

Battery performance cameroon

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Hourly load profile during vacation period and during normal period.

Buea monthly solar radiation data and monthly average ambient temperature.

where, PSTC represents the nominal power of the solar panel, NPV indicates the number of solar panels,  $I_r$  is the solar radiation at the chosen location, TC stands for the cell temperature,  $\alpha_p$  indicates the temperature coefficient and  $F_{losses}$  quantifies the reduction in efficiency of solar panels caused by factors such as dirt and shading. In this study, this variable was assigned a value of 0.9531.

where  $r$  represents the real interest rate while  $N$  denote the duration of the project.

$k_r$  represents the discount factor for component replacement cost. It is determined by the project lifespan, real interest rate, and component lifespan. Equation (19) describes this expression.

where  $N_{rep}$  is the number of component replacements and  $n$  is the lifetime of the component.

Setting parameters for the four algorithms.

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