

Market's most **efficient**  
solar panel



**HORIZON 2020**

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement N°947496



Abora Solar, manufacturer of hybrid solar panels  
Our solar panel is the most **efficient** and **cost-effective** in the world

**+10 years**  
Experience

**27 Countries**  
International presence

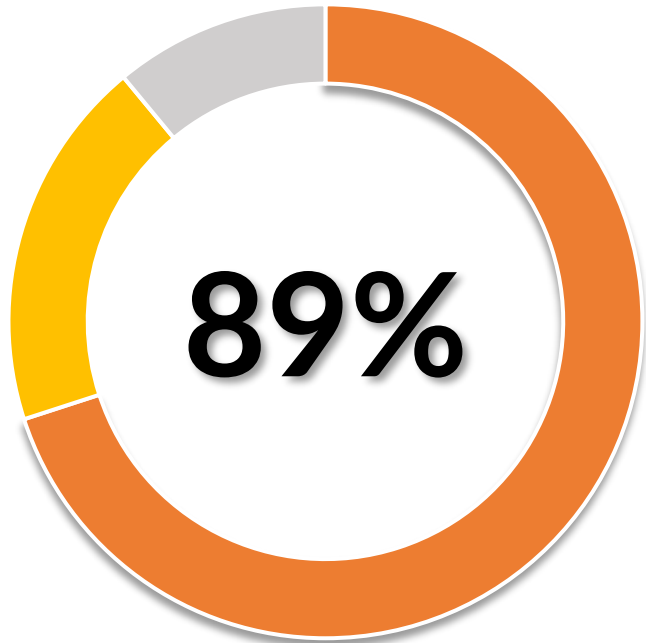
**+30 Prizes**  
Technological innovation



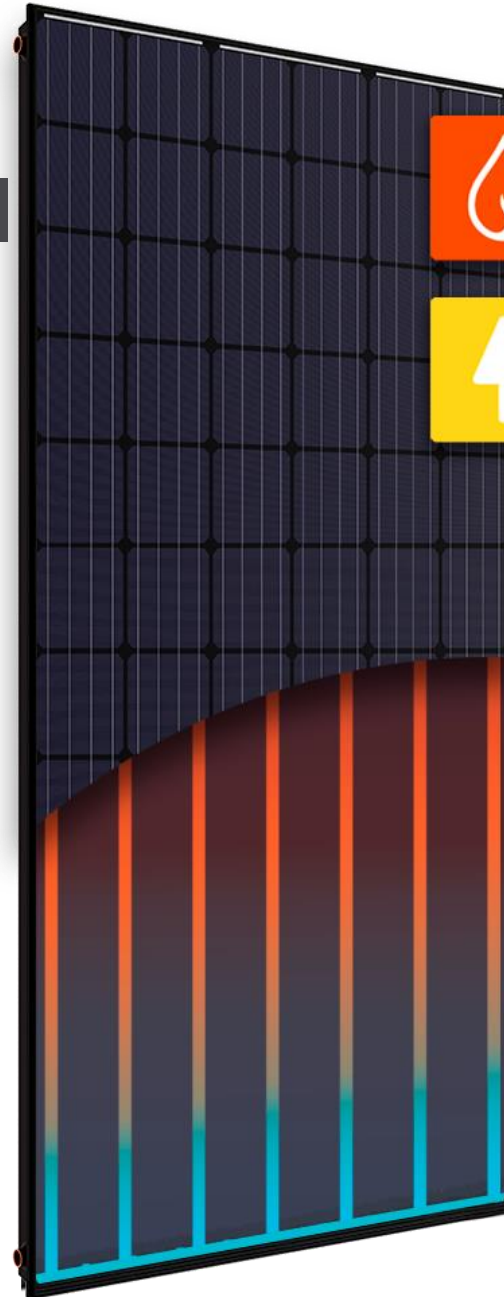




# The **hybrid** solar panel 2 in 1



Efficiency



HOT WATER



ELECTRICITY



# Photovoltaic panel

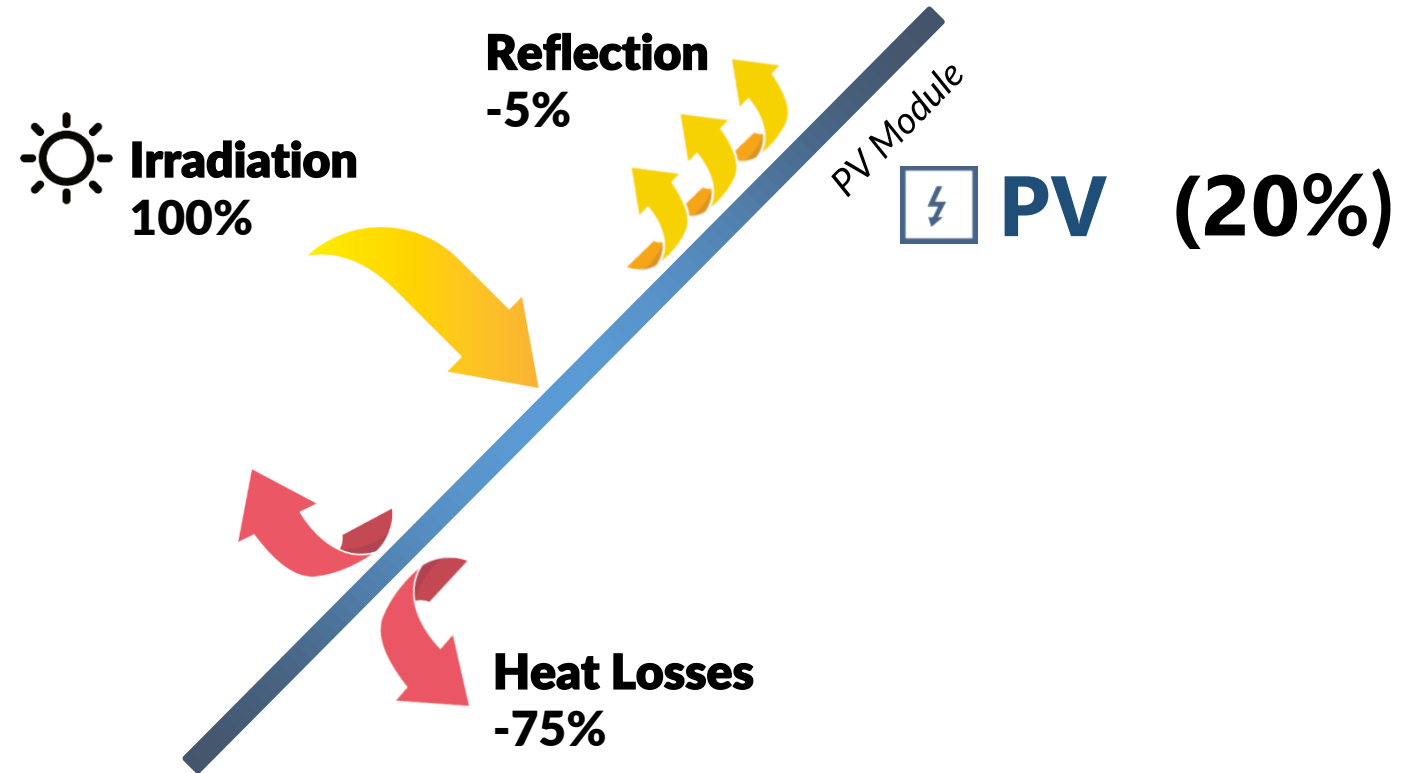


It is capable of seize **20%** in the form of **photovoltaic energy**.

The remaining **80%** of energy is lost due to reflection of the sun's rays and heat losses.

aHTech® Technology

# Energy balance





# Hybrid Panel PVT



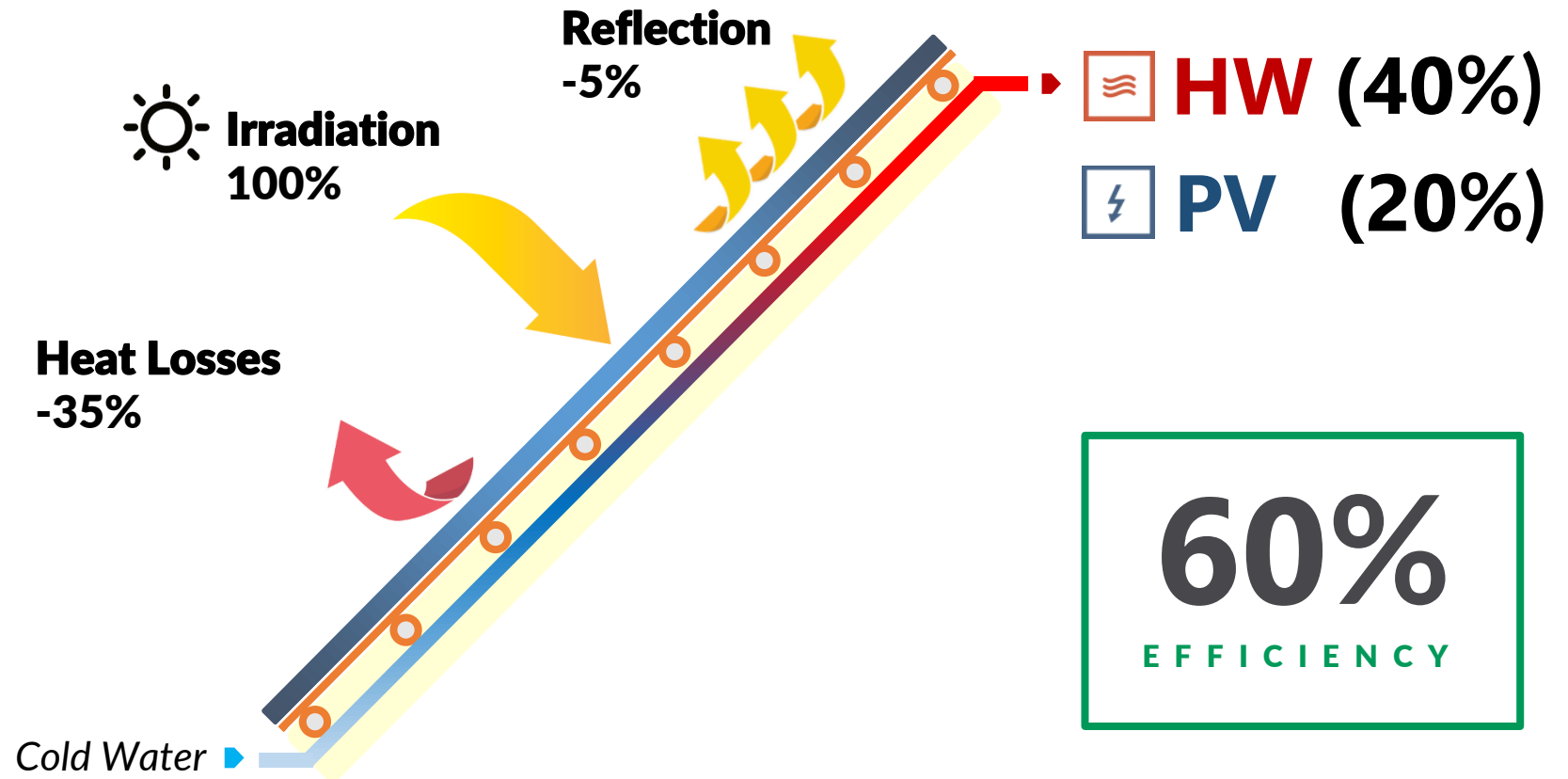
It incorporates a PV panel and a **water circuit** on the back.

In theory, it transforms the heat losses from the back of the panel (40%) into solar thermal energy.

This would lead to an efficiency of **60%**, however ...

aHTech<sup>®</sup> Technology

## Energy balance



# Hybrid Panel PVT



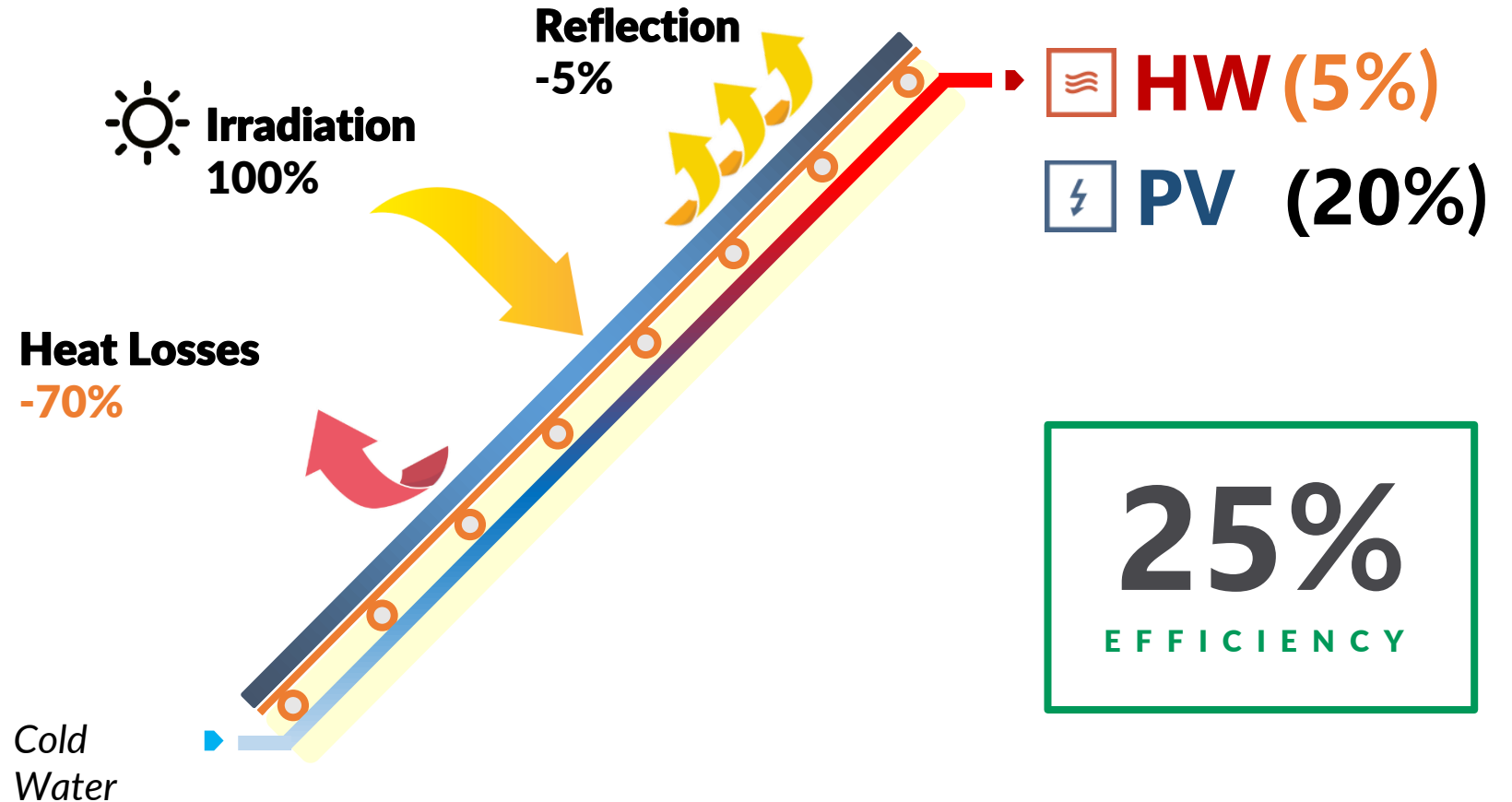
... In practice, the heat losses that went to the rear, escape through the front.

Only **5%** is transformed into solar **thermal energy**.

The total efficiency is far from theory, it is only **25%**.

aHTech® Technology

## Energy balance





aHTech® Technology

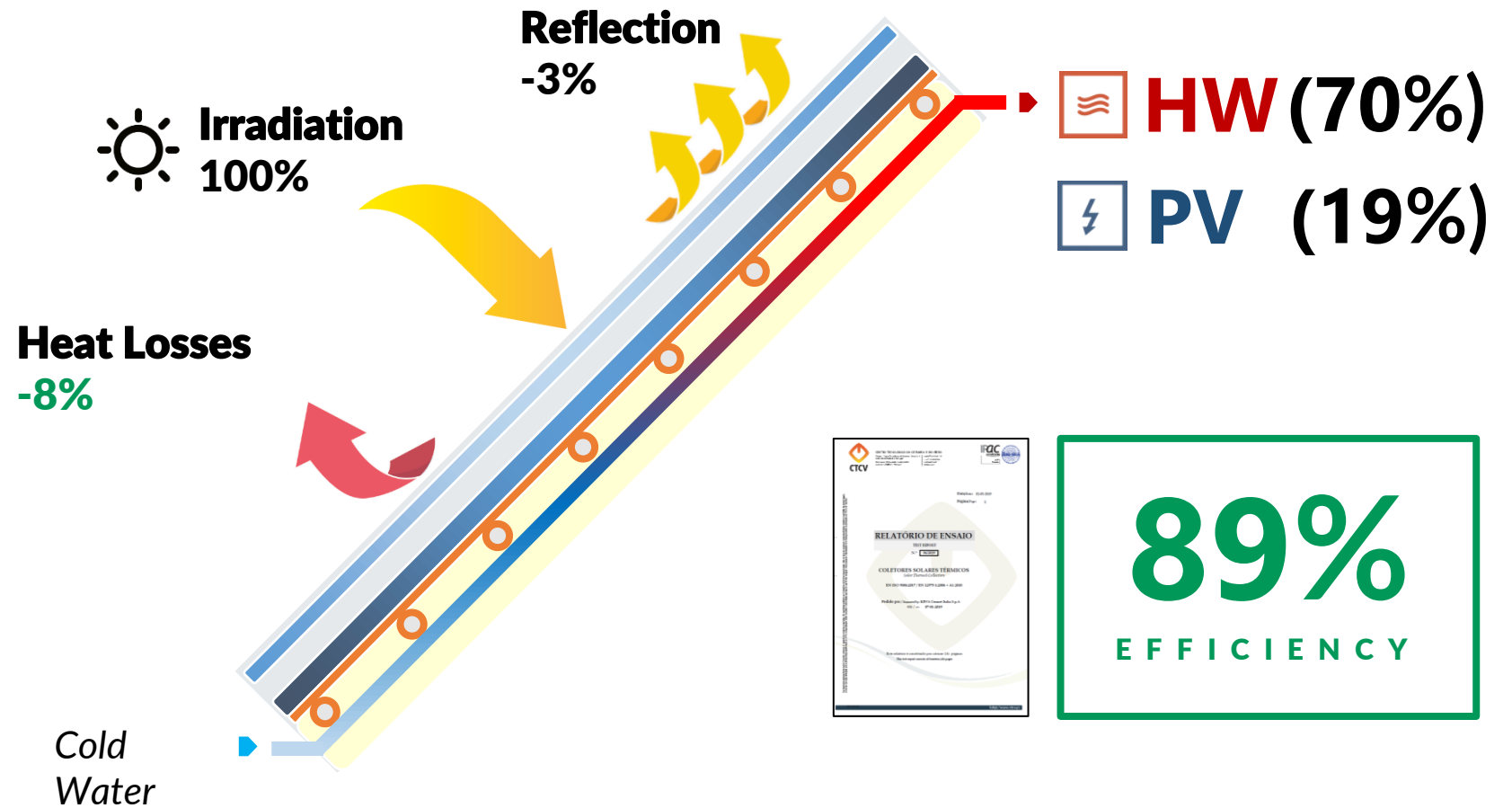
# Energy balance



aHTech® technology reduces heat losses.

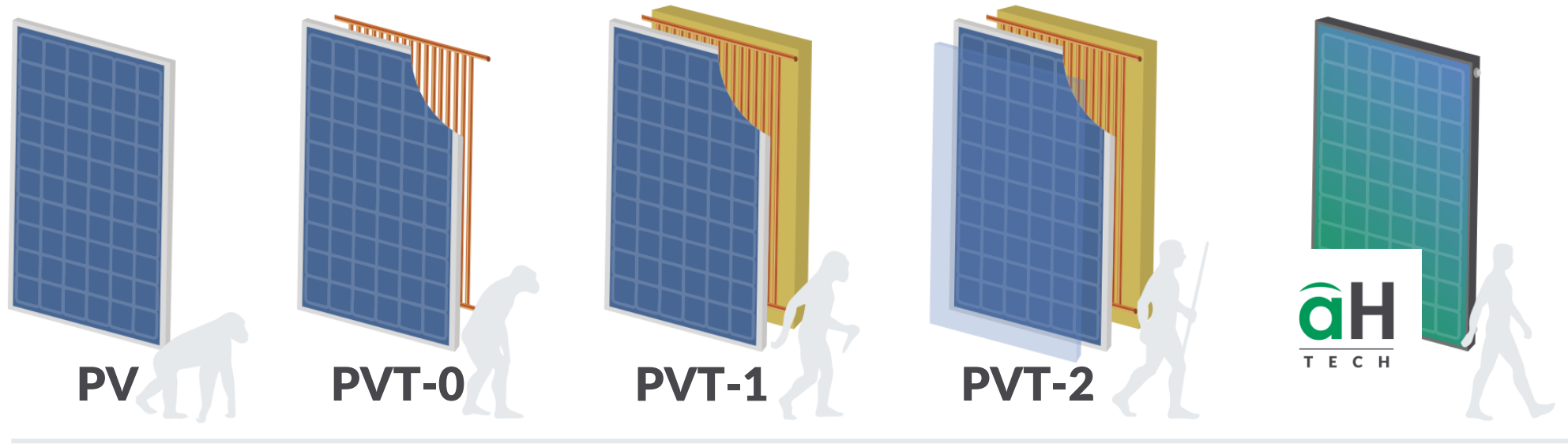
Solar thermal energy increases up to 70% and photovoltaics also increases.

Panel efficiency with aHTech® is increased up to 89%.



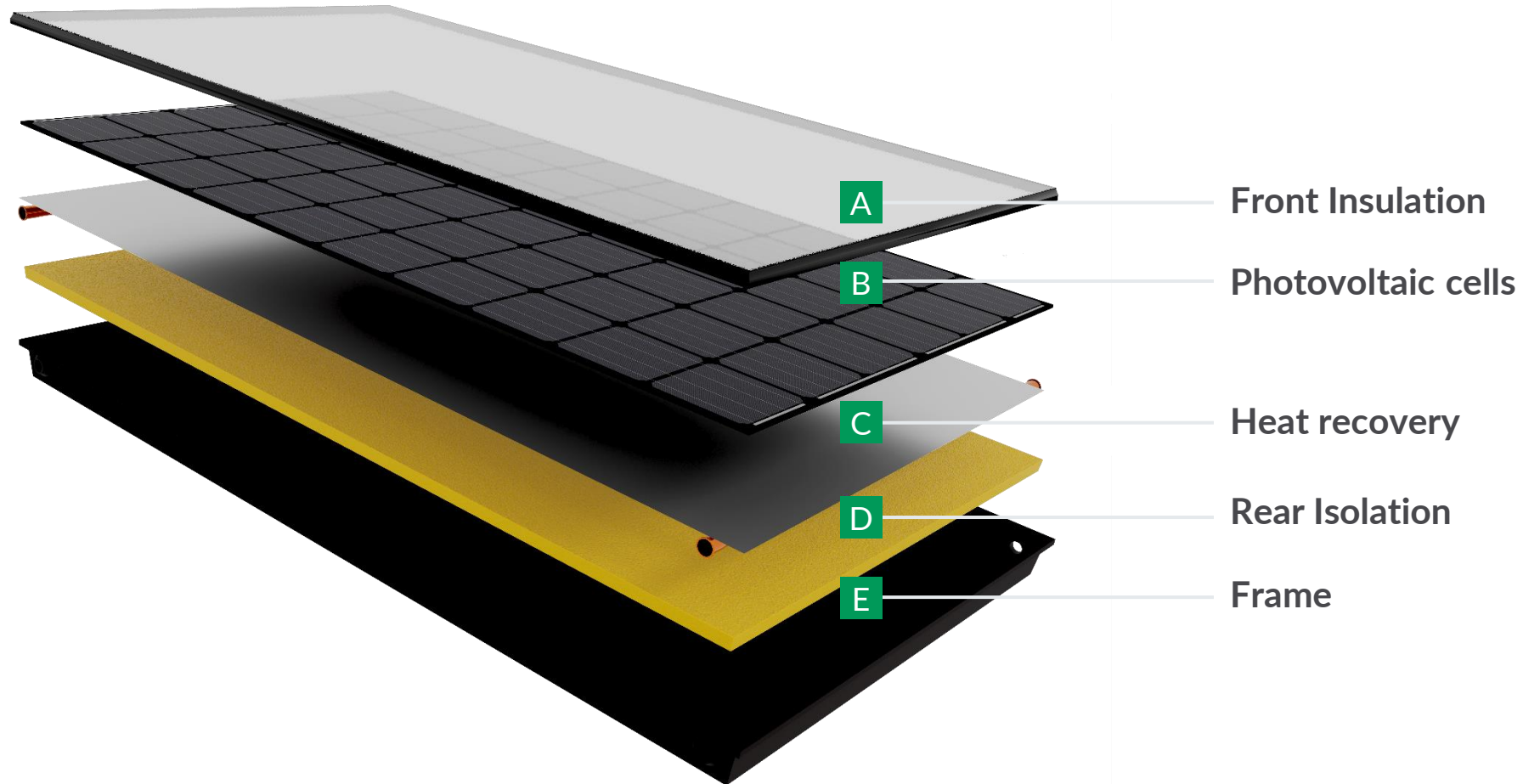


# Evolution of PVT

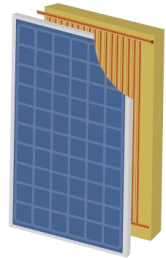


- Solar panel
- Heat Recovery
- Rear isolation
- Front isolation

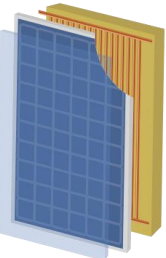
# Layer disposition



# Comparative



PVT-1

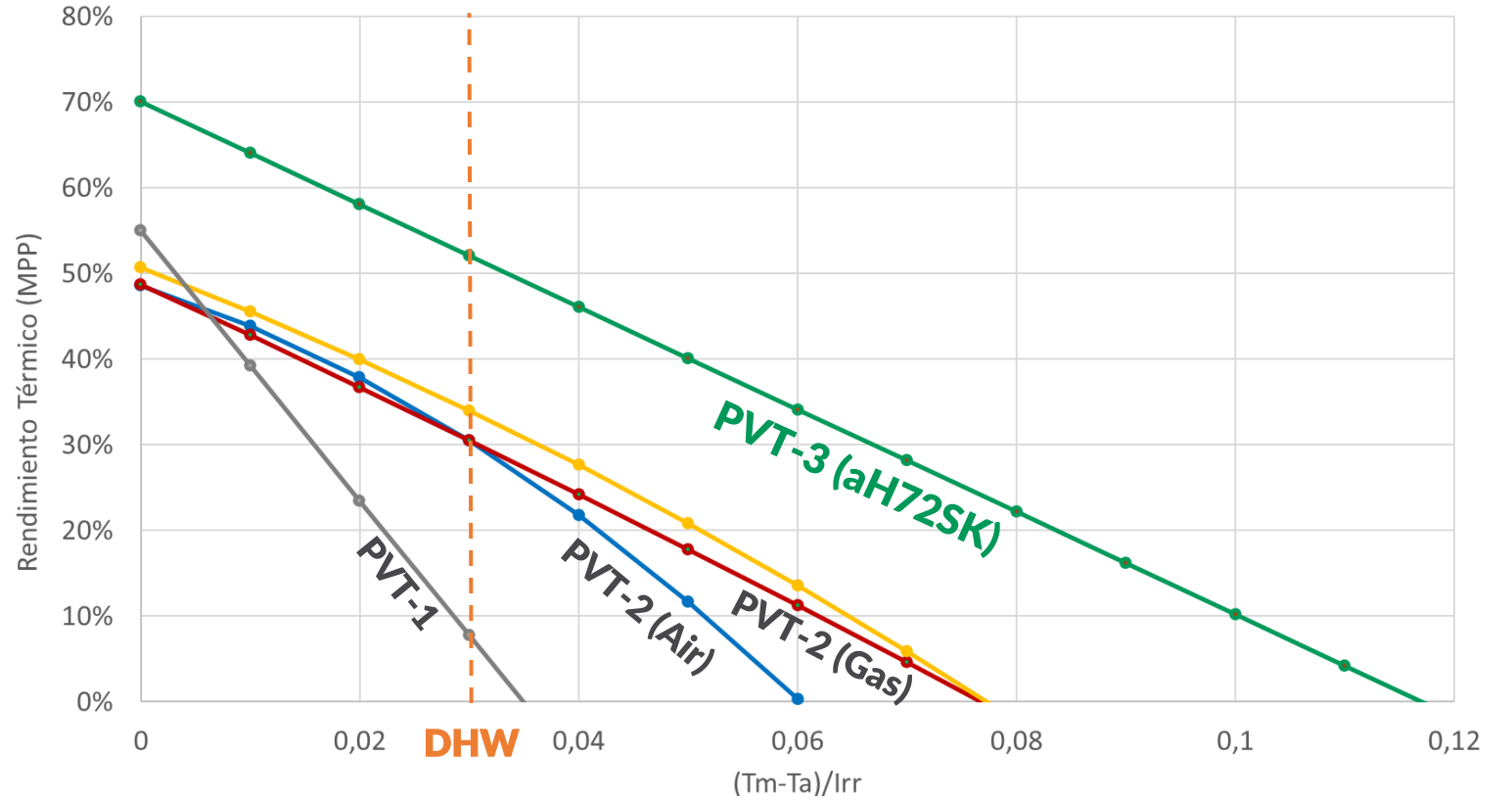


PVT-2



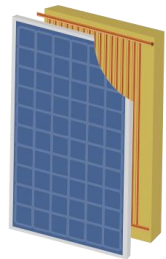
aHTech®

aH72SK

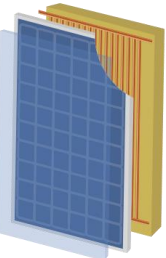




# Comparative



**PVT-1**

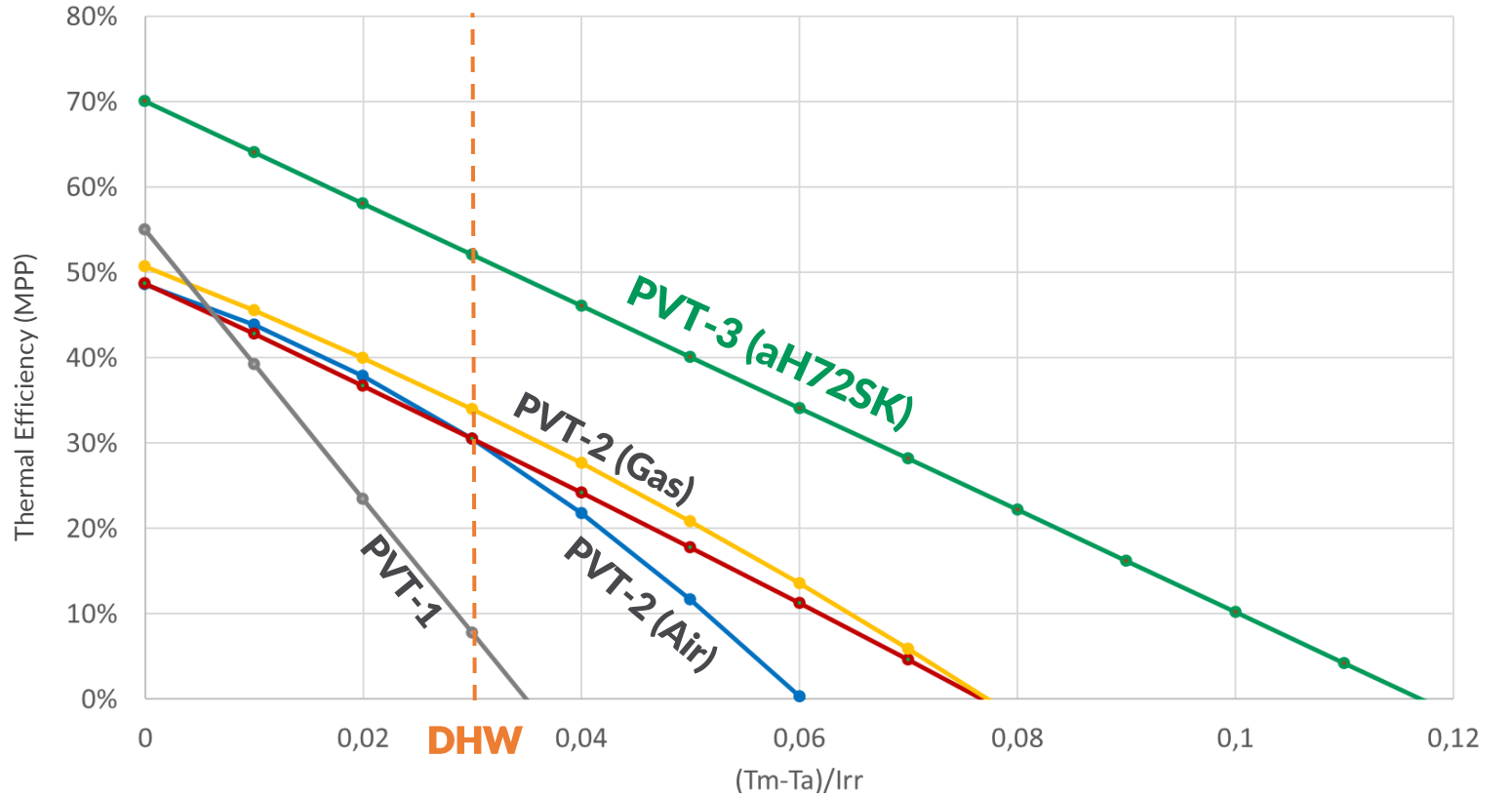


**PVT-2**



**aHTech®**

**aH72SK**





aHTech® Technology

# Certifications

ISO 9806:2017 / EN 12975-1:2006 + A1 2010

The first covered hybrid solar panel certified  
Solar Keymark



The Solar Keymark  
CEN Keymark Scheme



# Valor diferencial

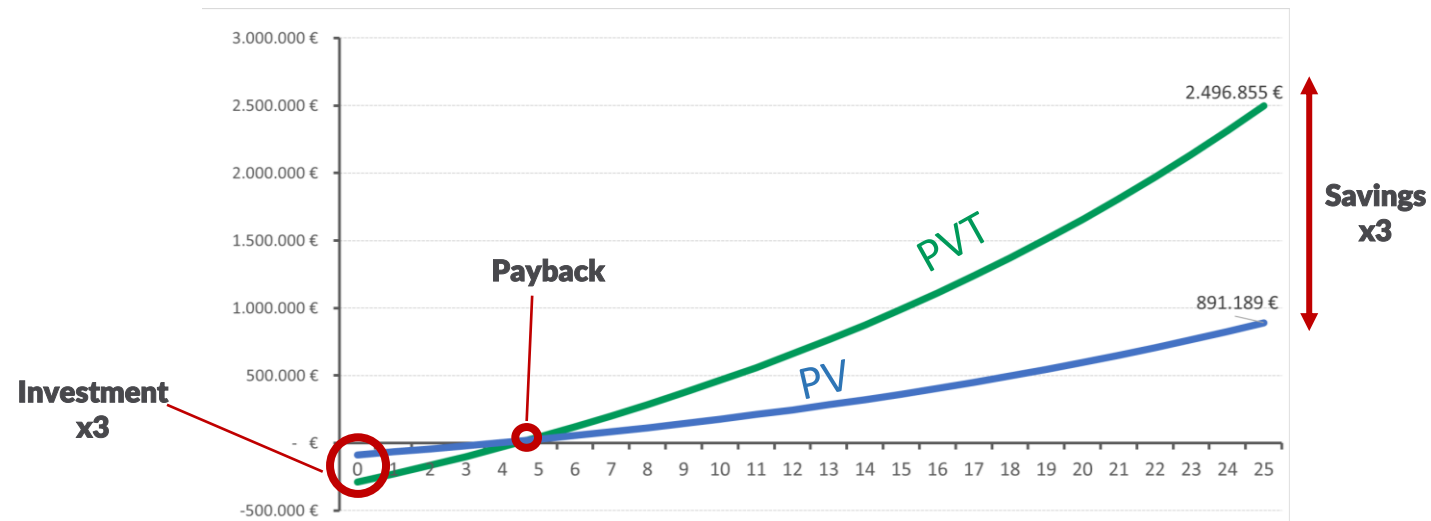


**Profitability**  
**x3**



**Sustainability**  
**x4**

## Comparaison between PVT and PV





MODEL



## Abora **aH72SK**

72 Photovoltaic cells

Dimensions 1.970 x 995

Thermal production 70%

Photovoltaic production 19%

Flow 60 L/h



The most

**PROFITABLE**

panel in the world



The most

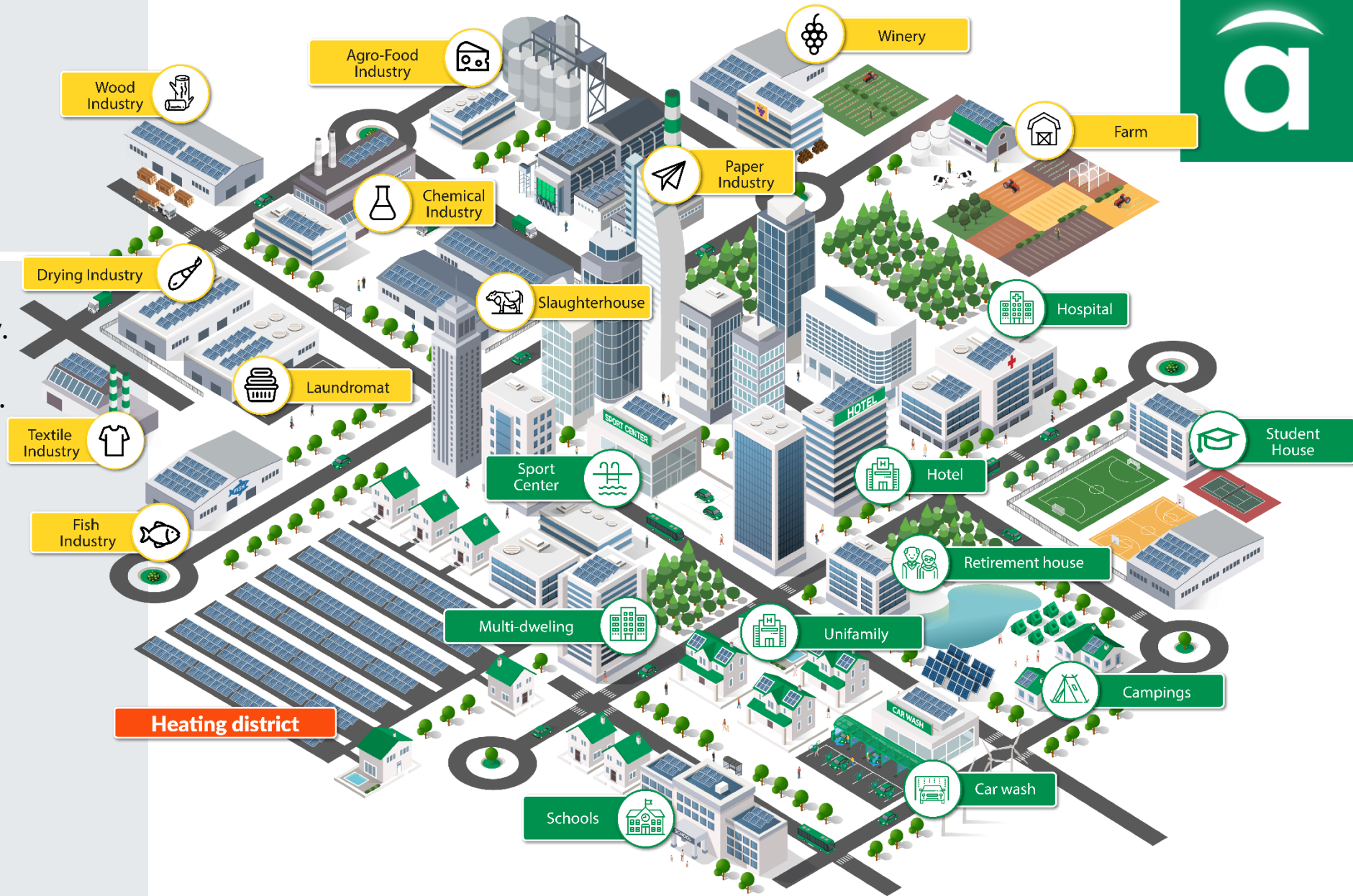
**EFFICIENT**

panel in the world

# SECTORS

## Most profitable sectors:

- ▶ A high consumption of electricity.
- ▶ A high consumption of hot water.
- ▶ A limited solar collection area.





Hotel

Iberostar Bouganville

Tenerife

102 Panels

4 years payback

86,544 KgCO<sub>2</sub> /year of emissions avoided





Hotel

Iberostar Royal Andalus

Chiclana de la Frontera

300 Panels

5 years payback

204,785 KgCO<sub>2</sub> /year emissions avoided





Hotel

Hotel Lago

Menorca

134 Panels

6 years payback

142,304 KgCO<sub>2</sub>/year emissions avoided





Industry

Arpa

Zaragoza

112 Panels

6 years payback

59,360 KgCO<sub>2</sub> /year emissions avoided



RECEPCIÓN DE MERCANCIAS

ARPA



EQUIPOS MÓVILES DE CAMPAÑA





Industry

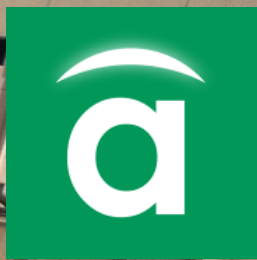
ITL Laundry

Huesca

63 Panels

6 years payback

40,715 KgCO<sub>2</sub> /year emissions avoided





Industry

SYTA Truck wash

Alfajarín

160 Panels

4 years payback

84,800 KgCO<sub>2</sub> /year emissions avoided





Retirement Home

Vitalia

Málaga

64 Panels

4 years payback

33,920 KgCO<sub>2</sub> /year emissions avoided





Retirement Home

Campotejar

Granada

51 Panels

4 years payback

27,030 KgCO<sub>2</sub> /year emissions avoided





Student Housing

CESTE

Zaragoza

40 Panels

6 years payback

27,030 KgCO<sub>2</sub> /year emissions avoided





Sports Center

Multisport of San Cugat

San Cugat

160 Panels

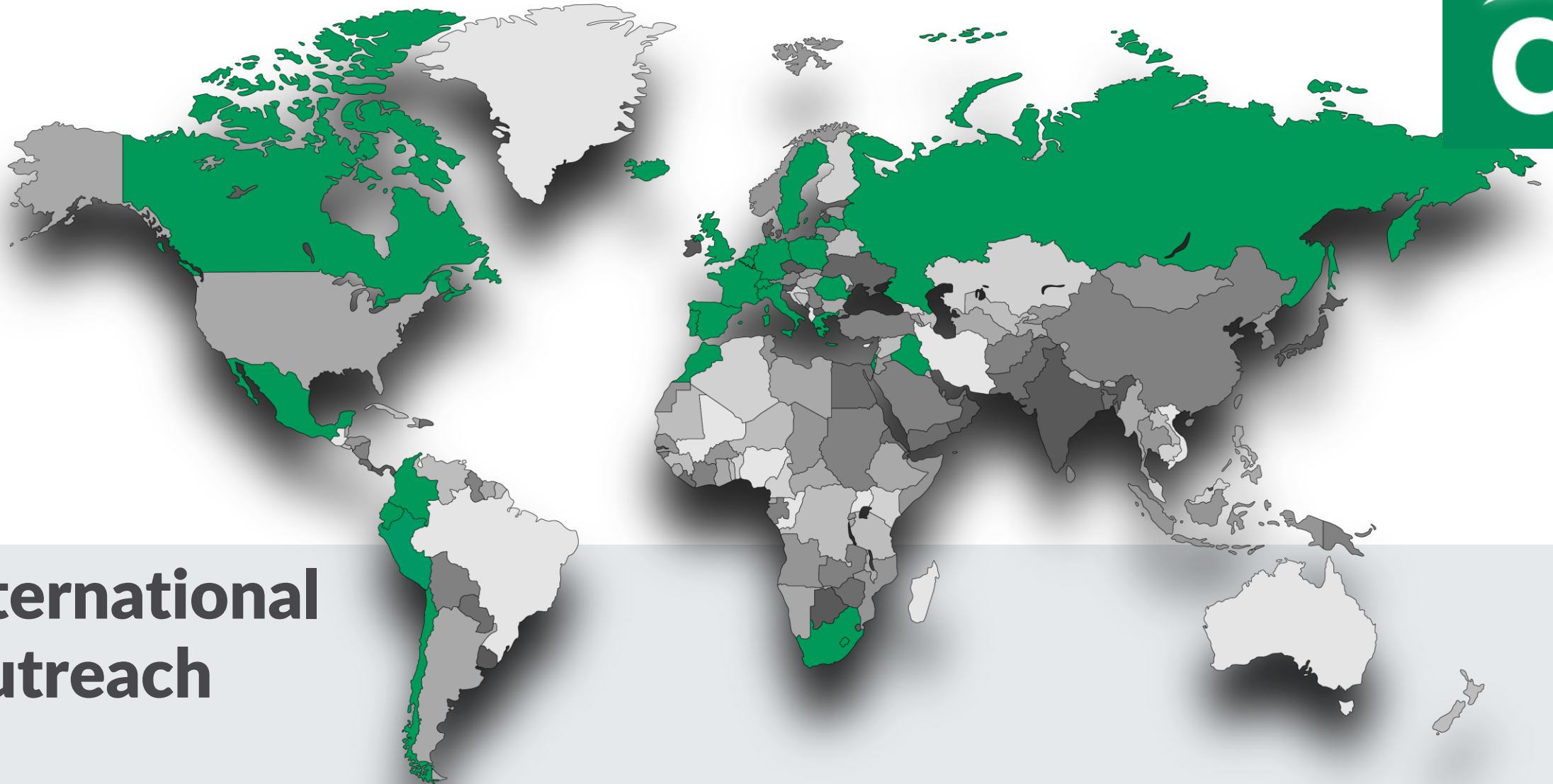
5 years payback

84,800 KgCO<sub>2</sub> /year emissions avoided





# GLOBALIZATION



**International  
Outreach**

# HYDRAULIC COMPONENTS



## Exit bench

Purger, Cutting key, Probeholder



## Dilatation Compensator



## Tap



## Exit of reference bench

Cutting key and component



## Security valve entrance

Security valve entrance, drain wrench



## STRUCTURES



### Flat cover structure

Valid for **flat cover** with adjustable inclination.



### Coplanar structure

Valid for **inclined** roofs.





# TYPES OF INSTALLATIONS

## Hybrid solar panel with...



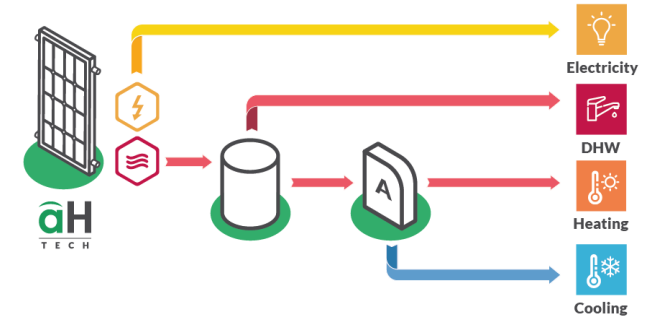
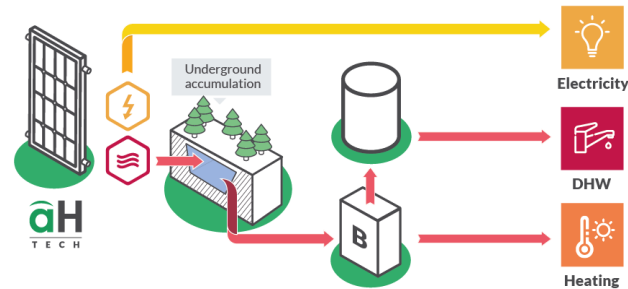
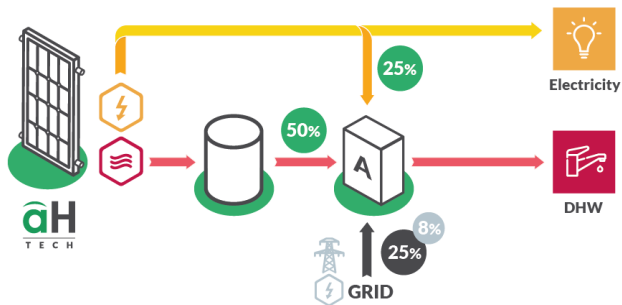
### HEAT PUMPS



### SEASONAL STORAGE



### SOLAR TRIGENERATION



aHMONITOR

# Monitoring system of the hybrid solar installation

- Online data
- Modular system
- Set alerts
- Easy integration



WARRANTY

**Hybrid panels with**  
**10 years**  
**warranty**

**25 years** lifespan







# abora

Advanced Solar Technology



[www.abora-solar.com](http://www.abora-solar.com)

APOYAMOS  
EL PACTO MUNDIAL

