

Solar System Design for Container Resort in Kitale (Approximate Figures)

1. Updated Load/Energy Calculations

The table below summarizes the updated load and daily energy requirements for the mini resort:

Item	Quantity	Power (W)	Hours per Day	Daily Energy (kWh)
Executive Rooms (TV + Lights)	33	120	10	39.6
Washing Machines	3	1,000	6	18
Chandeliers	20	150	12	36
Modern Kitchen Equipment	10	2,000	5	10
Freezers	2	800	24	38.4
Fridges	3	400	24	28.8
Fryers	2	1,500	5	15
CCTV Cameras	10	30	24	7.2
Security Lights	20	50	12	12
Charging Points	50	20	4	4
Miscellaneous (Lighting, Kitchen, etc.)	-	2,000	12	24
Total Daily Energy Requirement	-	-	-	233

2. Solar Panel Requirements

The table below outlines the solar panel requirements:

Total Daily Energy	233 kWh
Peak Sunlight Hours	5 hours

Required Solar Capacity	46.6 kW
Solar Panel Rating	400W (0.4 kW per panel)
Number of Panels	117 panels
Total Cost for Panels	KSh 2,340,000
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3. Battery Requirements

The table below outlines the battery requirements:

Total Daily Energy	233 kWh
Depth of Discharge (DoD)	80% (0.8 usable capacity)
Required Battery Capacity	291.25 kWh
Battery Rating	48V, 100Ah (4.8 kWh per battery)
Number of Batteries	61 batteries
Total Cost for Batteries	KSh 7,320,000

4. Inverter Requirements

The table below outlines the inverter requirements:

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Peak Load	23.92 kW
Recommended Inverter Size	28.7 kW
Inverter Configuration	4 units (7.5 kW each)
Total Cost for Inverters	KSh 600,000

5. Installation and Miscellaneous Costs

The table below outlines the installation and miscellaneous costs:

Installation Labor (15%)	KSh 1,539,000
Wiring, Mounting, Accessories	KSh 800,000
Total Installation & Miscellaneous Cost	KSh 2,339,000

6. Total Cost Summary

The table below summarizes the total costs:

Solar Panels (117 panels)	KSh 2,340,000
Batteries (61 units)	KSh 7,320,000
Inverters (4 units)	KSh 600,000
Grand Total	KSh 12,599,000
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