Advanced connection solutions

For solar PV plants

sicame
SOLAR SOLUTIONS

Renewables

About us

sicame GROUP

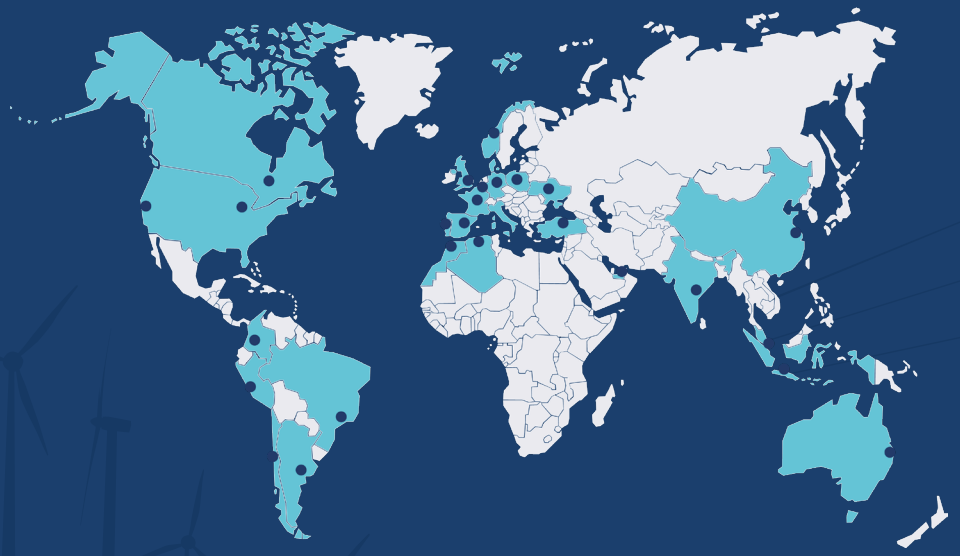
Sicame Group is one of the key players in the electrical equipment business worldwide. It has been able to adapt and develop to support the continuous evolution of electricity infrastructure in France and around the world, and become the largest independent entity in its sector.

A true player in the energy transition, it offers its customers new products and services to improve energy efficiency, deal with environmental risks and support the development of electric vehicle and solar power plant markets.

+65
years of worldwide success

458 M€
2021 turnover

3,600
employees



5 continents

26 countries

50 companies around the world

Products distributed in **157** countries

Our fields of activity

Sicame Group is specialized in **products and services** related to the transmission and distribution of **electrical energy** as well as safety equipment and industrial applications.

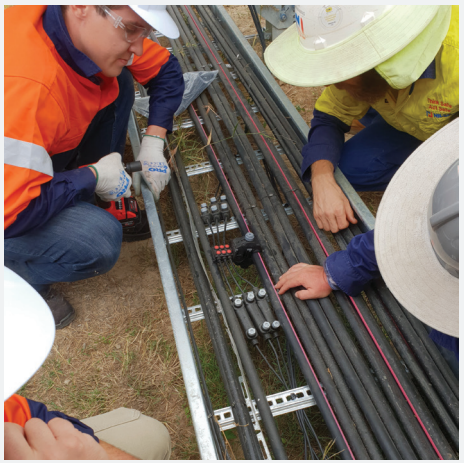
Today Sicame Group is gathering all its know-how and 65 years of experience in **one unique and innovative solution for solar farms connection using suspended DC Bus cable architecture...**

With the collaborative work of our R&D teams, **Sicame Group offers a global solution from the wiring of photovoltaic panels to the grid connection.**

In addition to offering excellent value for money with superior quality, our solution will allow to make significant savings on every construction site design from 1MWp to unlimited GWp.

- No trenching
- Easy to install
- Visual control
- Safe solution
- Energy savings
- Higher productivity
- Cost savings

An innovative approach to improve productivity and efficiency



Civil work

Losses

Cables

Improved LCOE

Time saving

- Less civil work
- No more cable stripping nor combiner box use

Cost saving

- Less cable length
- Less operators needed and with lower skills
- Suspended cable system : quicker & easier to install

Losing saving

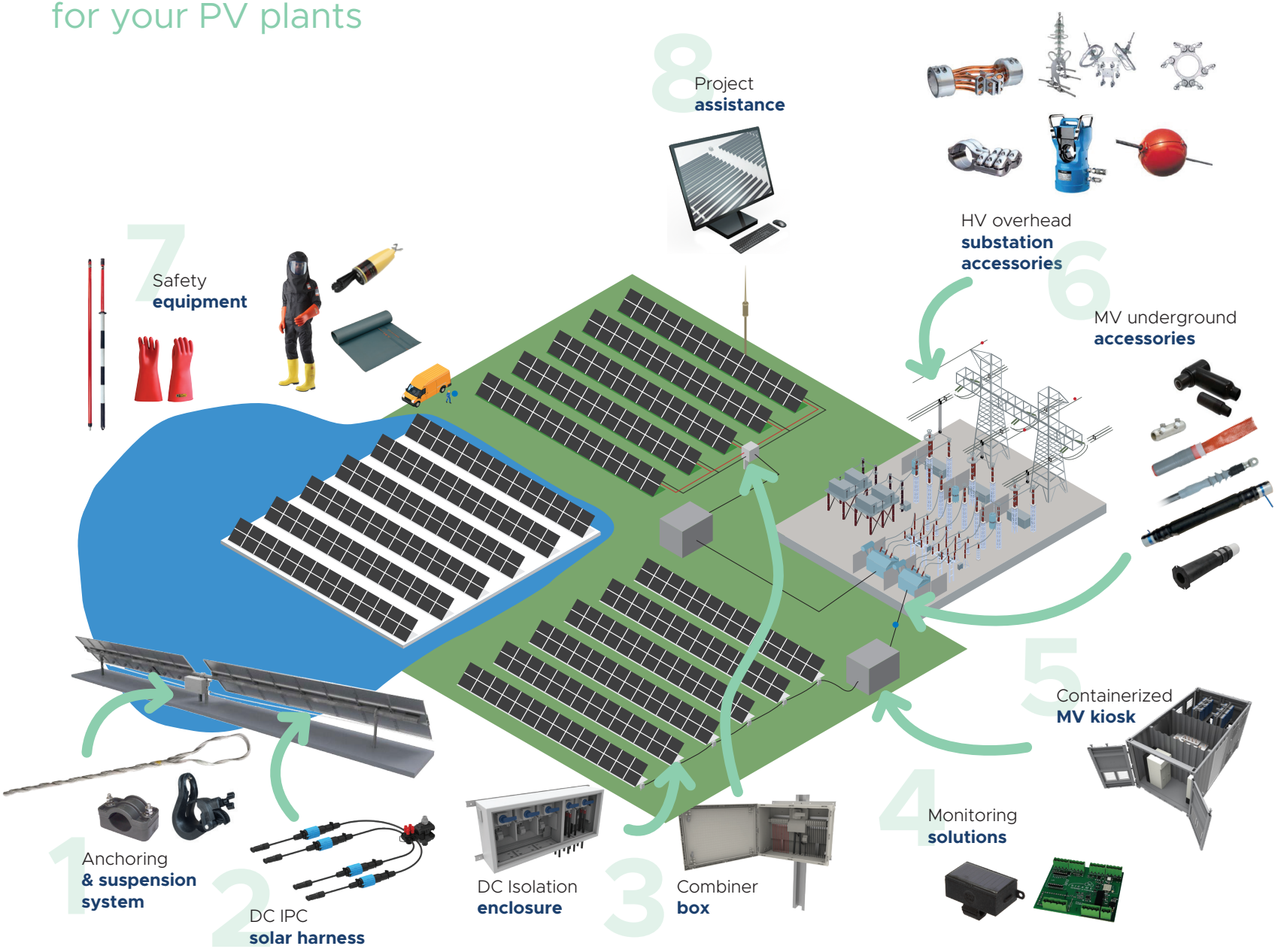
- Minimize network losses
- Larger cable section
- Reduced contact resistance

Reliability

- Sicame proven IPC technology
- Optimized fuse ventilation

Sicame solar solutions

A complete connection solution for your PV plants



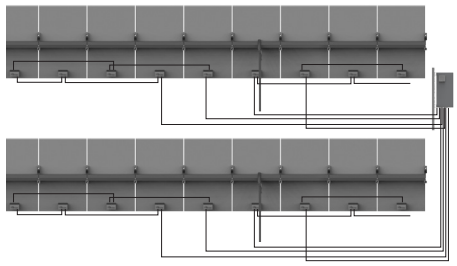
Sicame solar support

In addition to bringing you a complete and innovative product offering for DC bus connection, Sicame provides expert assistance in your electrical design construction.

Our dedicated team is at your disposal to assist you in the development of all stages of your project, from design to implementation of your electrical connection.

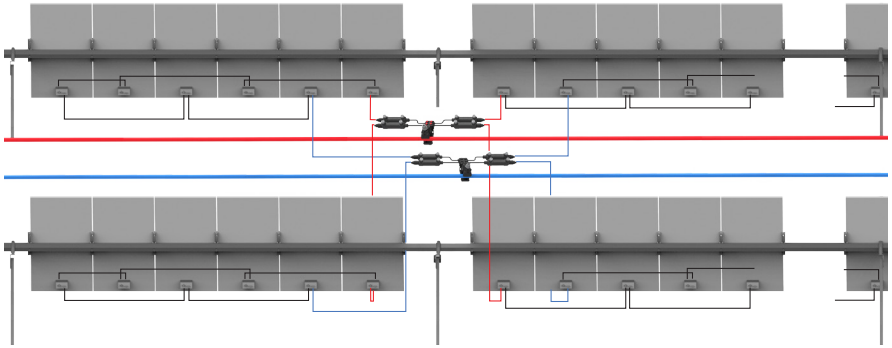
We have developed an in-house configurator to offer you a customized study of your project to help you assess costs & benefits and select optimized solutions.
We will also guide you for on-site installation deployment of your solar farms.

- Calculation of cable lengths
- Calculation of technical losses
- Calculation of complete bill of materials
- Evaluation implementation and product costs - from DC routing to inverter



Traditional string cabling layout

Cabling savings
with Sicame IPC system versus string cabling



Sicame harness cabling and IPC module layout

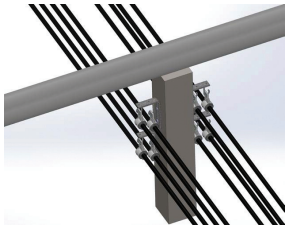
-34%
cabling length

A complete DC connection solution for your solar plants

1 Anchoring & suspension
accessories

- **Sicame best sellers**
- **Cost saving**
- **Easy and fast to install**
- **Minimal tooling**
- **No trenching**
- **No specific skills required**
- **UV stabilized**

- Live line work contact
- High mechanical and climatic resistance
- Parallel separation of + and - DC Bus polarity
- Suitable from 16mm² to 500mm² conductor range
- Modular design system

2 DC IPC
solar harness

- **Sicame IPC technology**
- **Reliability**
- **Easy to install**
- **Minimal tooling**
- **Less labor time**
- **Less cabling time**
- **No more combiner box**
- **Upon request consultation**

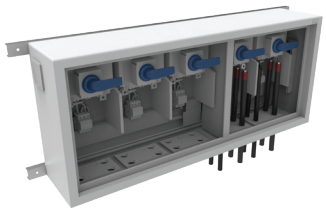
- String leads from 4-16mm²
- Bus cabling from 16-500mm², double insulated cable, copper or aluminum, stranded or flexible conductor
- Shear head bolt – predetermined torque for reliable & repeatable connection
- 1500 VDC rated system
- Inline fuse rating from 15-60A
- Dielectric testing to 6.5kV – 300mm underwater
- Multiple configurations available from 1 to 6 ways
- Pre-assembled with compatible MC4 connectors from your project



3 DC isolation enclosure

- **Customizable according to project requirements**
- **Strong mechanical resistance**
- **UV and corrosion resistance**
- **Watertightness**

- Strong mechanical shock resistance – IK10
- IP54 or IP66 protection degree
- High resistance to heat, fire and abnormal heat
- High dielectric strength
- Light weight
- 2 pole pad lockable load break switches
- 2 pole surge arresters
- 1500 VDC cabling



4 String & DCIB monitoring

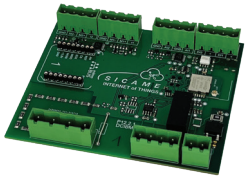
- **Smart sensors to assess strings & DCIB activity and fault detection**
- **Easy to install, no specific tooling**
- **Maintenance free**
- **Wireless standardized communication protocol**
- **Alert configuration & reporting**
- **Retrofit compatible**

String monitor SMM30:

- Power supplied by solar cell,
- Current monitoring
- Available for 2 or 3 simultaneous strings monitoring

DCIB monitor DCIBMM:

- Voltage and temperature measurement, switch and surge arrester status monitoring



5 Containerized MV kiosk

- **Customizable according to project requirements**
- **Integrated Cell : Inverter, Transformer & Switchgear**
- **Aeration and ventilation system**
- **Excellent thermal characteristics**

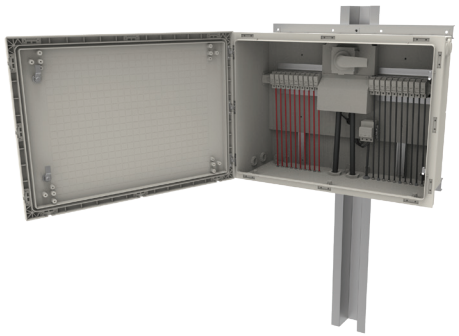
- 60mm thick Seifel insulating panels in a 20’ or 40’ maritime container
- Complete thermal design and modelization
- Ventilation: natural, mechanical, fan, air conditioning
- Integration of equipment (inserts for battery chargers, inverter), battery rack, battery
- Separation partition (between batteries, generator set)
- Possibility of a double doors container
- Indoor / outdoor lighting
- Cable trays
- Grounding
- Pre-wiring possible

Our complementary offer

String combiner
enclosure

- **Customizable according to project requirements**
- **Watertightness**
- **Strong mechanical resistance**
- **UV and corrosion resistance**

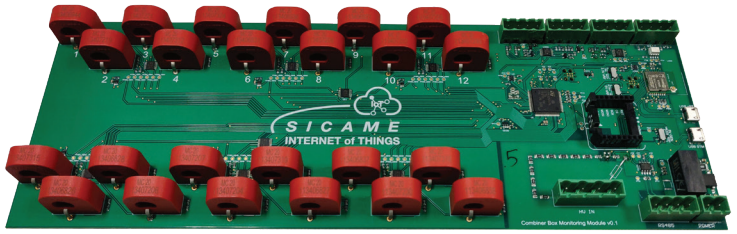
- Strong mechanical shock resistance – IK10
- IP54 or IP66 protection degree
- High resistance to heat, fire and abnormal heat
- High dielectric strength
- Light weight
- Fused inputs according on project requirement
- 2 pole pad lockable load break switches
- 2 pole surge arresters
- 1500 VDC cabling
- Monitoring in option



Combiner box
monitoring module - CBMM

- **Smart sensors to assess combiner box activity and fault detection**
- **Easy to install, no specific tooling**
- **Wireless standardized communication protocol**
- **Alert configuration & reporting**
- **Retrofit compatible**

- Voltage and temperature measurement, switch and surge arrester status monitoring
- Up to 24 DC inputs
- Current sensor from 20-45A

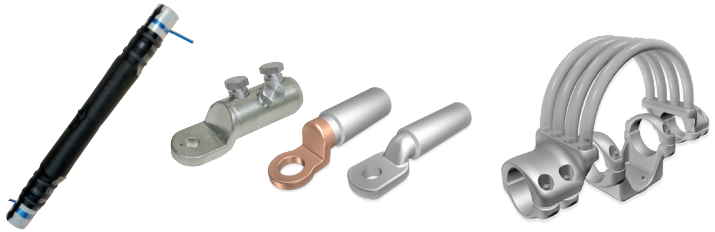


HV overhead substation & MV underground accessories
to distribution network

- **Cold shrink technology**
- **Easiest and quickest assembly**
- **Extremely reliable**
- **Product customization for individualized needs**
- **Limits misassembling risks**

Complete ranges of accessories to reach the regular energy distribution network:

- Substation accessories up to 1200 kV
- MV underground cold shrink accessories (joints, terminations, separable connectors, etc...)



Safety
equipment

Complete range of comprehensive electrical PPE and accessories to ensure safe installation & maintenance on PV plants.

Sicame Group

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GROUP