

Study concerning optimization of photovoltaic lighting system in Margineni village

Mărgineni

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IN2RURAL



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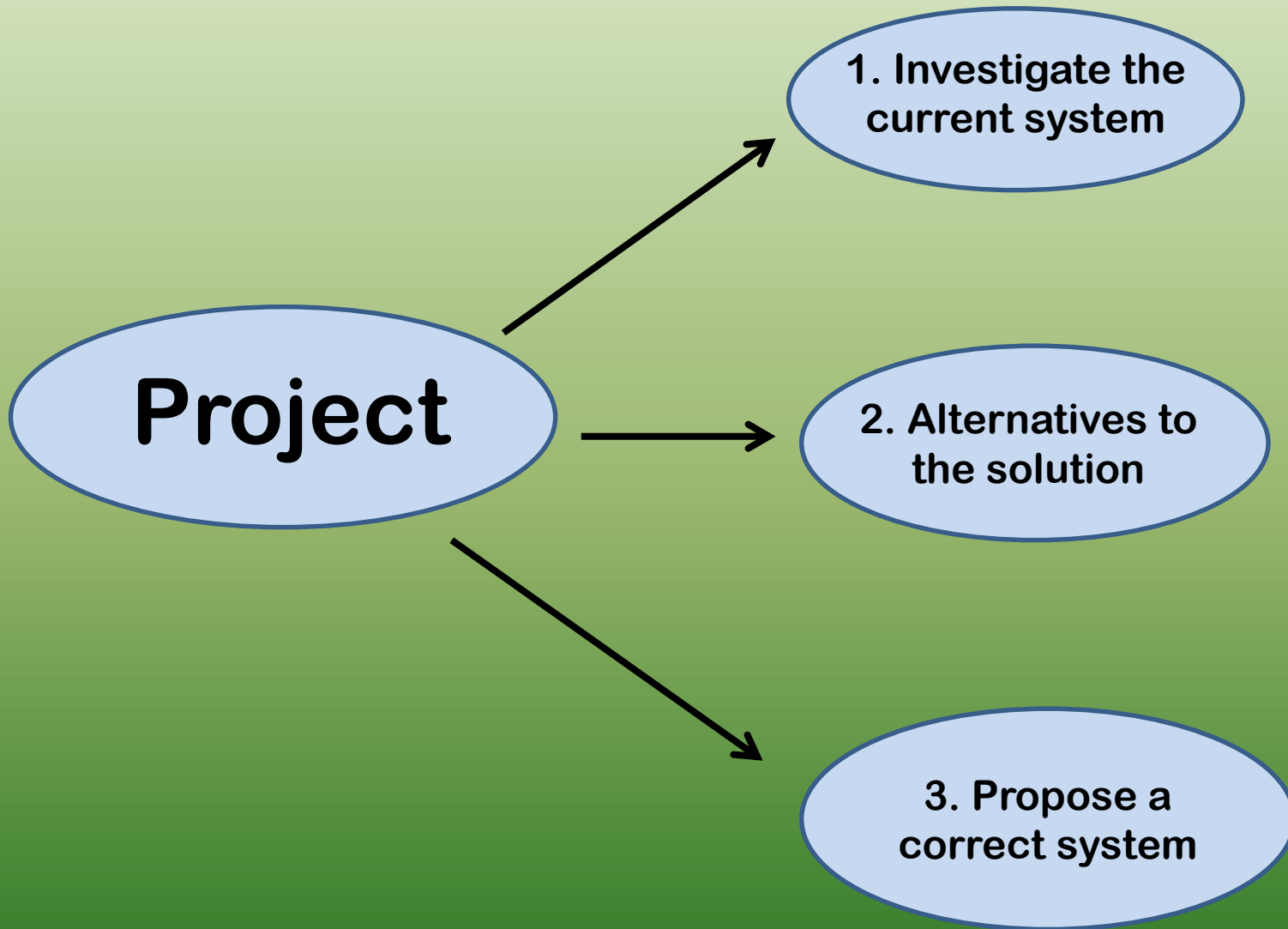


GEOLIN

GENERAL ELECTRIC

The case study's goal: propose a modern, energy-, and cost saving system for a street, where no lighting system in Margineni





Current system

- Works well, but there are some street where no lighting system
- Each lighting pole is a standalone system, without control management
- Non-dimmable → necessary to choose an other system for the final solution



Alternatives

Important criterias in the choice:

- Dimmable fixtures
- Adequate light for the street
(access street, 150m length, 4m width)
- Acceptable prices
- Low energy consumption
- Suitable control system
(many types of the system)
- Easy access and manageability

Proposed system

Proposed system's elements:

- LED lamp – Pegaso 36
- Solar panel - Shinetime Solar XTP6-60-240
- PV charge regulator - WRM-15
- Battery - FIAMM 12FGL27
- Inverter - MP Genius 20-24 Plus
- Remote control - Orionview
- Pole, and pole support - GLS Hline-T
- Battery box

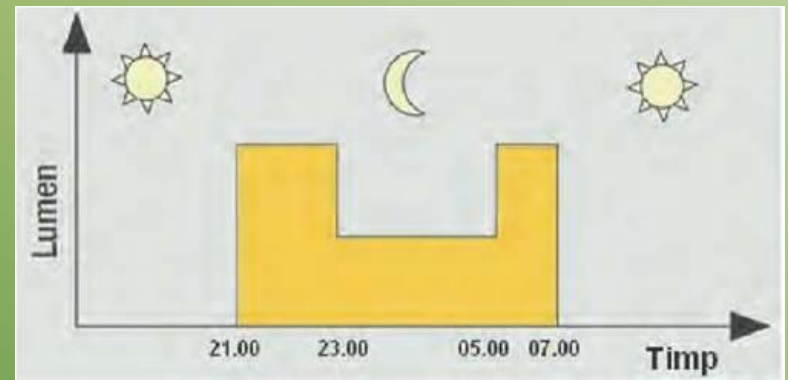
Important Datas

- The proposed LED lamp's energy consumption: 50 W
- Average time for the public lighting in Romania : 4000h / year
- Energy price in Romania: 0,097 Euro
- Minus hours at one night by the control system: 3 hour

Results

- **Calculations:**

- For the street necessary to install 5 system (8m height, and 30m between two poles)
- Use the control system in 6 hours/night with 50% lighting power → 27% reduction
- The control system use 638,75 kWh in one year,
a traditional system use 1825 kWh in one year.



Results

- **Budget**
 - Total installation cost of the system:
1 -2500 Euro; 5- 12500 Euro
 - Comparison: HPS vs LED costs

	Traditional system	Photovoltaic controlled system
1 piece	800 Euro	2500 Euro
5 piece	5600 Euro	12500 Euro
Energy price/year	177 Euro	62 Euro
Maintenance/year	80 Euro	15 Euro
Total cost in the 1. year	5857 Euro	12577 Euro
Total cost in the 2. year	257 Euro	77 Euro

Thank you for your attention!

