

## Lemon Creek Hotel Solar Installation



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# 1. Lemon Creek Hotel

- **Location:**
  - Kombo Coastal Airport Road
  - Bijilo (The Gambia)
- **Main services:**
  - Number of rooms: 39 divided in 5 blocks
  - Restaurant
  - Swimming pool
  - Laundry
- **Energy source:** NAWEC/diesel generator
- **Average daily consumption:** 488 kWh / day



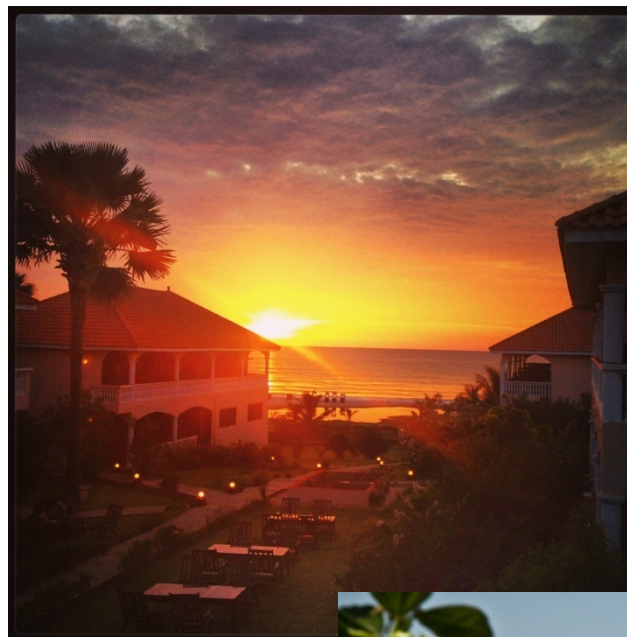


# 1. Lemon Creek Hotel

We are a small Danish owned hotel that opened our doors to business in November 2007.

Corporate Social Responsibility and the principal of Global Compact are vital to our running of the hotel and amongst other things we work with different women cooperatives and female entrepreneurs. Responsible tourism is key to a sustainable development and we constantly strive to get greener. As a part of our strategy we have our own kitchen garden as well as our small poultry to make sure as many of our products as possible are ecological. Since 2013 we are a part of Travelife and received a Silver Award in our first audit.

Solar energy was the logic way to move forward....



EUROPEAN ENERGY  
WIND SOLAR

solar  
energética

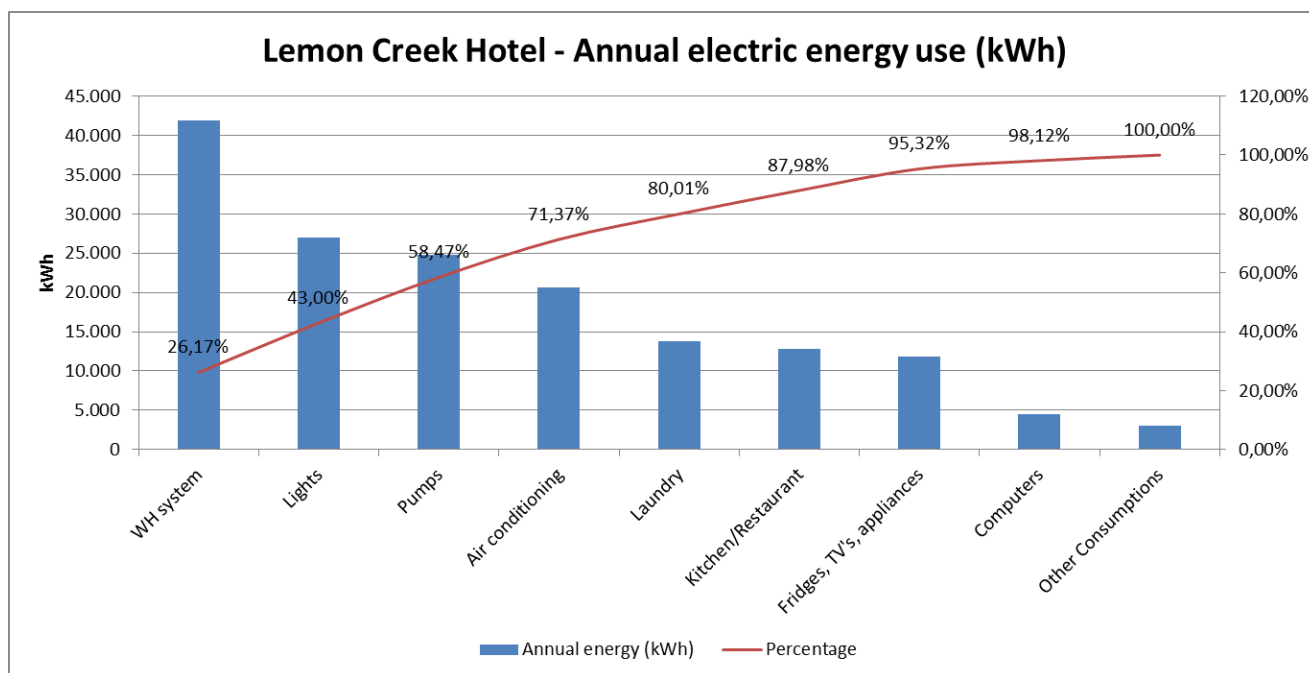
zepsilon  
solutions  
energías renovables



## 2. Foreword – Energy Audit

### 2.1 Conclusions of energy audit

During 2013, Lemon Creek Hotel performed an Energy Audit in order to detect how, when and where the electric energy is consumed.

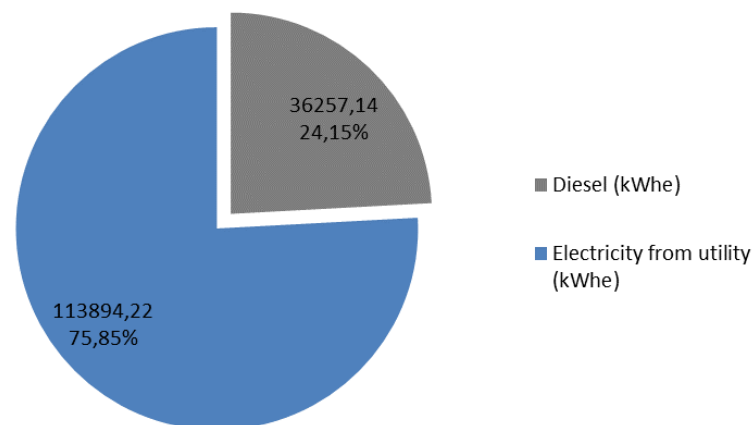


## 2. Foreword – Energy Audit

### 2.2 Action Plan

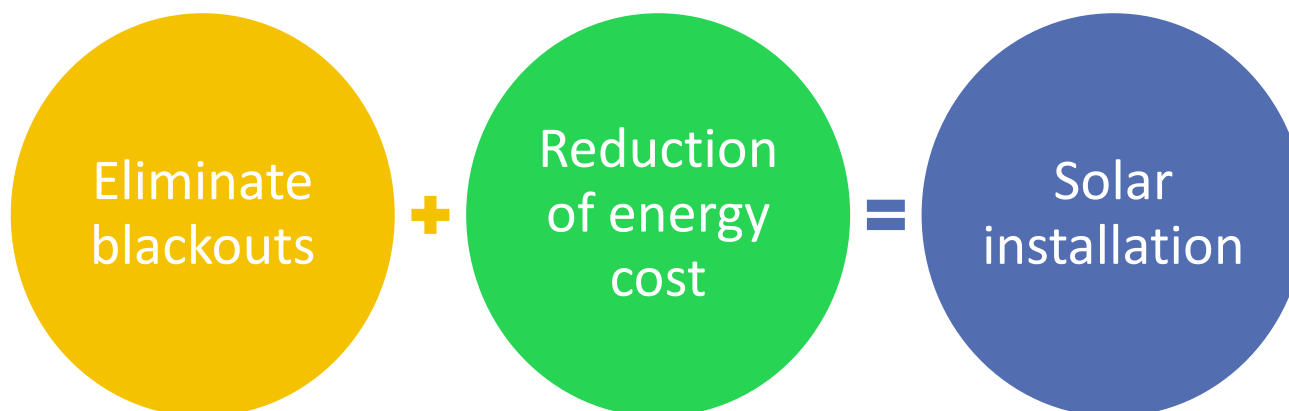
- Replacement of existing light bulbs
- Improvement of SWH system
- Improvement of electric installation
- Energy control and management (energy meters)
- Reduction of water consumption
- Solar installation
  - Reduction of energy cost
  - Eliminate blackouts

Lemon Creek Hotel - Annual energy consumption (kWh)



## 2. Foreword – Energy Audit

### 2.3 What to do?

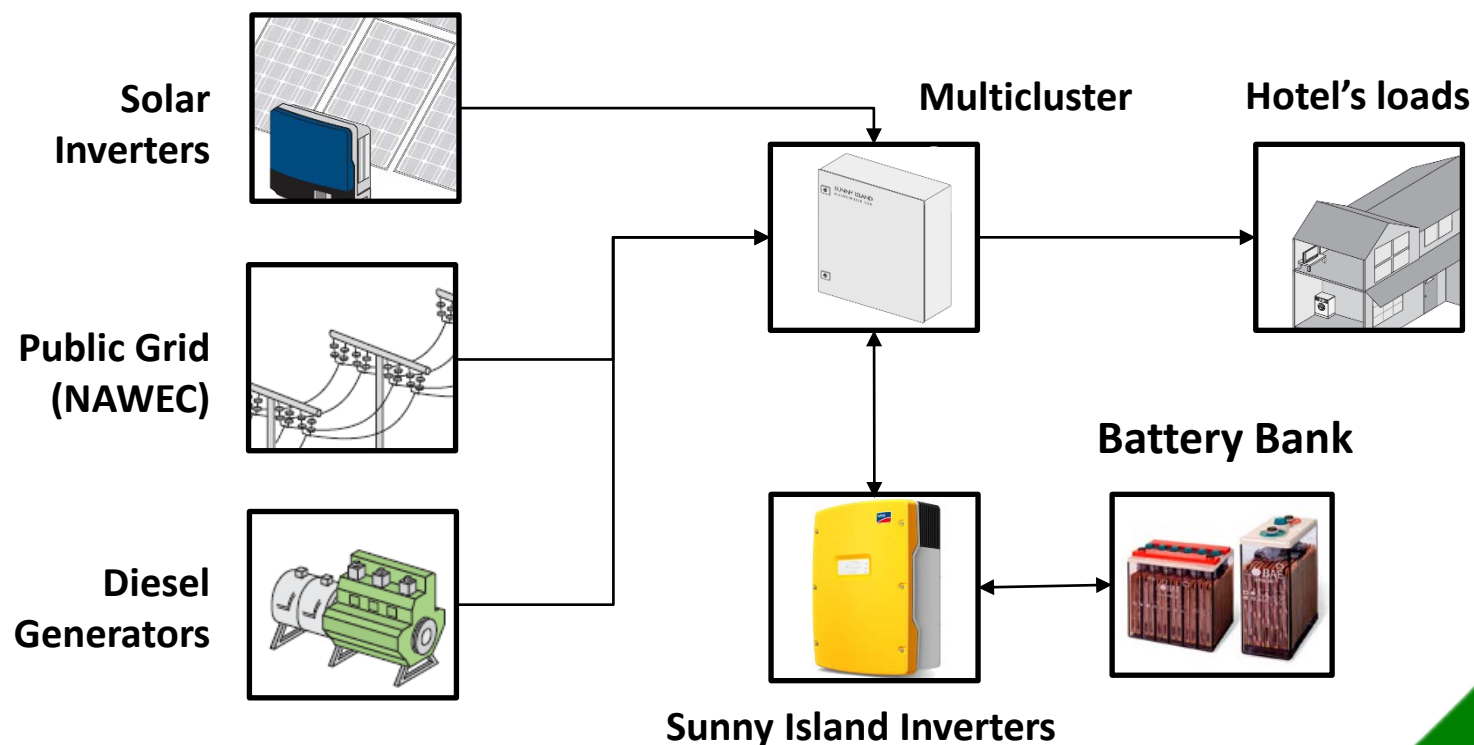


We designed a solar installation with batteries due to the low availability of public grid during daytime. That allows us to run off and store the solar energy during daytime and use it during night time.



## 3. Off-Grid Solar Installation

### 3.1 Diagram



## 3. Off-Grid Solar installation

### 3.2 Relevant Specifications

<u>Device</u>	<u>Quantity</u>
PV Panels	264
Solar Inverter 15 kW	4
Multicluster	1
Battery Chargers	9
Lead Acid Batteries (1880 Ah)	72
Protections	53



# SOLAR FIELD WORK IN PROGRESS





# SOLAR FIELD





# SOLAR FIELD





# STRUCTURES AND PROTECTION BOXES





# BATTERY BANK, BATTERY CHARGERS AND FUSE BOXES





# MULTICLUSTER, COMMUNICATIONS AND SOLAR INVERTERS



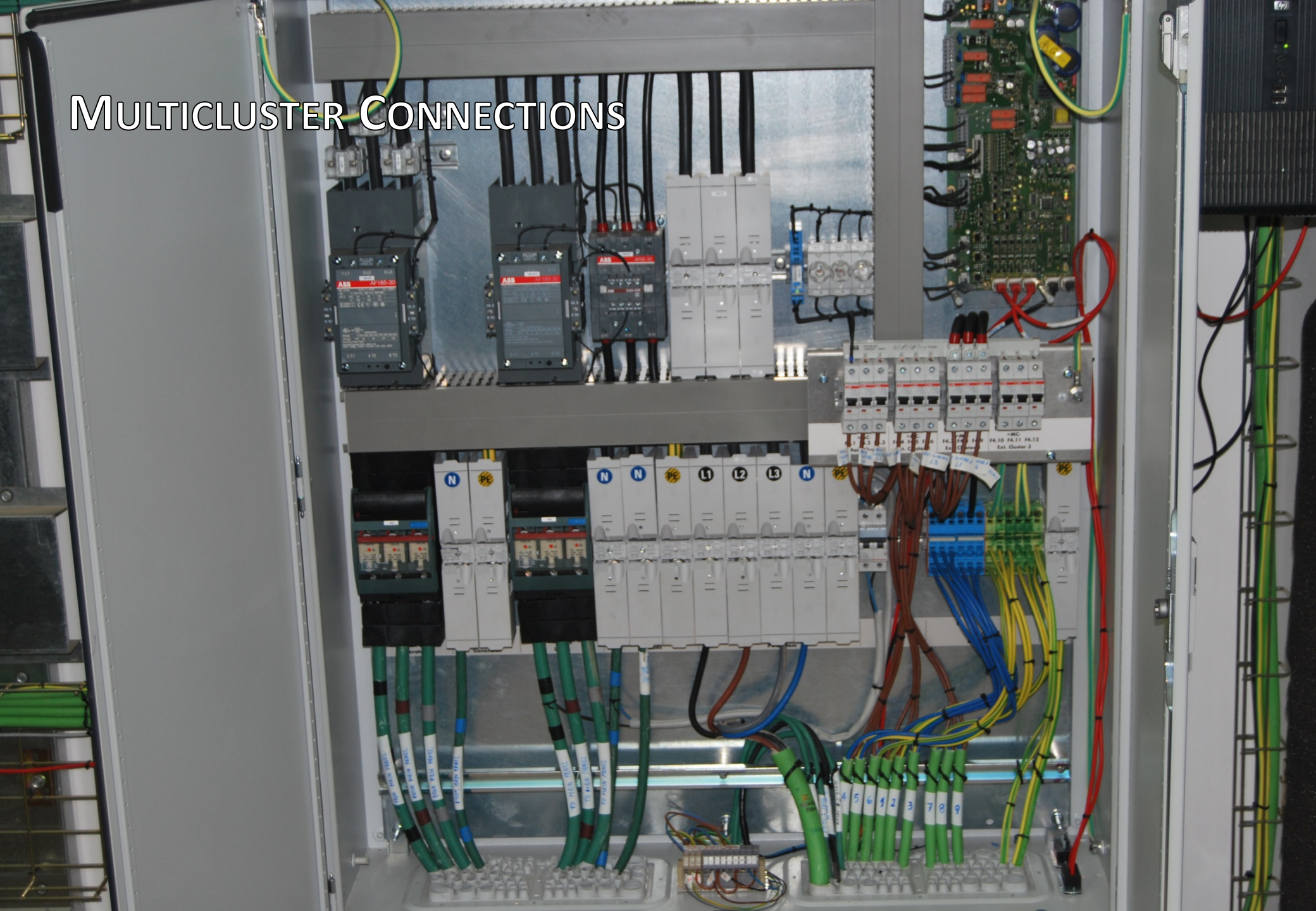


# BATTERY BANK CONNECTIONS

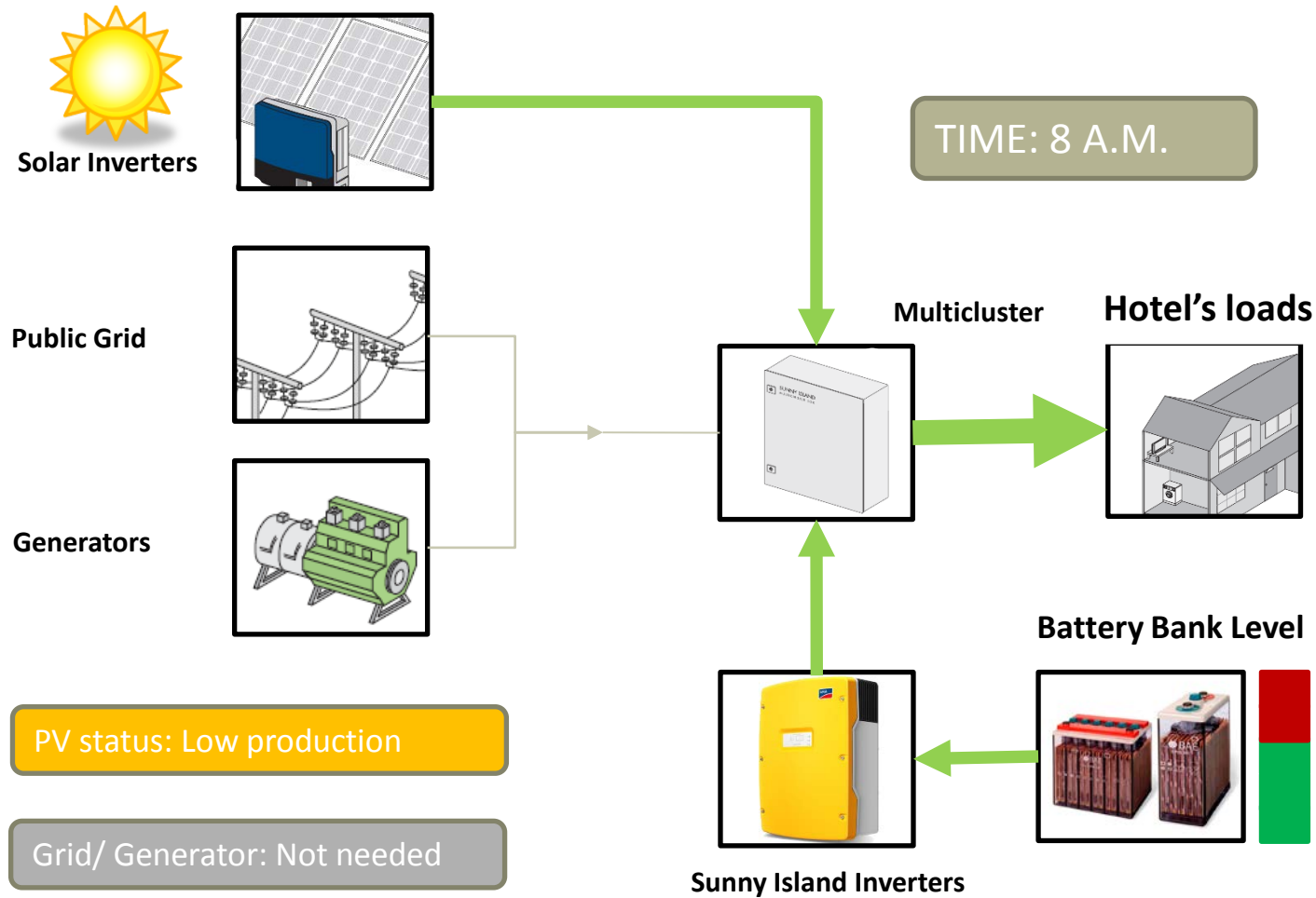




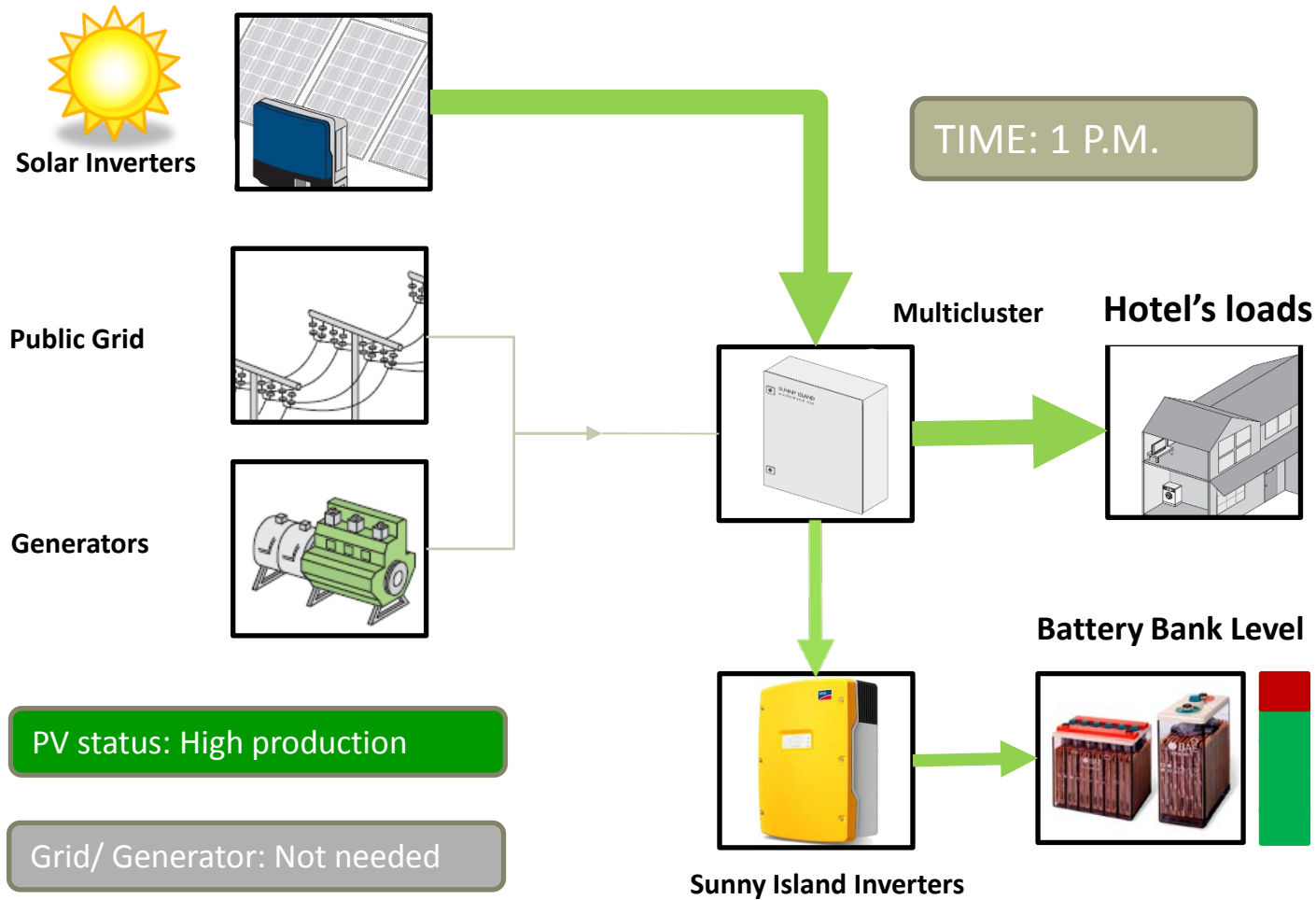
# MULTICLUSTER CONNECTIONS



### 3.3 How it works



### 3.3 How it works



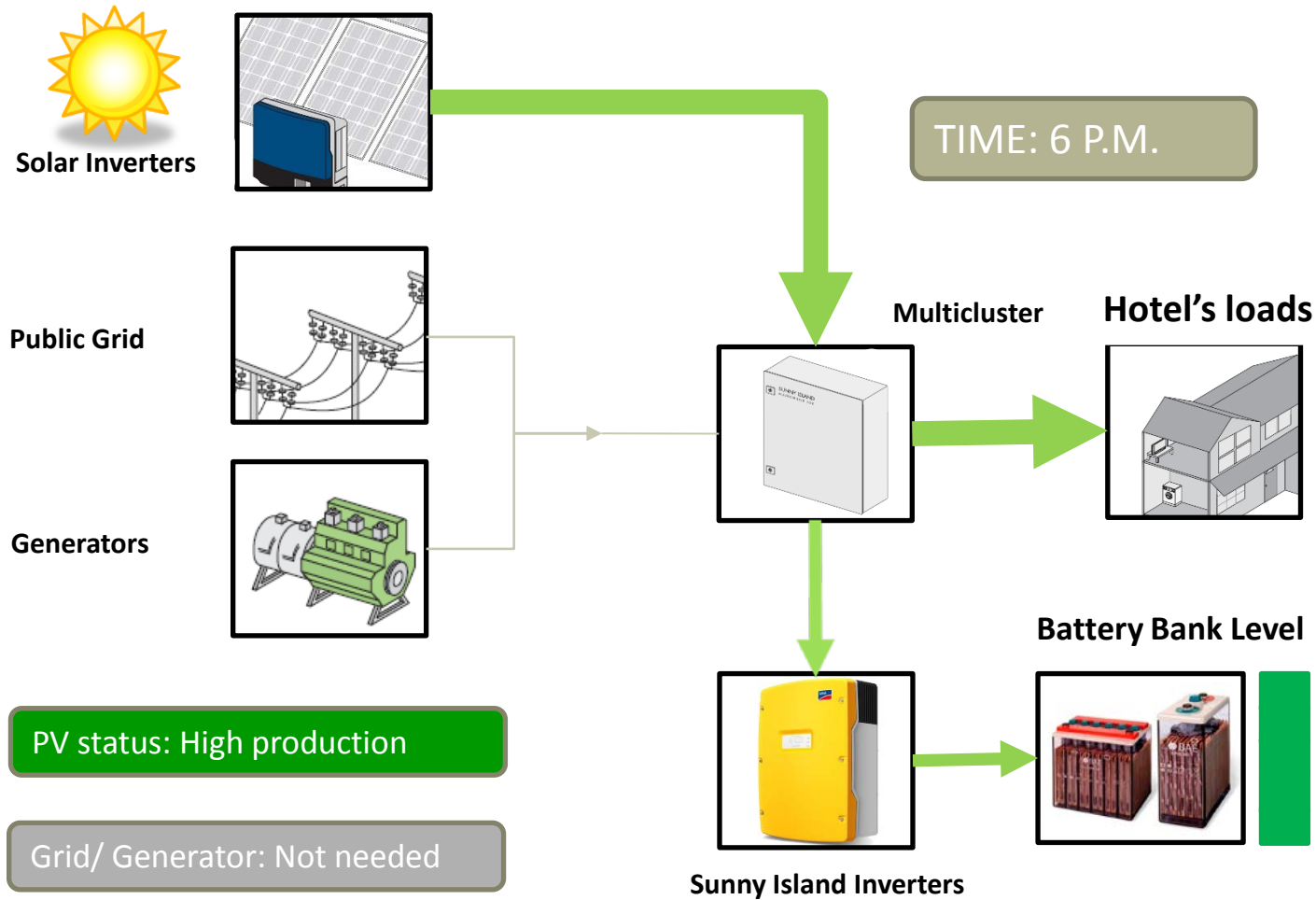
PV status: High production

Grid/ Generator: Not needed

Battery status: Charging



### 3.3 How it works

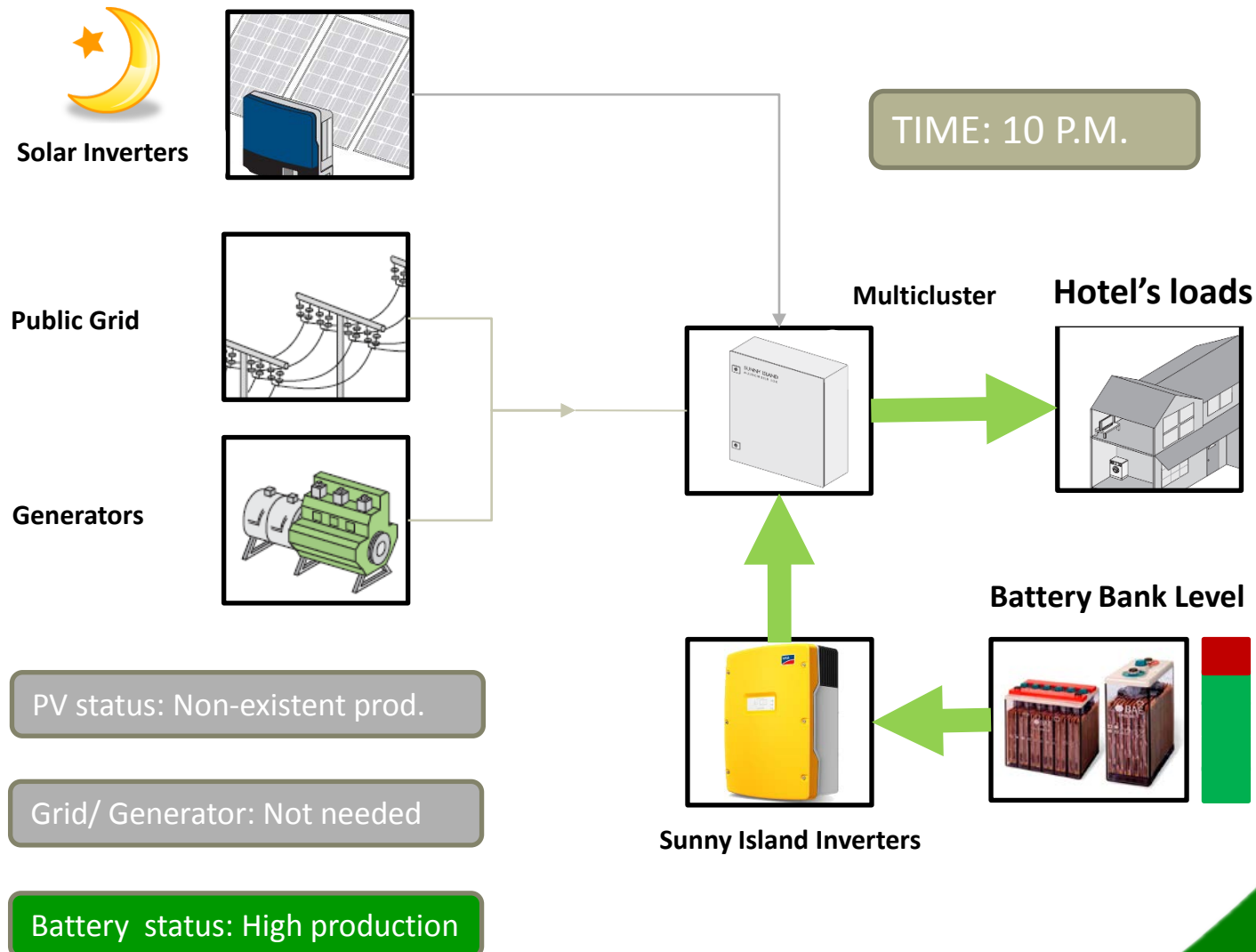


PV status: High production

Grid/ Generator: Not needed

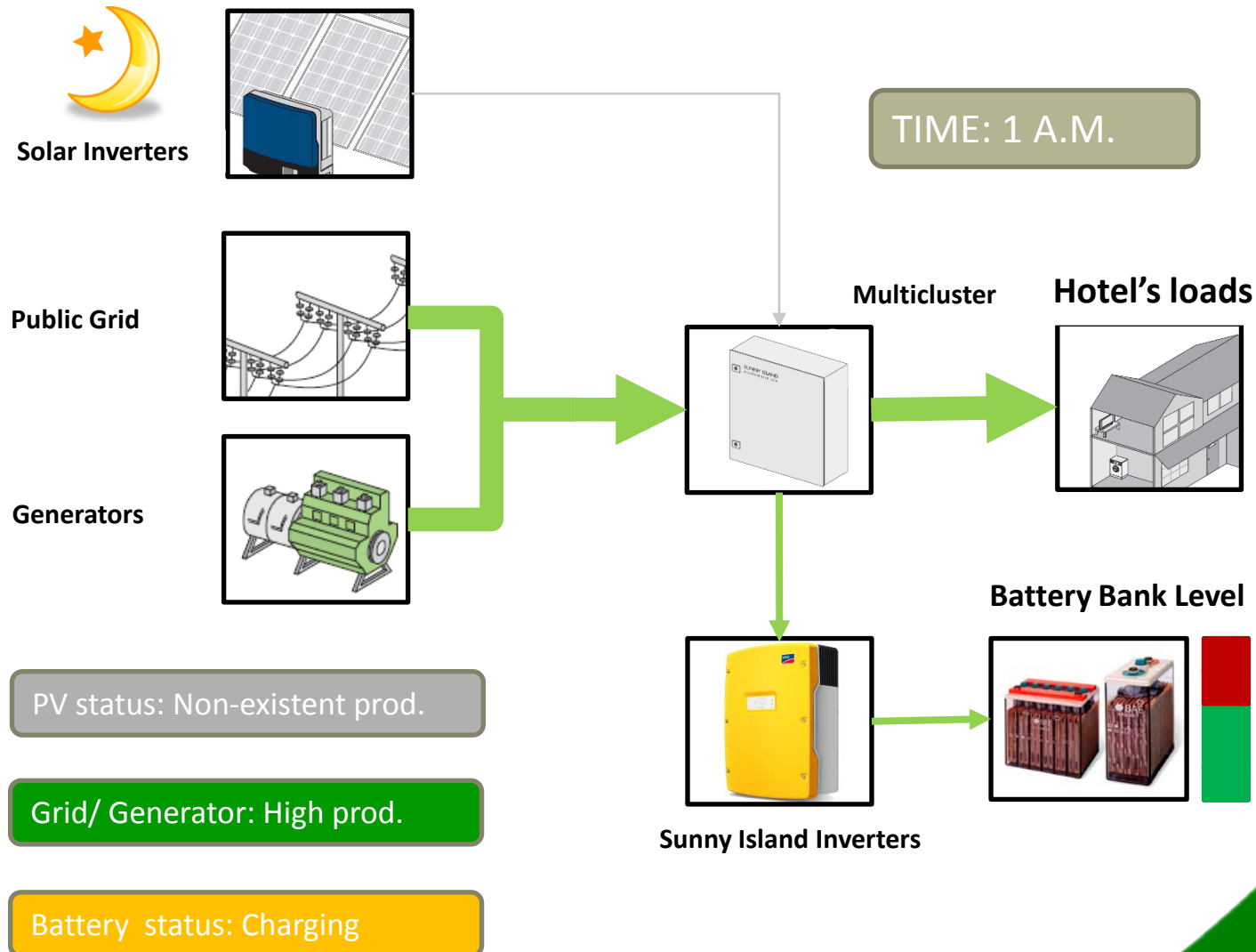
Battery status: Charging

## 3.3 How it works

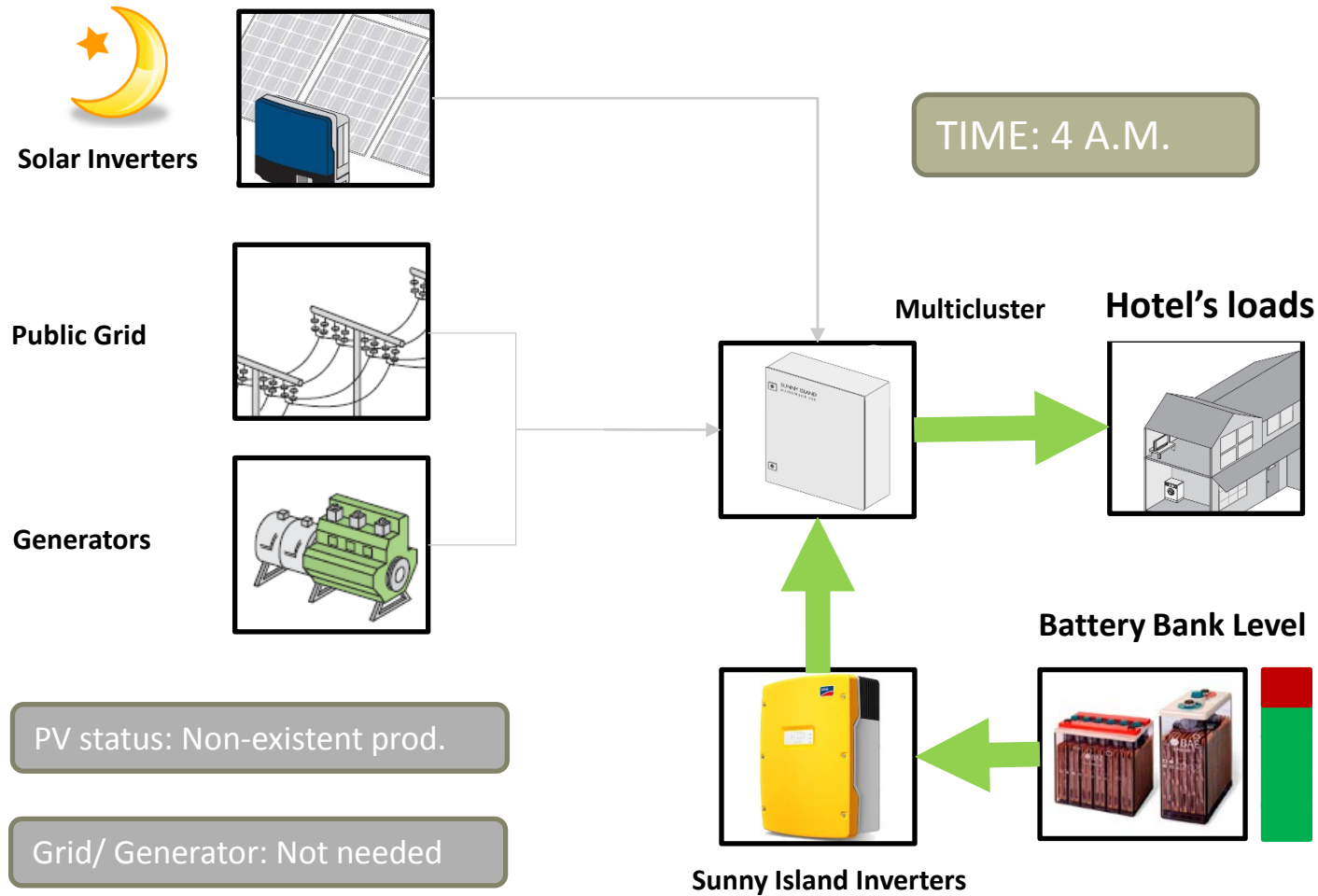




### 3.3 How it works



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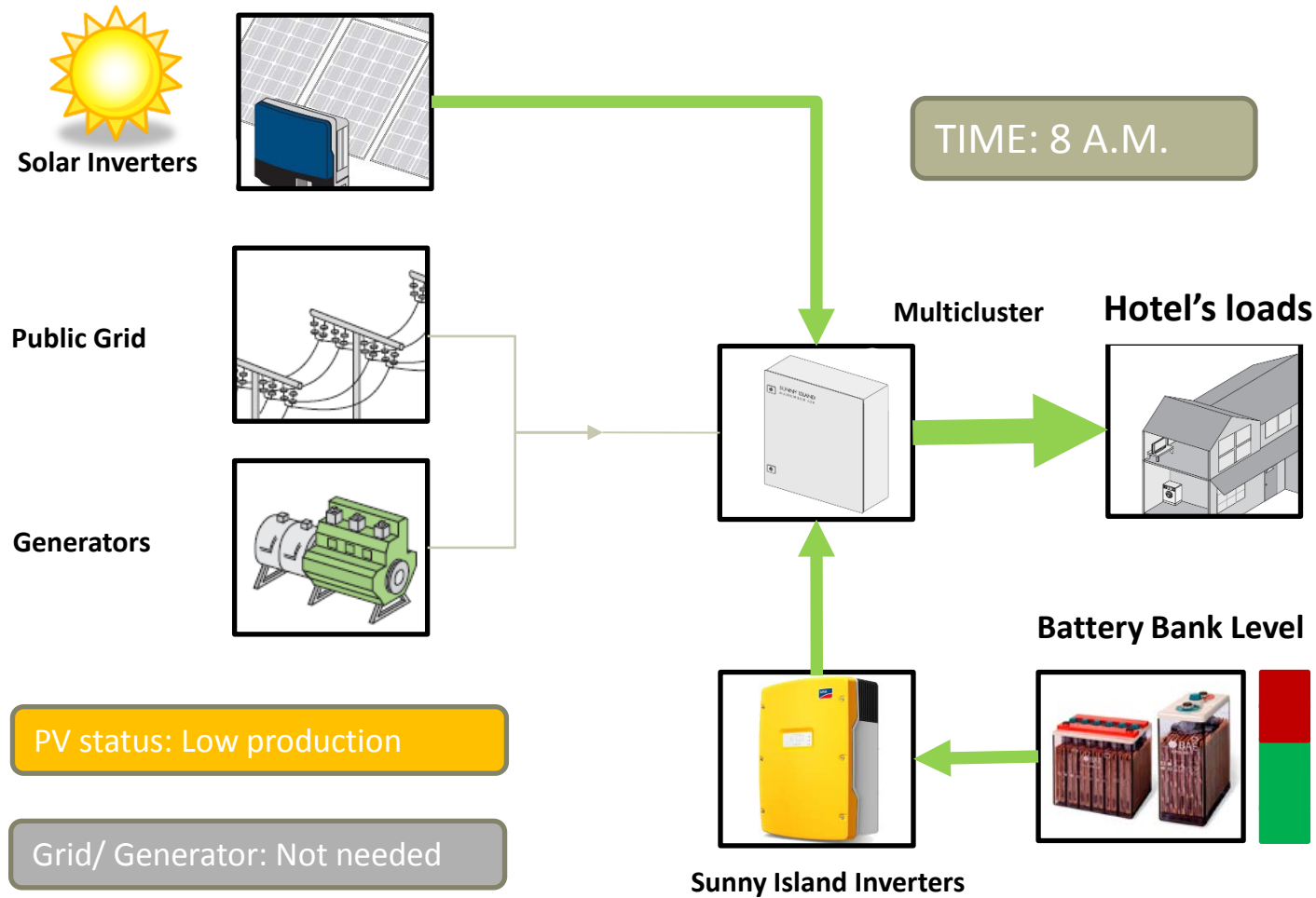


PV status: Non-existent prod.

Grid/ Generator: Not needed

Battery status: High production

### 3.3 How it works



PV status: Low production

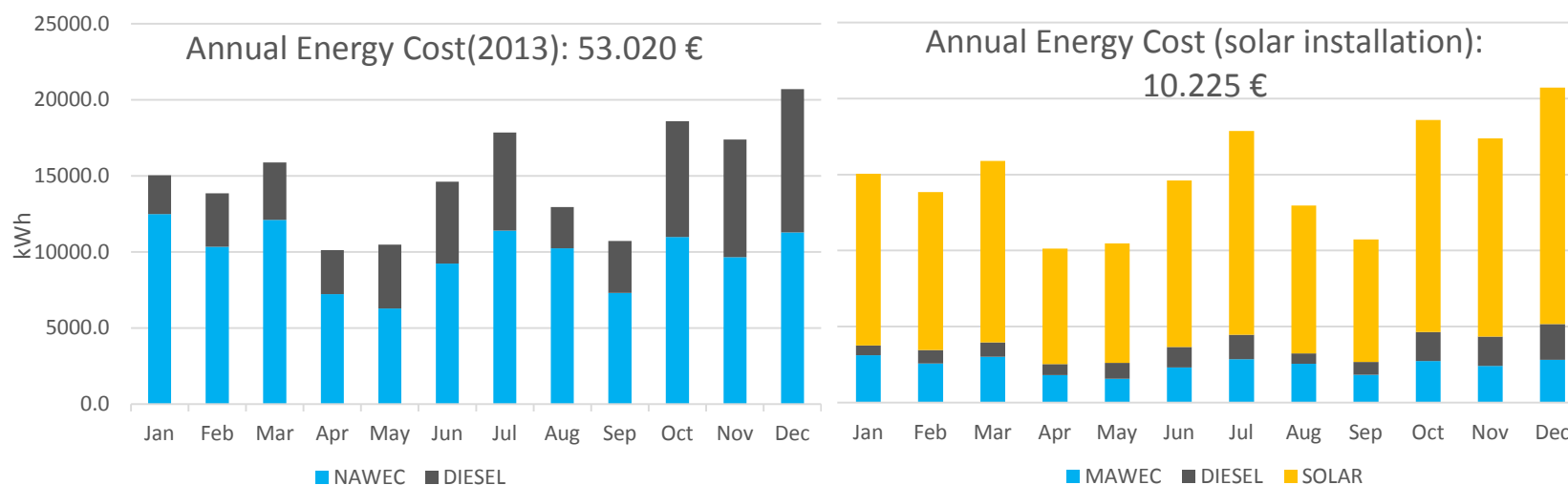
Grid/ Generator: Not needed

Battery status: Supplying



## 4. Main Figures

### 4.1 Consumption: Before and After







Average daily consumption 488 kWh  
Now we are getting 340 kWh/day from solar energy



**70% saving!!!**

## 4. Main Figures

### 4.2 Main figures of energy cost

<u>Average cost (older installation)</u>	4.418,36 € /month	
<u>Current cost (new solar installation)</u>	852,05 € /month	
<u>Savings</u>	3.336,22€ / month	
<u>Investment</u>	236.675,00 €	
<u>Return of investment</u>	5,5 years	
<u>Estimated price of solar energy</u>	0,16 € / kWh*	

\*Considerations: 25 years lifespan with 20% degradation.  
Operating costs included.  
Battery replacement every 8 years.



## 5. Involved Companies



- Customer: Lemon Creek Hotel Resort



- Supplier: European Energy (Denmark)



- Installer: Solárea Energética (Spain)



- Engineering: 3Epsilon Solutions (Spain)

## 6. Contact Information

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# *The TEAM*

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*Jesús Sana Kutubo Toni*

*+ Allassana*





The background of the slide is a photograph of a beach at sunset. A large, dark, leafless tree stands on the left side of the frame. The ocean is in the middle ground, with gentle waves. The sky is a warm orange and yellow, with the sun visible on the right side. Several small figures of people are walking along the beach in the foreground.

The future....

We will keep on working to reduce our  
energy consumption, next step is  
replacing our low watt bulbs with LED  
lights

*Renewable Energy is the sustainable  
choice for the future . . .*

Thank you!