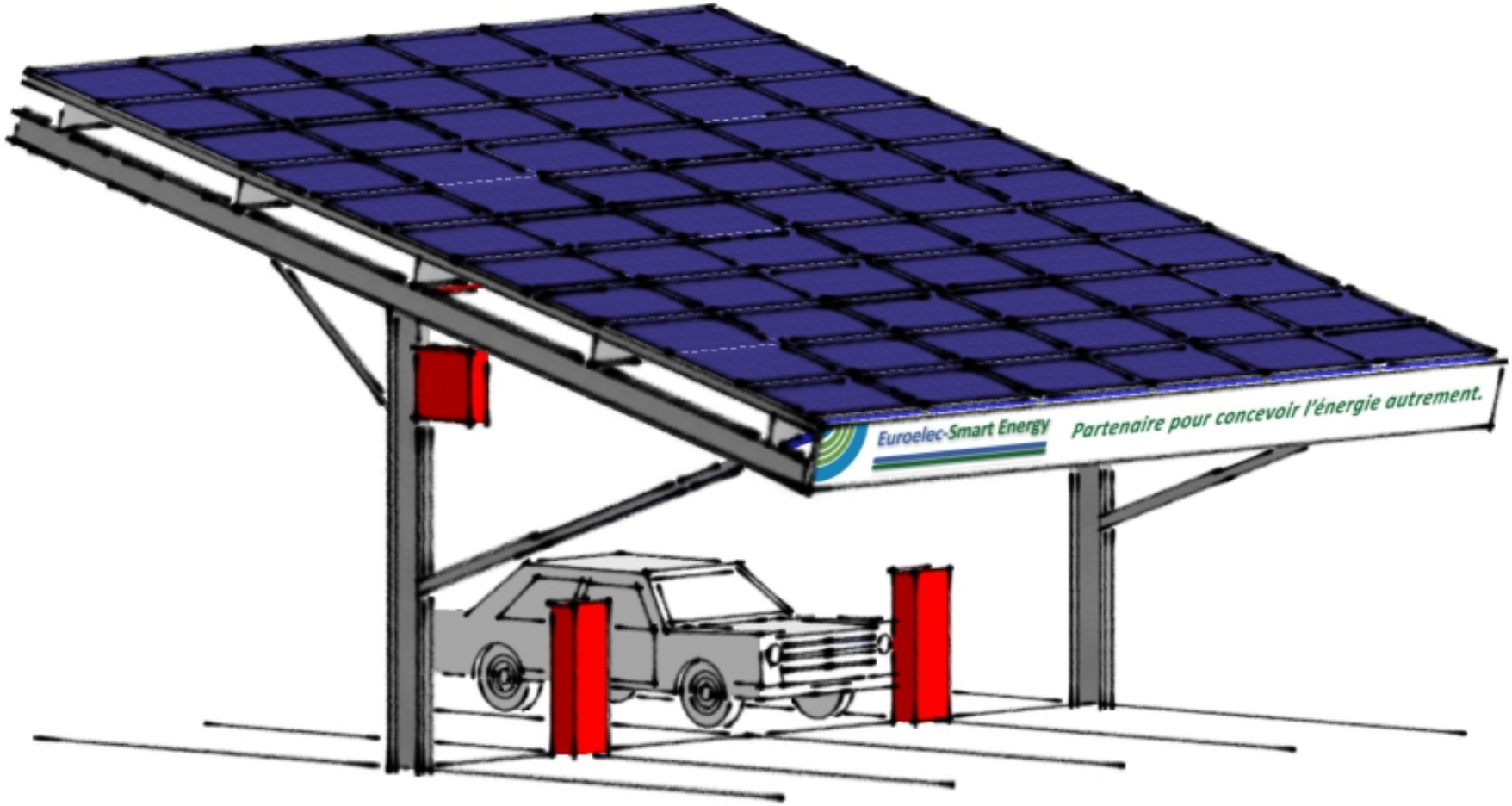
Euroelec-Smart Energy

Partenaire pour concevoir l'énergie autrement.



PHOTOVOLTAIC CAR PARKS

REF № 1555005
07.12.15

Euroelec-Smart Energy

- Headquarter in Paris and office in São Paulo
- Specialized in renewable energies and home automation
- Consulting, Engineering and R&D

PV in Brazil

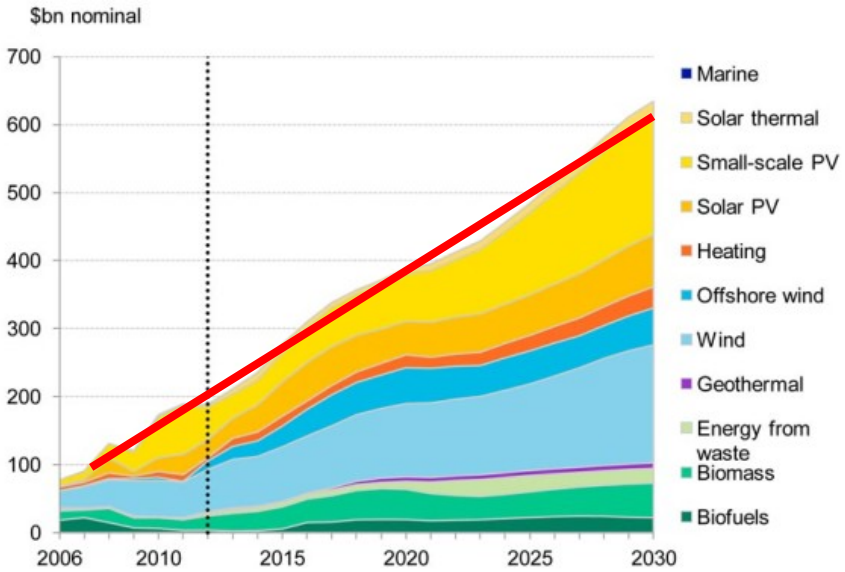
- Excellent solar resource: between 1550 and 2350 kWh/m² year

  (France: 900 - 1650kWh/m²)

- Emerging moment of PV in Brazil, with a potential investment of R $ 7 billion over 20 years

- Complementary to other renewable sources (e.g. hydro, wind, biomass)

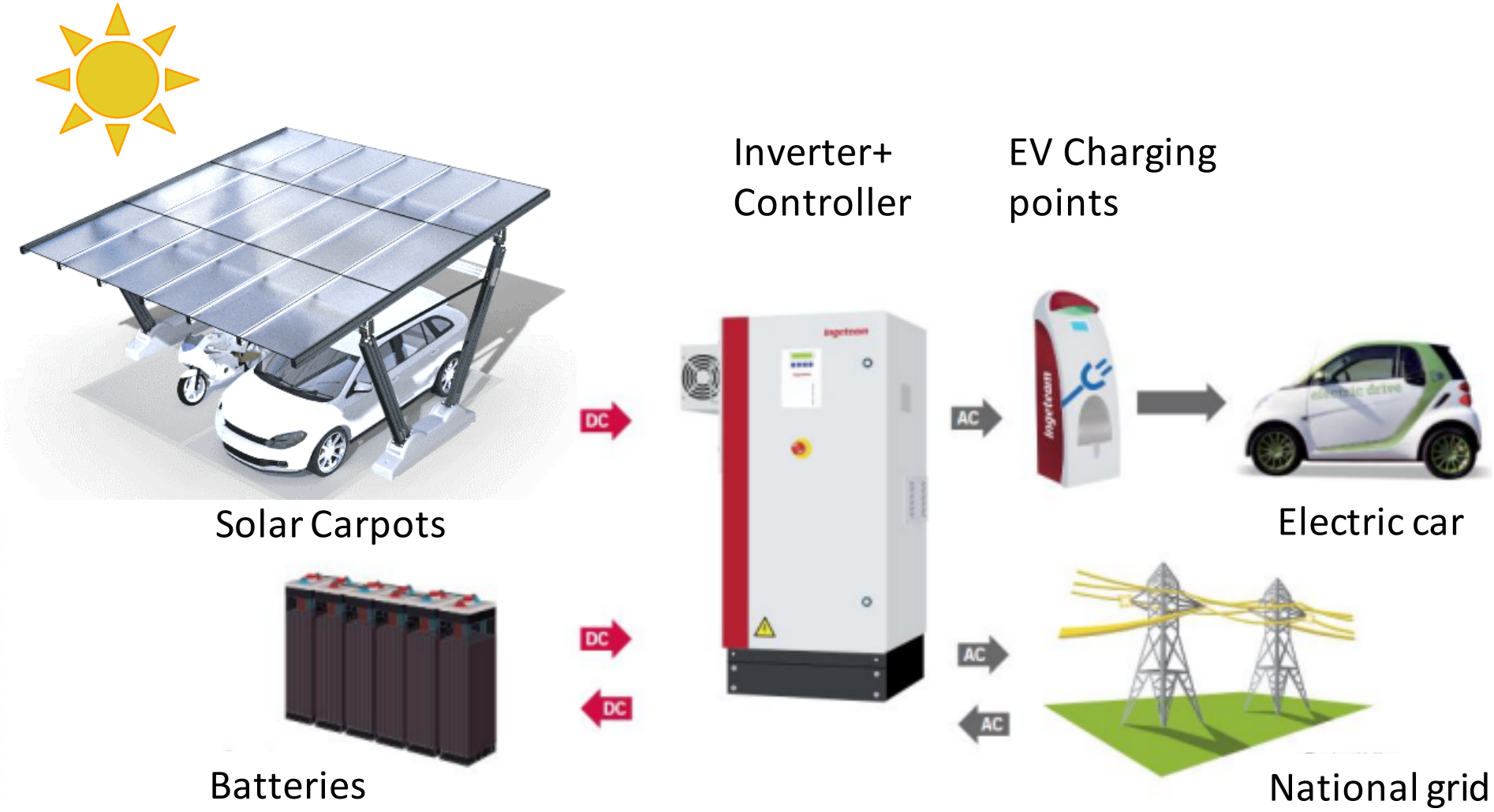
Absolar, 2015



Bloomberg New Energy Finance predicts that solar energy will take up the second largest share of new power capacity added, accounting 24%.

Annual Clean Energy Investment to 2030
Image Credit: Bloomberg New Energy Finance

The Components



Advantages of a Solar Carport

- **Existing surface areas to generate power**
- **Long-term secured investment**
- **Visible expression of sustainability and the support of renewable energy solutions**
- Enhanced appearance and increased property value
- Weather-protected parking
- Opportunity for weather-protected outdoor events

Why Euroelec-Smart Energy?

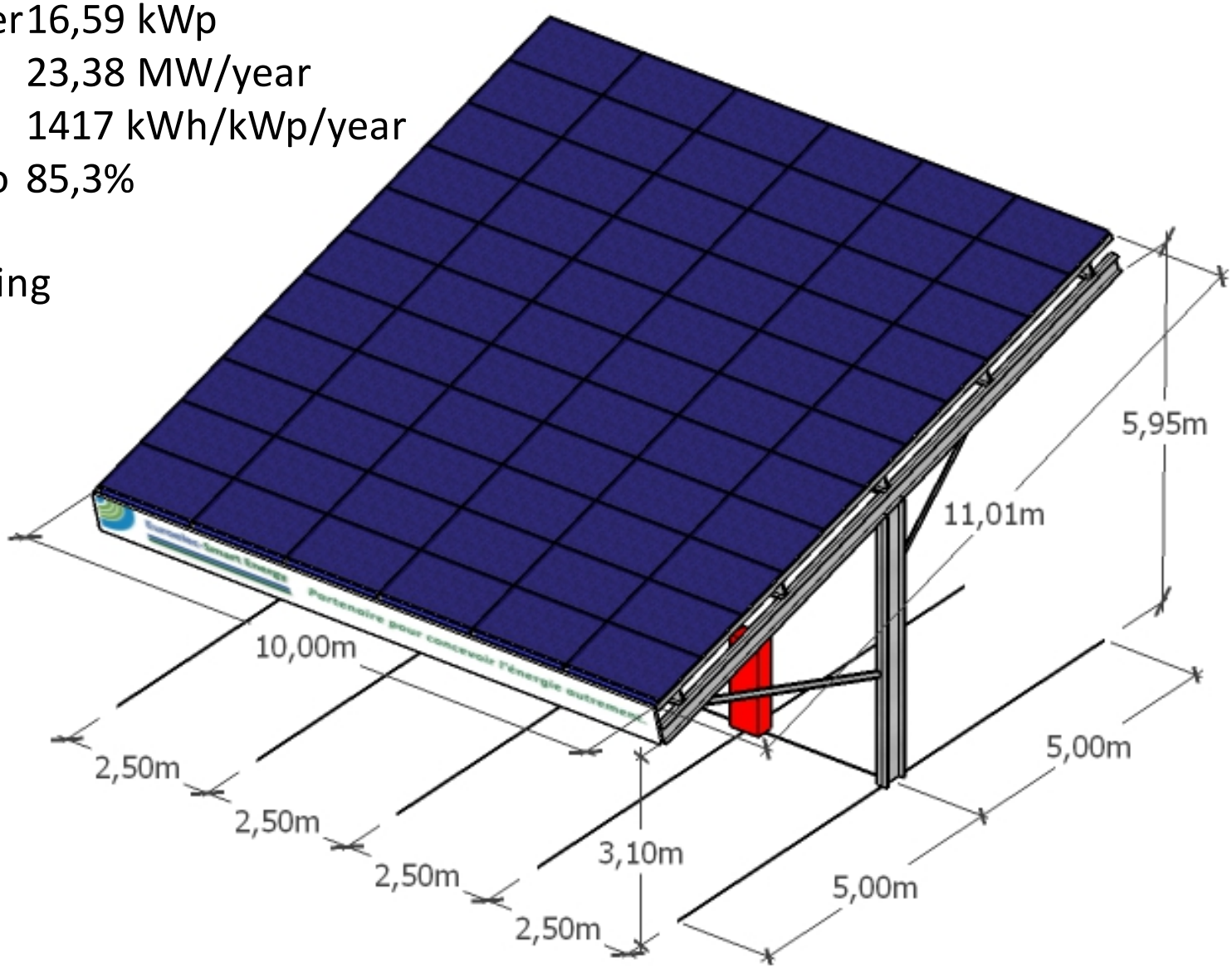
- Know-how: BRAZILIAN and EUROPEAN markets:
  - ✓More than 10 years of professional experience in the Brazilian Energy Market
  - ✓More than 10 years of professional experience in the French Energy Market
- Europe is a global reference in solar energy
- Multidisciplinary and dynamic team
- Focus in innovation as our priority

Euroelec-Smart Energy
Partenaire pour concevoir l'énergie autrement.

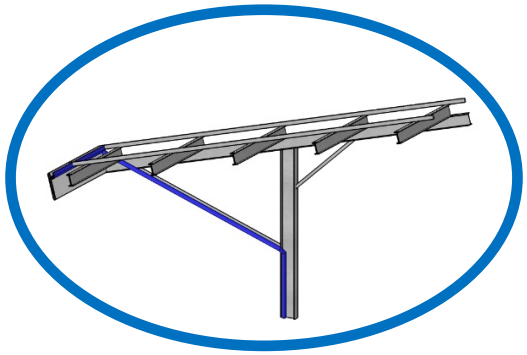
Esen Photovoltaic Car Park

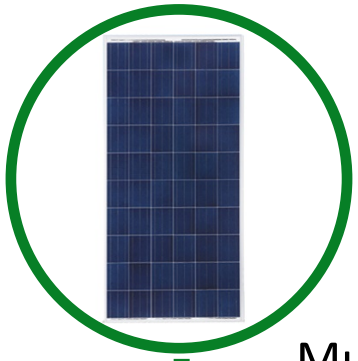
- 1 Module

Array Global power 16,59 kWp
Produced Energy 23,38 MW/year
1417 kWh/kWp/year
Performance Ratio 85,3%
66 panels
- 22 panels per string
- 3 string
1 Inverter
10 x 11,01 m
8 cars



Esen Photovoltaic Car Park

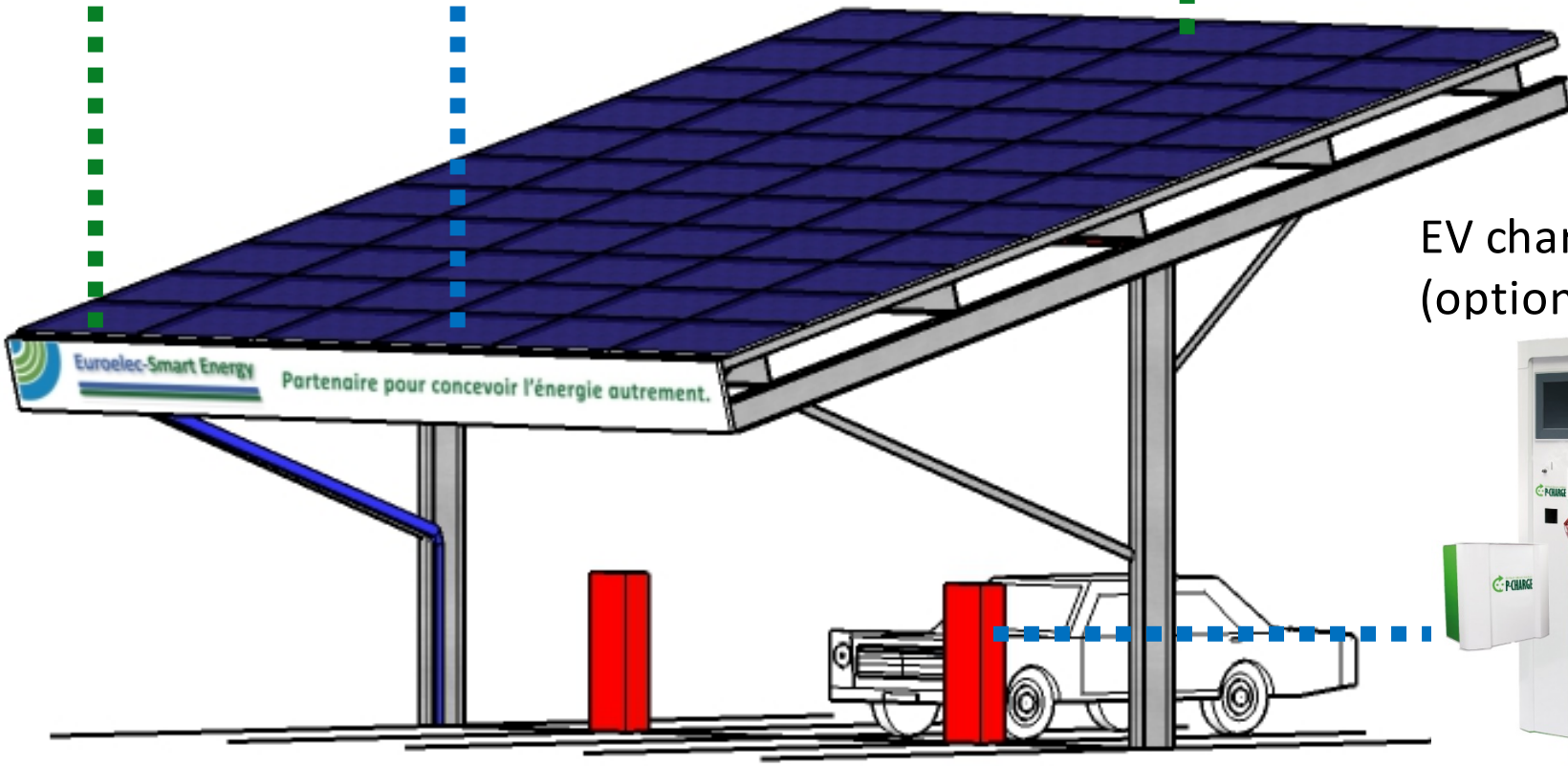




Rain water collector

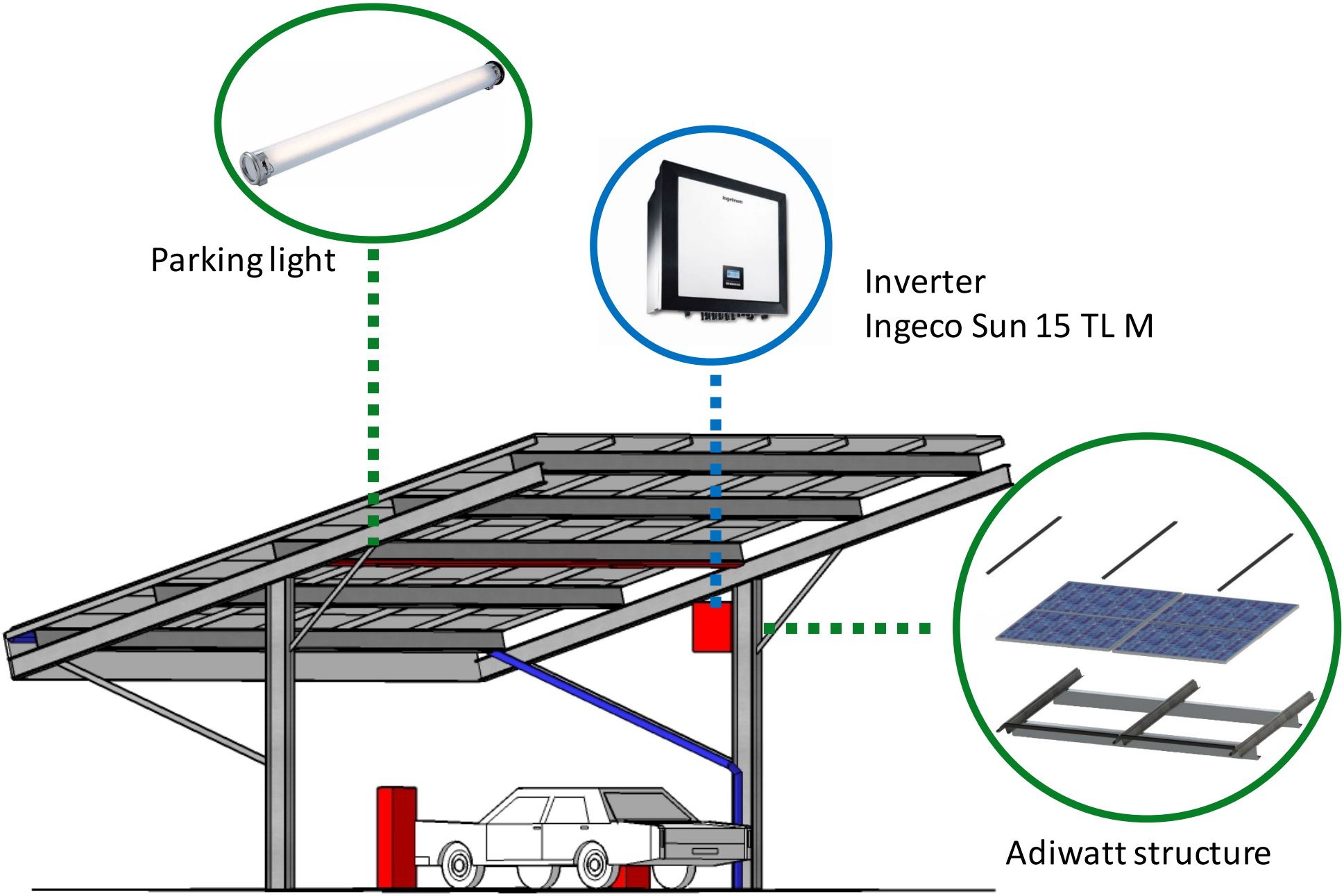
Multi Solar Energy
MSE 250 Wp panels

Avertissement banner



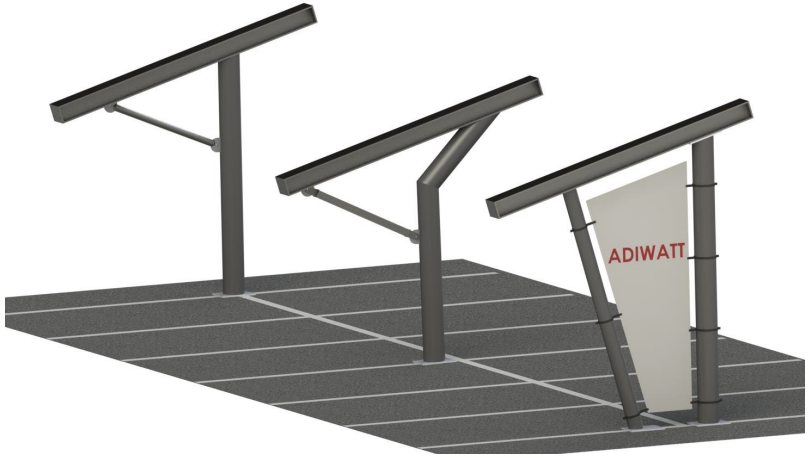
EV charging points
(optional)

Esen Photovoltaic Car Park



Esen Photovoltaic Car Park

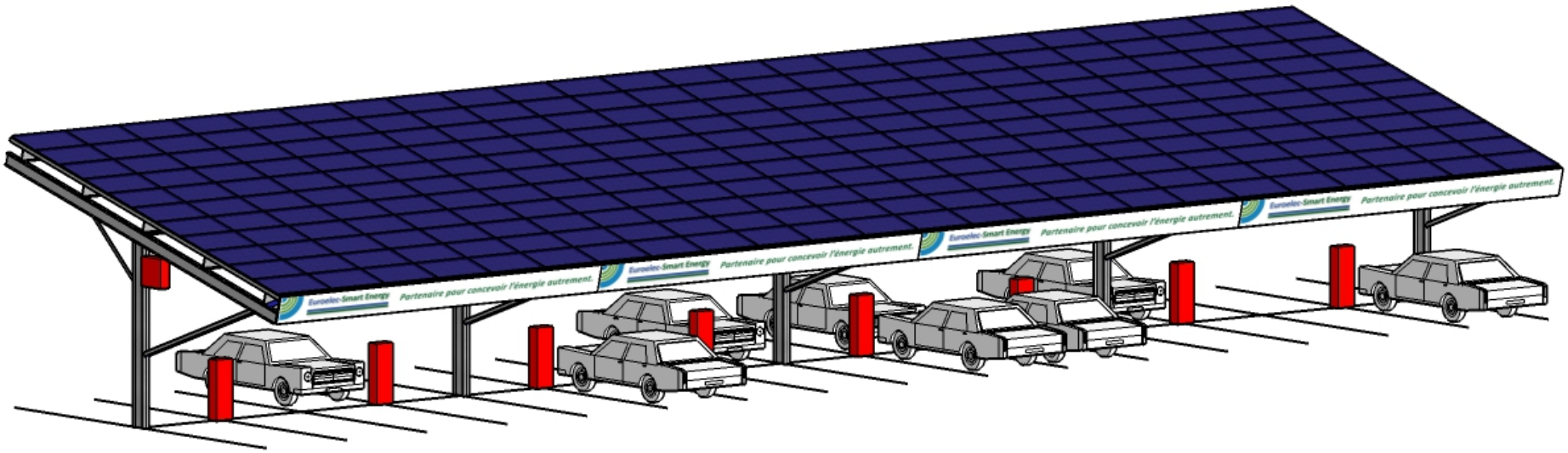
- Structure - ADIWATT



Esen Photovoltaic Car Park

- Our advantage

- Integration of the panels in the structure
- All surface used for panels
- Barrier-free system design for ease of parking
- Maximum surface for parking



Esen Photovoltaic Car Park

- Our service
  - Site layout and coverage configuration
  - Architectural design and structural engineering
  - PV panel analysis - layout, alignment, orientation and optimization
  - High resolution digital project preview (illustrations, 3D site fly over)
  - Full installation
  - Maintenance

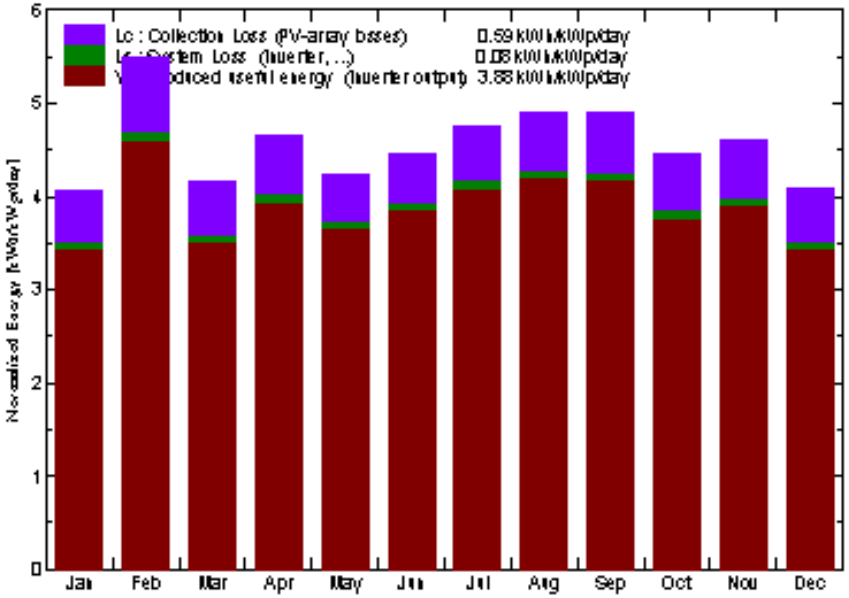
Esen Photovoltaic Car Park

Project :	**Grid-Connected Project at Belo Horizonte**
Simulation variant :	**MSE/Ingeteam_Belo Horizonte**

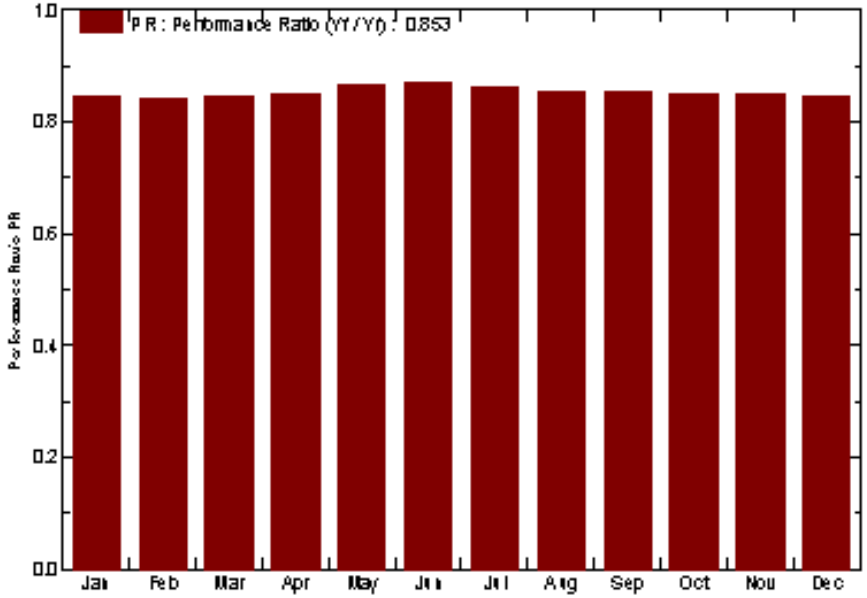
Main system parameters	System type	**Grid-Connected**		
PV Field Orientation	tilt	15°	azimuth	0°
PV modules	Model	MSEsolar	Pnom	250 Wp
PV Array	Nb. of modules	66	Pnom total	**16.50 kWp**
Inverter	Model	Ingecon Sun 15 TL M	Pnom	15.00 kW ac
User's needs	Unlimited load (grid)			

Main simulation results				
System Production	**Produced Energy**	**23380 kWh/year**	Specific prod.	1417 kWh/kWp/year
	Performance Ratio PR	85.3 %		

Normalized productions (per installed kWp): Nominal power 16.50 kWp



Performance Ratio PR



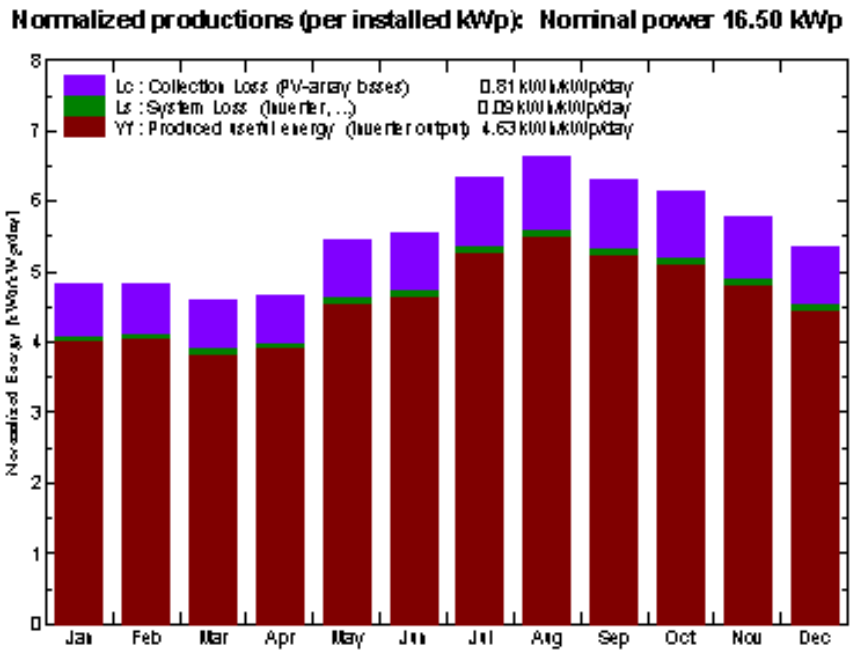
Esen Photovoltaic Car Park

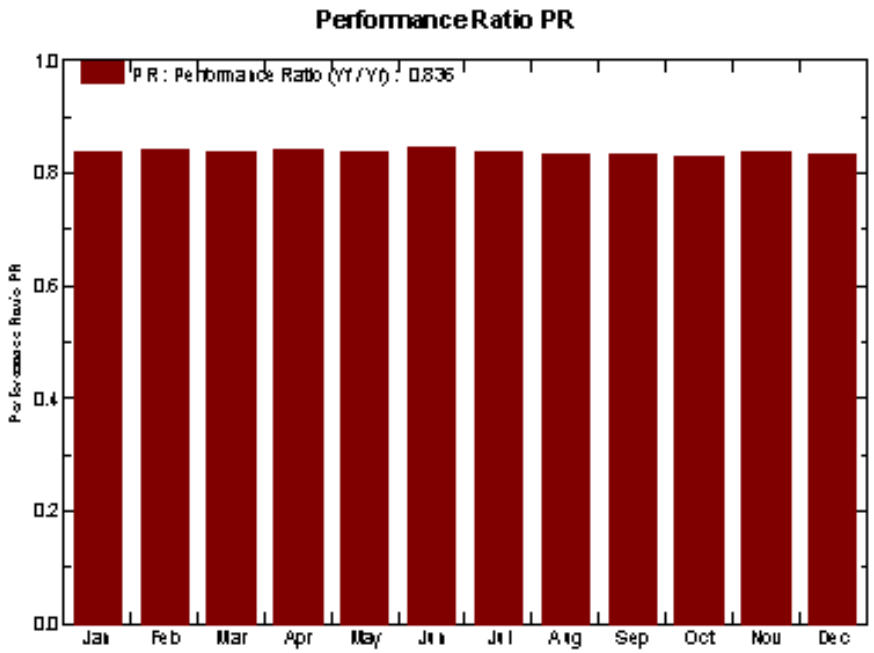
Project : **Grid-Connected Project at Fortaleza**

Simulation variant : **MSE/Ingeteam_Fortaleza**

Main system parameters	System type	**Grid-Connected**		
PV Field Orientation	tilt	15°	azimuth	0°
PV modules	Model	MSEsolar	Pnom	250 Wp
PV Array	Nb. of modules	66	Pnom total	**16.50 kWp**
Inverter	Model	Ingecon Sun 15 TL M	Pnom	15.00 kW ac
User's needs	Unlimited load (grid)			

Main simulation results				
System Production	**Produced Energy**	**27898 kWh/year**	Specific prod.	1691 kWh/kWp/year
	Performance Ratio PR	83.6 %		





Esen Photovoltaic Car Park

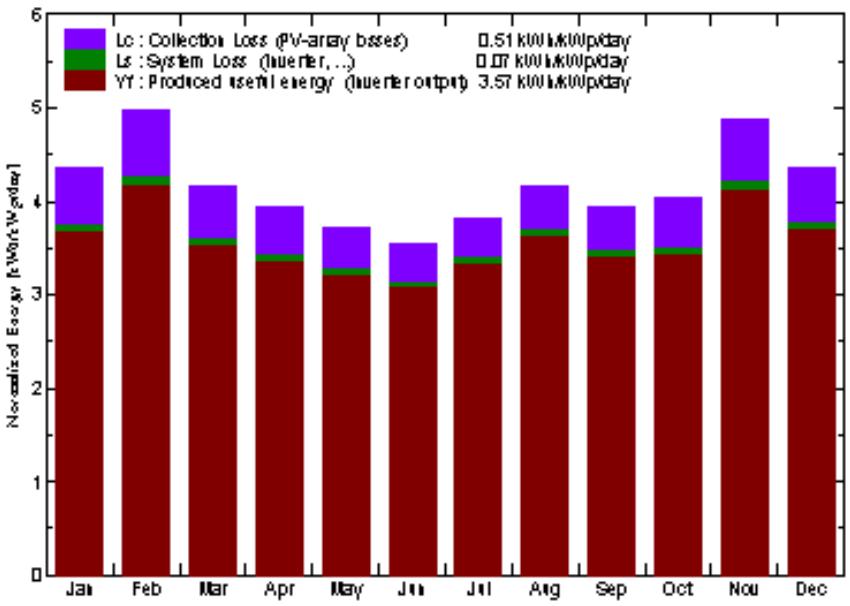
Project : **Grid-Connected Project at São Paulo**

Simulation variant : **MSE/Ingeteam_Sao Paulo**

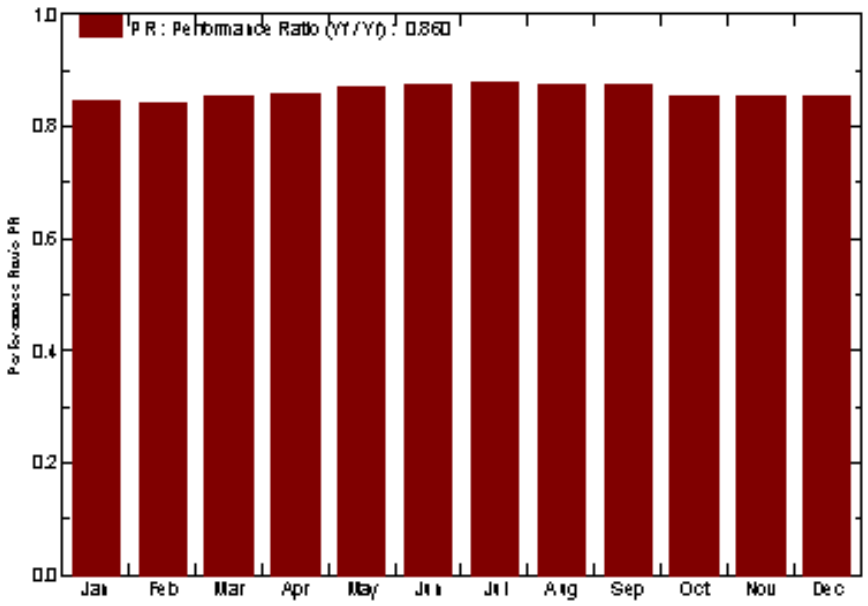
Main system parameters	System type	**Grid-Connected**		
PV Field Orientation	tilt	15°	azimuth	0°
PV modules	Model	MSEsolar	Pnom	250 Wp
PV Array	Nb. of modules	66	Pnom total	**16.50 kWp**
Inverter	Model	Ingecon Sun 15 TL M	Pnom	15.00 kW ac
User's needs	Unlimited load (grid)			

Main simulation results				
System Production	**Produced Energy**	**21483 kWh/year**	Specific prod.	1302 kWh/kWp/year
	Performance Ratio PR	86.0 %		

Normalized productions (per installed kWp): Nominal power 16.50 kWp



Performance Ratio PR



1 MW installation

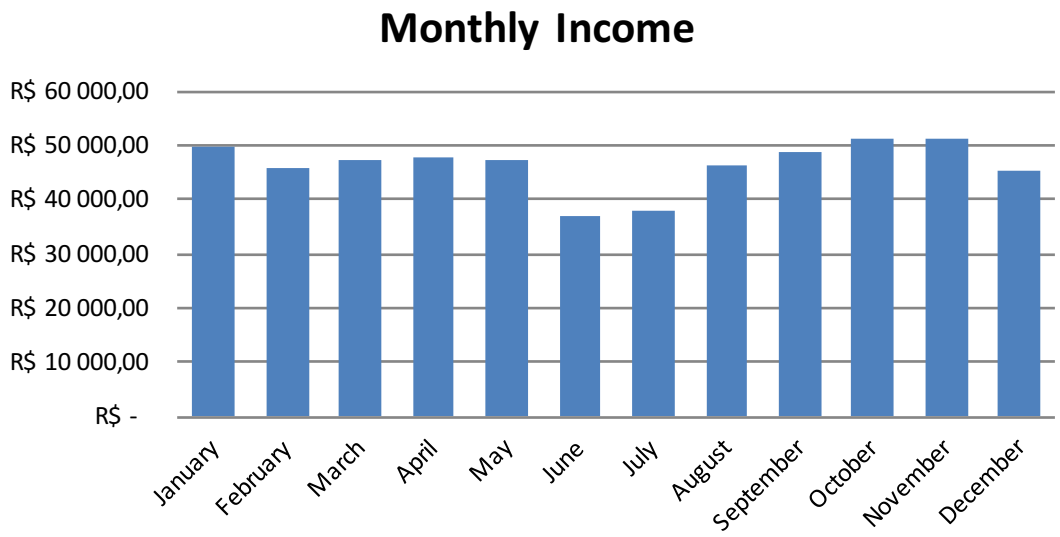
PV Systems Price in Brazil

Source: Based on the research made by Portal Solar, March 2015
* Values expressed in thousands of BRL

KWp	BRL *	BRL/Wp
10	75,9 - 99	7,59 – 9,9
100	650,1- 900,9	6,50 – 9
500	3.000–3.498	6 – 7
1.000	5.000 – 6.000	5 - 6
5.000	19.998	3,99
30.000	119.998	3,99

- Estimated cost of a 1MW installation :
R$ (k) 5016

- Annual income:
R$ 555.000



French references

Sunvie

Saint-Aunès E.Leclerc supermarkt in l'Hérault

- 8000m² of covered area
- 5472 panels, 1,5 MWc
- Production 1,42 GWh
- Prefabricated wood structure
- Duo pitch inverted roof
- 10 m spaced structure
- Rain-water collector

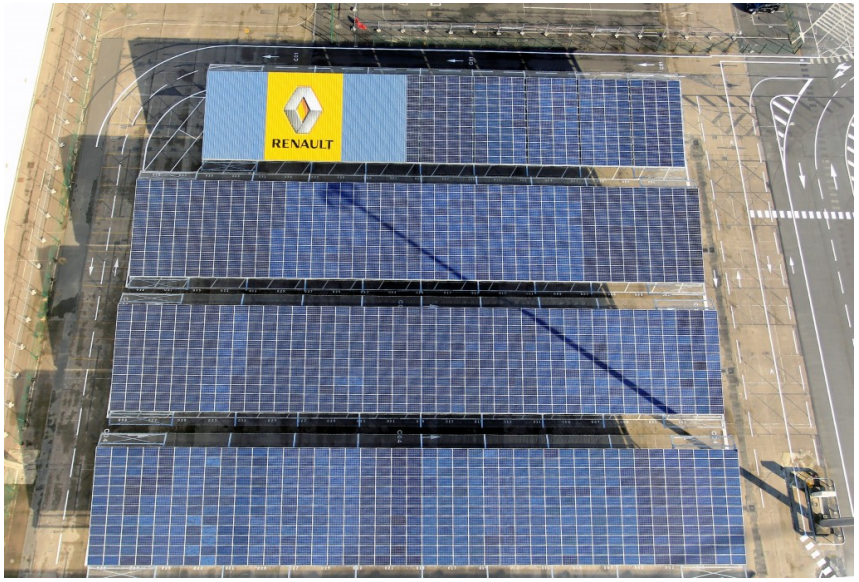
French references

Gagne Park

Solar Park "Etape de Vendres", Hérault

- 31000m² of covered area
- 660 solar fields
- Production 4,5 MW
- Prefabricated metal structure assembly by bolting on site
- Roofing 15m x 3,2m

French references



Parking Renault, Cléon

Prefabricated metal structure

Mono pitch roof

8 parking space

124,78 kW/m²

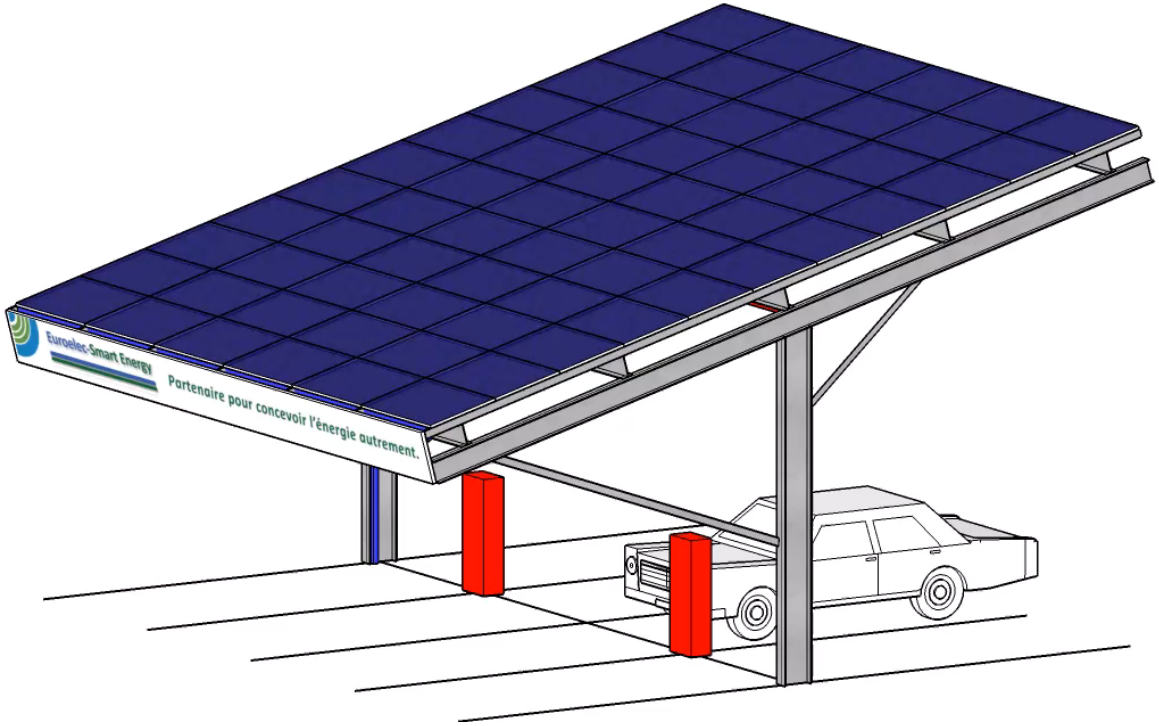
- 33 146m² of covered area
- 4894 kWc
- Production 4 136 MWh
- Power consumption households 1034

Euroelec-Smart Energy

Partenaire pour concevoir l'énergie autrement.

Thank you!

info@euroelec-smartenergy.com
http://www.euroelec-smartenergy.com/home/



FRANCE
85 Boulevard Malesherbes
75008 Paris
+33 (0)6 59 56 98 19
+33 (0)1 84 06 43 20

BRÉSIL
Av. Paulista 854, 10 andar –
Bela Vista 01310-100 São Paulo – SP
+55 (11) 21860393