



Contribution ID: 221

Type: **Poster Presentation**

Daylight Availability & Energy Savings Potential in an Office Building in Alice

The commercial sector represents the third highest energy consumers in South Africa with electric lighting constituting one of the major energy usages in the sector. Considering the significant amount of solar radiation in South Africa, office buildings can utilise daylighting solely for daily tasks without compromising occupant visual comfort; thus, reducing the overall energy consumption in the sector. This study aims to investigate the daylight availability and the resultant potential energy in an office building. In this regard, photometric sensors were used to monitor illuminance in selected offices to illustrate the daylighting of the building. Daylight uniformity in each of the office was determined by handheld photometric meter, measured at 0.5 m interval from the windows to the interior of the office. The indoor illuminance measurements were accompanied by ambient horizontal illuminance and solar global horizontal radiation observations. Preliminary results show that the average illuminance at the work plane in the office space with all electric lights on and without daylight was 460 lux. The average daylight illuminance on a typical clear sky and overcast days was found to be 910 and 170 lux, respectively. This resulted in a daily cumulative energy savings of 11.14 kWh on a clear sky day and 0.47 kWh on an overcast day. Based on the findings of the study, daylight practice in office buildings has the potential of reducing energy consumption without compromising occupants' visual comfort. However, integration of adjustable photocell switch controller in daylight assisted office space is recommended for effective performance.

Apply to be considered for a student award (Yes / No)?

No

Level for award (Hons, MSc, PhD, N/A)?

N/A

Primary author: Dr OVEREN, Ochuko Kelvin (Fort Hare Institute of Technology)

Co-author: Prof. MEYER, Edson Leroy (Fort Hare Institute of Technology)

Presenter: Dr OVEREN, Ochuko Kelvin (Fort Hare Institute of Technology)

Session Classification: Poster Session 1

Track Classification: Track F - Applied Physics