

RES Project Cape Verde

2Power Pilot Project at Casa Strela B&B, Ponta de Atum, CP 118 Tarrafal, Santiago Island

**Realized by PA-ID GmbH, Germany
Installed by GTEK Lda, Praia, CV**

The RES Project Cape Verde is supported by the German Federal Ministry for Economic Affairs and Climate Action as part of the Renewable Energy Solutions Programme of the German Energy Solutions Initiative

Supported by:



Implemented by:



on the basis of a decision
by the German Bundestag



Brief Introduction

PA-ID (short form for patent-idea)

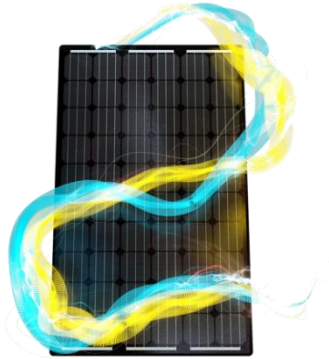
The company was founded 1996,
has approx. 50 employees and is
based in Kleinostheim near
Frankfurt, Germany

PA-ID is the developer and producer
of the **2Power-Module**

a combined photovoltaic and
thermal module, which produces
heat and warmth simultaneously.

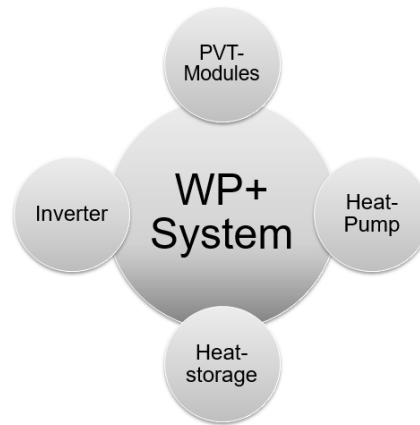


Main Business Activities



PVT -Systems

Combined
Photovoltaic and
Thermal Systems



Heat Pump Systems

With a PVT-
System for Power
Supply



PV solar roof tiles

Replaces Roof-
tiles aesthetically

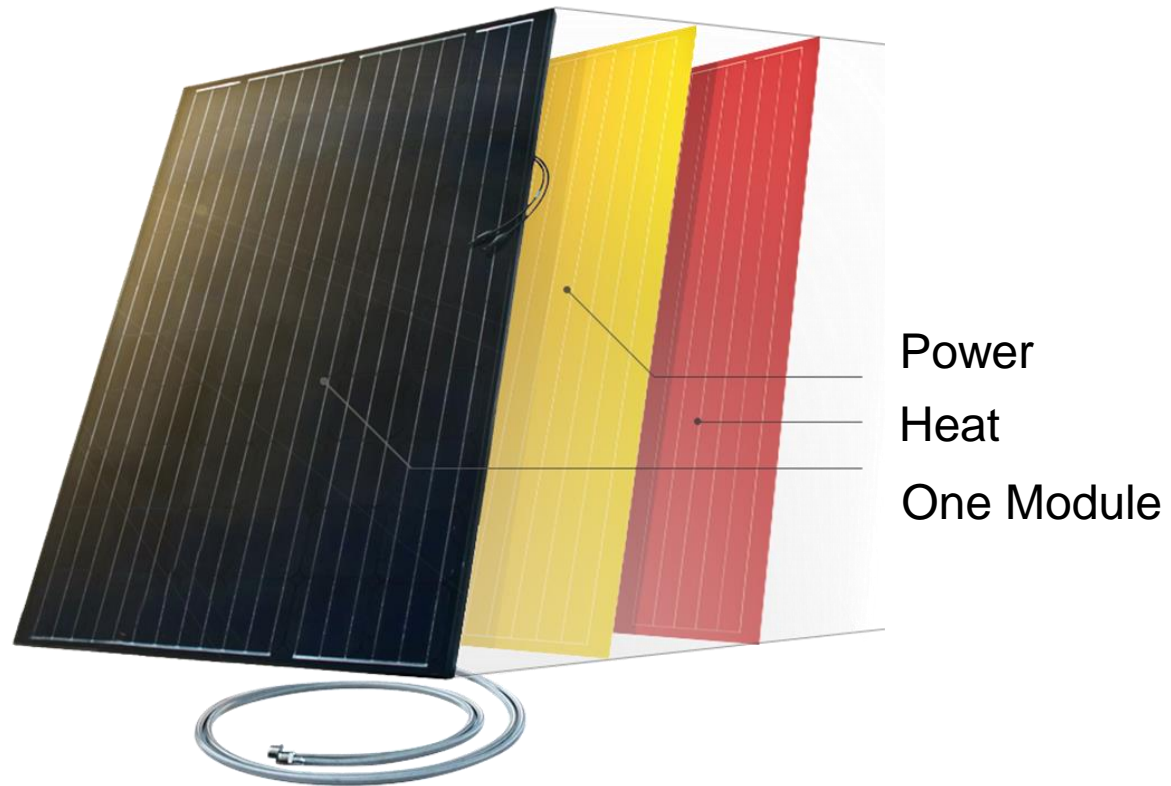
PVT-Systems



- Higher efficiency compared to combined separate systems, as less area is needed for the same energy yield
- better performance of electricity yield due to cooling effect
- Homogeneous appearance
- especially beneficial with large heat demand (e.g. hotels)

Centerpiece of each 2Power-System:

The 2Power HM1305 Mono Black Module



The Idea behind the Project

The most important preconditions for a successful launch of the 2Power-System:

- High and long lasting solar radiation
- Need for reduction of electricity costs
- More independence from fossil fuels
- Suitable structures / openness to renewable energies

→ ideal for Cape Verde ?!

Market Entry

- With the support of the German-Portuguese Chamber of Industry and Commerce
 - Participation in the events 2017 and 2019 with establishing first contacts
- With the support of the German Energy Agency “dena”
 - as part of the Renewable Energy Solutions Program of the German Energy Solutions Initiative

Project Realisation

- Finding project partners and a suitable site for the project
 - Partner: GTEK Lda, Praia
 - Site: B&B Casa Strela in Tarrafal/Santiago
- Barriers on the way to implementation
 - Corona and all the restrictions
 - supply shortages for material

Transport of the Material



Seaworthy Packing



On the way to Tarrafal

Installation of the 2Power System

2Power-Modules

The number of 2Power modules depends on the expected and average heat demand.

This ensures that there is only as much heat generated as is needed and the remaining available roof area can be used for power generation.

→ 8 x 2Power modules were installed and complemented by 7 classic photovoltaic modules



Installation of the 2Power System



Hot Water Storage Tank

A hygienic stratified storage tank prevents the formation of legionella, so that the domestic water can be used.

This tank also saves energy, because the water is always taken in layers (in a normal buffer tank, the water is mixed and therefore has to be reheated earlier).

Installation of the 2Power System



Other Components

The system was supplemented by

- an SMA inverter 4.0
- a solar station with controller from CitrinSolar
(both German manufacturers)
- and among others for example plug-in-connecting hoses for easy installation.



Report from Sunday, 14. May 2023:

■ Power generation ■ Consumption ■ Grid supply

Total power generation: 17,5 kWh

Self-sufficiency-rate (without battery): 57 %

An additional battery storage will enable full self-sufficient supply

Performance

Peak Performance:

Thermally: 5,48 kWp

Electrically: 4,72 kWp

- 8 Panels of 2Power HM1305 Mono Black and
- 7 Panels of 1Power HM325 Mono Black

Résumé

- A very efficient system with a satisfied customer - Original statement from the owner Andreas Schäfer: *"The system produces strongly a lot of electricity"*
- This shows, that the 2Power-System is apparently ideally suited for Cape Verde
- And last but not least we did a further - albeit little step – towards carbon neutrality



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