The corrected sentence appears below:

“In our previous published paper in Solar Energy, the results for June 2019 were analyzed using an explicit less accurate rational PDF function. Here, histograms and temperature/humidity are analyzed more accurately by numerical kernel density estimation (KDE) functions and compared for the two offices with/without 3M Neutral 20 window films for 3 months of June, July, and August 2019. Two floors of the same building consisting of 31 offices were also modeled and simulated in Design Builder to study energy saving and CO₂ footprint reduction using various window films.”

A correction has been made to [Page Number 17]. This sentence previously stated:

“The same results discussed here from Figures 7–12 are presented for the month of July 2019 in appendix A (ures A1–A6) and for the month of August 2019 in Supplementary Appendix B (Supplementary Appendix Figures B1–B6).”

The corrected sentence appears below:

“The same results discussed here from Figures 7–12 are presented for the month of June 2019 in Supplementary Appendix A (Supplementary Appendix Figures A1–A6) and for the month of August 2019 in Supplementary Appendix B (Supplementary Appendix Figures B1–B6).”

A correction has been made to [Page Number 18]. This sentence previously stated:

“Simulation results on minimum-mean-maximum temperature and humidity are compared with measured values in Figure 15 for the office with double-glazing in the month of June 2019. Simulation

results for sensor 1 provide the closest match with experiments. Simulation results on minimum-mean-maximum temperature and humidity are also compared with measured values in Figure 16 for the office with 3M Neutral window films in the month of June 2019. Simulation results for sensor 2 provide the closest match with experiments. Simulation results for the months of July and August 2019 are presented in Supplementary Appendix C (Supplementary Appendix Figures C1–C4).”

The corrected sentence appears below:

“Simulation results on minimum-mean-maximum temperature and humidity are compared with measured values in Figure 15 for the office with double-glazing in the month of July 2019. Simulation results for sensor 1 provide the closest match with experiments. Simulation results on minimum-mean-maximum temperature and humidity are also compared with measured values in Figure 16 for the office with 3M Neutral window films in the month of July 2019. Simulation results for sensor 2 provide the closest match with experiments. Simulation results for the months of June and August 2019 are presented in Supplementary Appendix C (Supplementary Appendix Figures C1–C4).”

A correction has been made to [Conclusion] [Page Number 21] This sentence previously stated:

“A systematic method was presented to develop a monthly PDF (probability density function) indicator using a rational function for parameters of interest such as temperature, humidity, and illuminance.

The offices with window films always possessed 5% to 10% higher humidity compared with offices without windows films.

The offices with window films always possessed lower temperatures between 2 degrees and 5 degrees Celsius compared with offices without window films.

The lux intensity was reduced by applying window films particularly during the peak solar radiation of the day around 3 to 4 p.m.

For the 3M Neutral 20 window films in June 2019 in Kuwait, the electricity consumption and carbon dioxide production could be reduced by 0.973%.

For the 3M Neutral 70 window films in June 2019 in Kuwait, the electricity consumption and carbon dioxide production could be reduced by 0.004%.

The energy saving in the month of June 2019 by installation of 3M Neutral 20 window films was about 132.97 kWh.

The energy saving in the month of June 2019 by installation of 3M Neutral 70 window films was about 0.06 kWh.

Simulations for the SOL 101 window film indicated a 699.537 kg CO₂ footprint reduction and 1154.28 kWh energy saving in summer 2019 for one floor in the ACK building.

Results for the SOL 102 window film showed a 653.215 kg CO₂ footprint reduction and 1077.83 kWh energy saving in summer 2019 for the same floor.”

The corrected sentence appears below:

“A systematic method was presented to develop a monthly PDF (probability density function) indicator using a rational function for parameters of interest such as temperature, humidity, and illuminance.

The offices with window films always possessed 5% to 10% higher humidity compared with offices without windows films.

The offices with window films always possessed lower temperatures between 2 degrees and 5 degrees Celsius compared with offices without window films.

The lux intensity was reduced by applying window films particularly during the peak solar radiation of the day around 3 to 4 p.m.

For the 3M Neutral 20 window films in July 2019 in Kuwait, the electricity consumption and carbon dioxide production could be reduced by 0.973%.

For the 3M Neutral 70 window films in July 2019 in Kuwait, the electricity consumption and carbon dioxide production could be reduced by 0.004%.

The energy saving in the month of July 2019 by installation of 3M Neutral 20 window films was about 147.11 kWh.

The energy saving in the month of July 2019 by installation of 3M Neutral 70 window films was merely about 0.71 kWh.

Simulations for the SOL 101 window film indicated a 699.537 kg CO₂ footprint reduction and 1154.28 kWh energy saving in summer 2019 for one floor in the ACK building.

Results for the SOL 102 window film showed a 653.215 kg CO₂ footprint reduction and 1077.83 kWh energy saving in summer 2019 for the same floor.”

The authors apologize for these errors and state that this does not change the scientific conclusions of the article in any way. The original article has been updated.

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