

# TEWA Solar

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THE EFFICIENT WAY

## COMPANY PRESENTATION

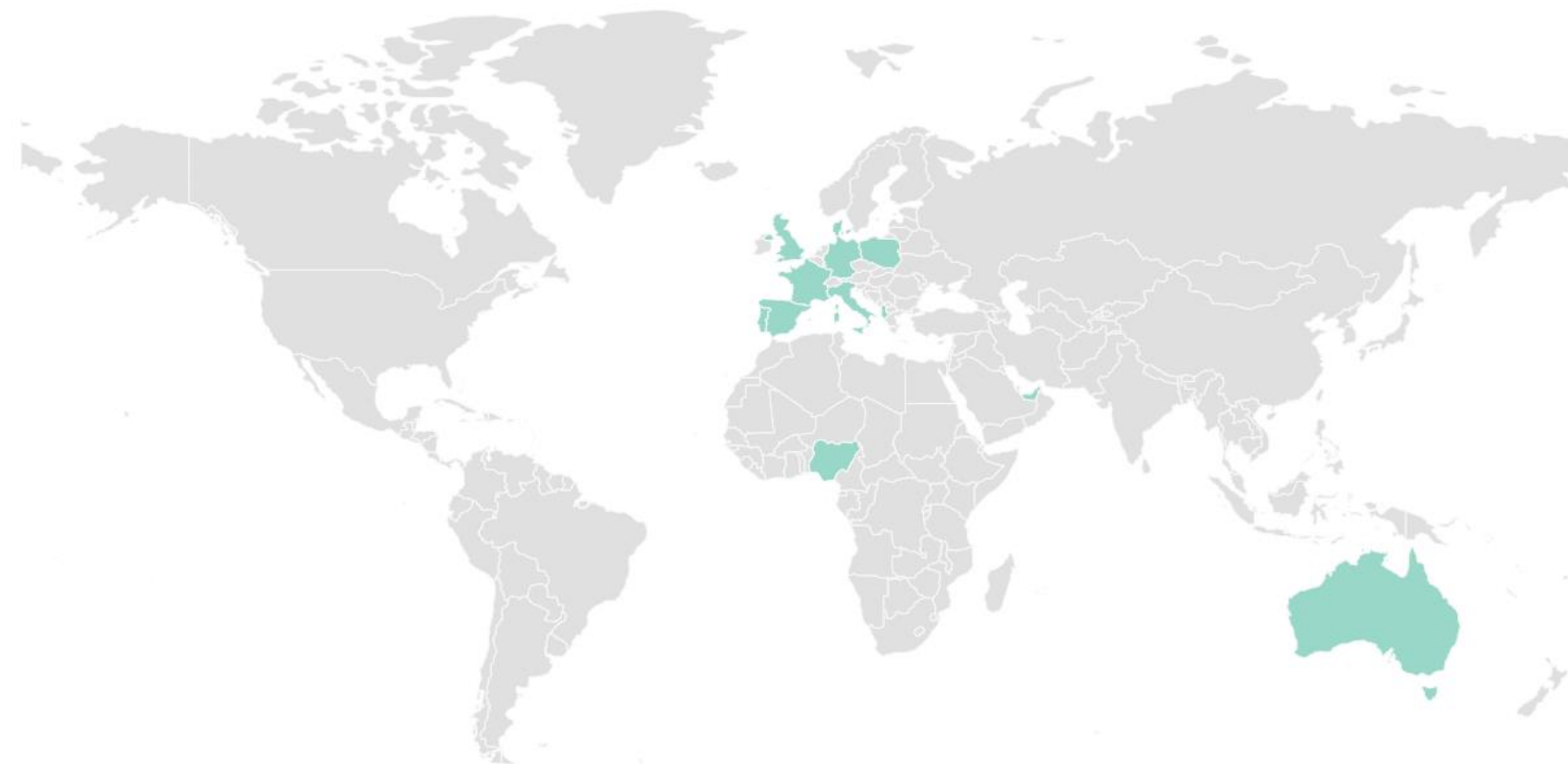


# COMPANY OVERVIEW

## REFERENCES AROUND THE WORLD

### ☀ Renewable Energies **Engineering, Grid Connection & Commissioning** company

- PV Plant (> 100MWp)
- BESS (> 100MW)
- HV / Substations
- Hybrid systems / Energy Management / Complex projects



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# COMPANY OVERVIEW

## THE TEAM'S EXPERIENCE



**15 years** of HV  
engineering



**10 years** in renewable  
systems: EPC, PM, Grid  
connection



Commissioning of more  
than **1.2GWp** of PV  
plants (>50 plants)



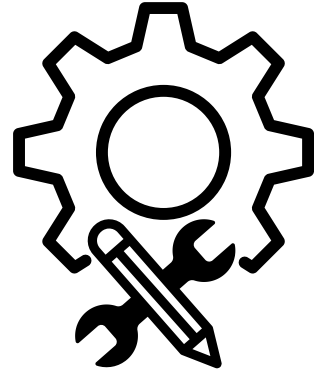
Solar projects from  
**100kWp up to 400MWp**



Extensive **international**  
experience

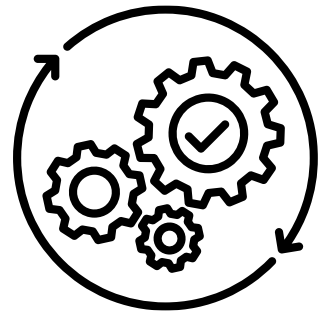
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# VALUES AND COMMITMENT



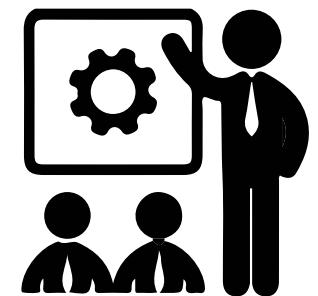
## **SKILLED TEAM**

Our team is only composed of highly skilled engineers, with experience at each stage of large-scale projects: Engineering, Construction, Commissioning, O&M.



## **BEING EFFICIENT**

Our main objectives: be efficient in our ways of working and providing added value to our clients, and help deliver more efficient and sustainable energy.



## **PROVIDING INTELLECTUAL PROPERTY**

Our goal is to provide knowledge, intellectual property and tools to our clients to help them become more skilled and autonomous.

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# VALUES AND COMMITMENT

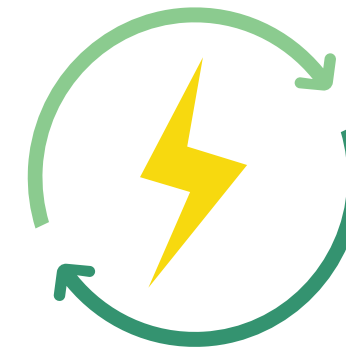
## A TRANSITION ACTOR

We are contributing to the energy transition which is essential for all of us.

TEWA Solar is a Member of 1% for the planet.

We measure our environmental impact and draw up an annual balance sheet of the CO2 emissions linked to our activity, and, wherever possible, offset our emissions.

All transport within France or nearby countries is by train.



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# TEWA'S EXPERTISE

## ENGINEERING, CONSTRUCTION, COMMISSIONING AND O&M

- Large-scale project technical & commissioning management (>100 MW)
- International experience
- Grid connection / HV systems
- SCADA & communications systems
- Multi-energy / hybrid projects
- Overall generation facility design



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# SERVICES

## FOR DEVELOPERS & INVESTORS:

- Owner engineering
- Due diligences
- Preliminary design
- Grid connection assessment

  
For more  
details



## FOR PV & SUBSTATION EPC:

- Detailed design
- Commissioning

  
For more  
details



## FOR ASSET OWNERS:

- Complex issues & under performance troubleshooting
- Revamping

  
For more  
details



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# SERVICES FOR DEVELOPERS

## PROJECT OWNER ASSISTANCE

- Preparation of technical specifications for contracts
- Assistance in the subcontracting tender process
- Analysis of grid codes / network operator requirements
- Assistance in the process of connecting to the electricity grid
- Pre-design of grid connection studies
- Assistance in the execution of contracts
- Contradictory analysis of third-party studies



# SERVICES FOR DEVELOPERS

## EARLY STAGE DESIGN

- Overall design of electricity generation and storage systems
  - Equipment layout drawings
  - Single line diagram
  - Communication architecture
  - Functional analysis
- Photovoltaic Design
  - Site drawings, layout drawings
  - Yield studies
  - Profitability study (LCOE, LCOS, Projects P&L, CAPEX estimation)
  - Techno-economic optimisation of PV & storage capacities of self-consumption projects
  - Sizing / Choice of components (cables, electrical protections, inverters, DC/AC ratio optimization)
- Medium and high voltage design
  - Sizing of primary electrical equipment
  - Specification of equipment for consultation with suppliers
  - Current Transformers and Voltage Transformers Calculation Notes
  - Notes on load flow and short circuit calculations
  - DC, LV, HV/MV cable calculation notes
  - Sizing of reactive compensation and harmonic filtering equipment



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# SERVICES FOR DEVELOPERS

## COMPLETE TECHNICAL MANAGEMENT OF ELECTRICITY GENERATION AND STORAGE PROJECTS

- Study management
- Coordination between the various shareholders
- Comments list management
- Technical and economic analysis of contract's deviations and variations
- Analysis of supplier offers, management of subcontractors
- Establishment and monitoring of studies and supplies' planning



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# SERVICES FOR DEVELOPERS

## KEY REFERENCES

### **Banie II – 406MWp PV plant – Poland - Owner Engineering :**

- Due diligence of conceptual design
- Issuing technical specifications for subcontractors contracts
- Tenderers offers review
- Subcontractors execution design review
- Expertise in 400 kV grid connection process and grid code compliance



### **Confidential BESS project – 240MW – France - Owner Engineering :**

- Due diligence of conceptual design
- Expertise in 225 kV grid connection process and grid code compliance
- Issuing technical specification for subcontractors contracts
- Tenderers offers review

The logo for TEWA Solar features the company name in a white, sans-serif font. To the right of the name, the word "Solar" is written in a yellow, sans-serif font. Below the company name, the tagline "THE EFFICIENT WAY" is written in a smaller, white, sans-serif font.

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# SERVICES FOR PROJECT EXECUTION

## PROJECT EXECUTION ENGINEERING AND DESIGN

- Overall design of electricity generation and storage systems
  - Equipment layout drawings
  - Single line diagram
  - Communication architecture
  - Functional analysis
- Photovoltaic Design
  - Site drawings, layout drawings
  - Yield studies
  - Profitability study (LCOE, LCOS, Projects P&L, CAPEX estimation)
  - Techno-economic optimisation of PV & storage capacities of self-consumption projects
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# SERVICES FOR PROJECT EXECUTION

## PROJECT EXECUTION ASSISTANCE

- Construction supervision
  - Project management assistance - EPC site supervision
- Commissioning management
  - Drafting and implementation of test procedures
  - Risk analysis and implementation of prevention plans
  - Management of subcontractors / suppliers / service providers
  - Management of planning and interactions between the different shareholders
- Factory Acceptance Tests of equipment
- Performing PV commissioning tests
  - AC and DC LV cable testing: insulation, continuity, polarity
  - PV string tests: I/V curves
  - Checking earth continuity
  - Validation of weather equipment (pyranometers, weather stations, etc.)
  - Tracker control tests
- Performing HV/MV commissioning tests
  - Insulation testing
  - Testing of equipment: cubicles, circuit breakers, disconnectors, harmonic filters, etc.
  - Soil resistivity measurements



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# SERVICES FOR PROJECT EXECUTION

## KEY REFERENCES

### **Karavasta – 140MWp PV plant – Albania - Commissioning**

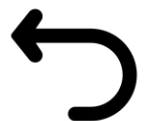
- Commissioning management of the overall PV Plant
- Commissioning testing (secondary systems, MV cables...)
- Review and approval of all subcontractors commissioning procedures and reports
- Technical issues investigation and support to the Owner



### **Confidential BESS project – 12MW / 14MWh – Italy**

- Commissioning management of the EMS, remote internet connection and battery system
- Expertise in SCADA, EMS and communication systems testing and commissioning
- Support to CEI-0-16 qualification tests

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# SERVICES FOR ASSETS OWNERS

## OPERATION & MAINTENANCE

- Performance analysis / optimisation / improvement
- Technical expertise on PV / LV / MV / HV failures
- Revamping engineering
  - Electrical design and integration into existing assets
  - Control upgrade (SCADA / PPC)

## TRAINING

- On-site training in PV operation and maintenance
  - Training in PV system design
  - Technical project management training
  - Training on grid codes/ network operator requirements



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# SERVICES FOR ASSETS OWNERS

## KEY REFERENCES

### **Confidential PV/BESS plant project – 20MWp + 7.5MW – France**

- Investigation of primary and secondary systems technical issue
- Expertise and troubleshooting of communication interfaces issues between contractors
- LAN communication architecture revamping : new design, devices, installation and testing plan.

### **Confidential PV plant project – 15 MWp – France**

- Due diligence of project performance KPIs



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# THEY TRUST US

ZEenergy



TotalEnergies

BeGreen   
Powered by the Sun

  
FRANÇAISE  
DE l'Energie

tagenergy

v  ltalia

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# TEWA'S TOOLS

## SOFTWARES

PVSyst



PVcase



LisePV/LisePRO

DIGSILENT PowerFactory

Cableizer

COPA DATA Zenon



**COPADATA**

Autocad 3D

## STANDARDS & ORGANISATIONS

NF / EN / IEC / ISO / AS-NZ

AFNOR member of committee UF 82

« Systèmes de conversion photovoltaïque de l'énergie solaire »

TEWA staff includes CIGRE members



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# CORE TECHNICAL TEAM



**Hervé KLEISS**

Founder and CEO of TEWA Solar. Hervé is specialized in Engineering and Commissioning of photovoltaic (PV) projects, from large scale PV plants to Distributed Generation or hybrid projects, Hervé is a photovoltaic projects Swiss knife.



**Guillaume PERRIN**

Specialized in design and commissioning of large electrical energy projects, particularly in HV, grid connection and control scopes, Guillaume has 17 years of experience in France and abroad. He worked on large projects from 50 to 400 M€ with high contractual stakes.



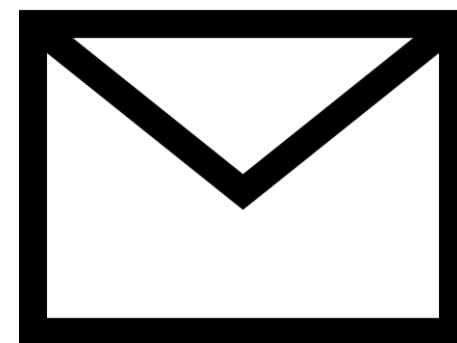
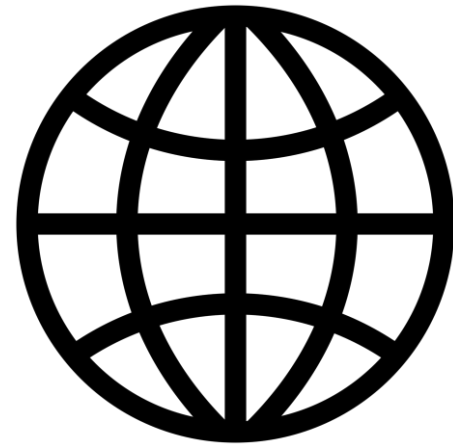
**Clément HENRY**

Specialized in industrial supervision (SCADA) and communication networks, Clément HENRY was previously manager of a T&D SCADA team department. He designs and develops SCADA and automation solutions to improve efficiency and safety of energy infrastructures.



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## KEEP IN TOUCH



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**THANK YOU**

