



Hybrid Solar Panel in the sanitary sector

Power your building with the full potential of the sun: the hybrid solar panel, **redefining efficiency and sustainability.**



aHTech®, hybrid solar panel

The **hybrid** solar panel with aHTech® technology sets a new standard in the solar industry.

A 2-in-1 solution for cost-effective, clean energy for your business.



-  Double energy production
-  Higher performance
-  High efficiency cells
-  Highest quality and reliability on the market

aHTech®

Power your healthcare facility with the full potential of the sun: the hybrid panel, **redefining efficiency and cost-effectiveness.**

Higher energy efficiency

A **hybrid** solar panel (PVT) allows you to generate electricity and domestic hot water simultaneously. Thanks to its efficiency, you make the most of solar radiation. Its hybrid technology allows you to get four times more energy than photovoltaic in a minimum space that can be used for domestic hot water, heating swimming pools, etc. **This additional feature allows you to maximise the production and use of energy, making your health centre more self-sufficient.**

Cost reduction

With the **PVT**, hospitals or nursing homes can generate part of their own electricity and heat needs, **reducing their dependence on the grid and saving on their energy bills**, as well as protecting them from rising energy costs and providing long-term financial benefits.

Energy reliability

For a hospital, a reliable power supply is essential to ensure the continued operation of vital medical equipment. In the event of a natural disaster or prolonged emergency, such as a power outage caused by a storm, **hybrid solar panels can provide an independent power source, crucial for maintaining medical operations and patient care.**

Power your healthcare facility with the full potential of the sun: the hybrid panel, **redefining efficiency and cost-effectiveness.**

Optimización del espacio

Hybrid solar panels save space by combining two functions in one system. If your building has limited roof or ground space, installing **PVT can be a more efficient use of that space compared to photovoltaic and thermal systems**, as the **PVT** panel produces more energy per square metre.

Durabilidad y longevidad

Abora panels are built to last, using high quality materials and robust construction techniques. They are rigorously tested to ensure they can withstand adverse weather conditions, temperature variations and mechanical stresses. **When you invest in hybrid panels, you benefit from long life and reliable performance, which translates into a solid return on investment.**

Imagen sostenible

By opting for a clean and renewable energy source, the hospital can reduce its carbon footprint and its contribution to greenhouse gas emissions. Thus the installation of **hybrid** solar panels can reinforce the **image of the hospital or nursing home as an institution committed to sustainable development and environmental responsibility**. This can be perceived positively by patients, staff and the local community.



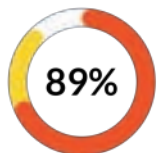
HYBRID SOLAR PANEL

aHTech®

Abora Solar designs, develops and manufactures the world's most cost-effective solar panel with an efficiency of 89%, achieving a certified world record.

The hybrid solar panel with aHTech® technology produces the same energy as 4 photovoltaic panels.

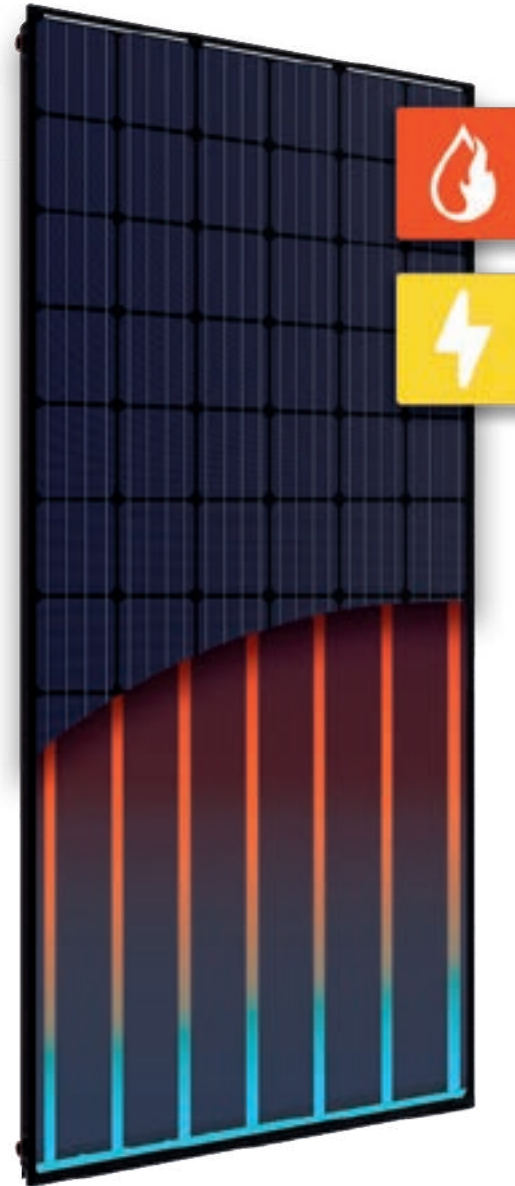
Efficiency



Manufacture



Quality



Product

Hybrid solar panel

Energy

Thermal production
Electricity production

Compatible auxiliary systems

Biomass boilers
Gas boilers
Heat pumps

Application

Industrial sector
Tertiary sector
Residential sector

Benefits

Higher efficiency
Higher savings
Best reduction of CO2 emissions



TECHNICAL DATA

HYBRID SOLAR PANEL



General specifications

Length x width x thickness	1.970 x 995x (85+22) mm
Total area	1,96 m ²
Opening area	1,88 m ²
Number of cells	72
Weight	50 kg
Front glass	3,2 mm. tempered
Framework	Aluminium
Connection box protection	IP65
Number of diodes	3 dio des
Dimensions of the cell	156 x 156 mm
Connection type PV / length cables	Solar lok PV4/ 1m

Electric specifications

Cell type	mono-crystalline
Rated power (W)	350W
Maximum power voltage (Vmpp)	39,18V
Maximum power current (Impp)	8,98A
Open circuit voltage (Voc)	48,82V
Short circuit current (Isc)	9,73A
Module efficiency (%)	17,8
Power tolerance (W)	+/- 4%
Maximum system voltage	DC 1000V(IEC)
Backsheet	Black
Temperature coefficient of Pmpp	-0,36%/°C
Temperature coefficient of Voc	-0,28%/°C
Temperature coefficient of Isc	+0,06%/°C
Maximum reverse current	15A
NOCT Temperature	45+/-2 °C

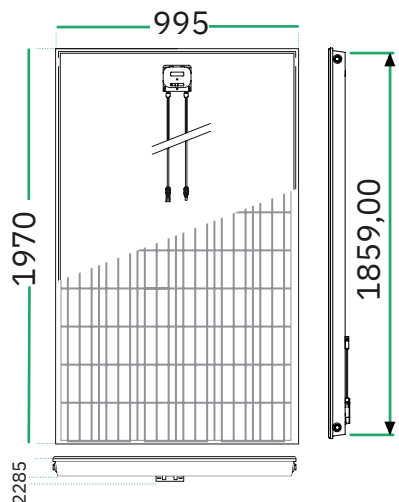
Standard test conditions STC: AM 1.5. irradiation 1000 W / m²
Cell temperature 25 C°

Thermal specifications

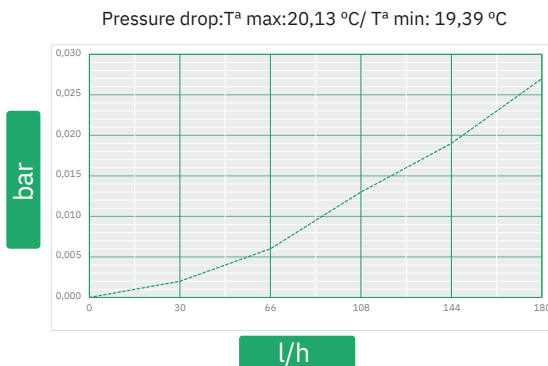
Optical performance	0,7
Coefficient of thermal losses, a1	5,98W/m ² .K ²
Coefficient of thermal losses ,a2	0,00W/m ² .K ²
Internal liquid capacitance	1,78L
Stagnation temperature	126°C
Number of hydraulic connection	4 Conexions
Measure hydraulic connectios	Quick connection
Maximum permissible pressure	10bar
Nominal flow	60L/h

Standard test conditions STC: AM 1.5. irradiation 1000 W / m²
Cell temperature 25 C°

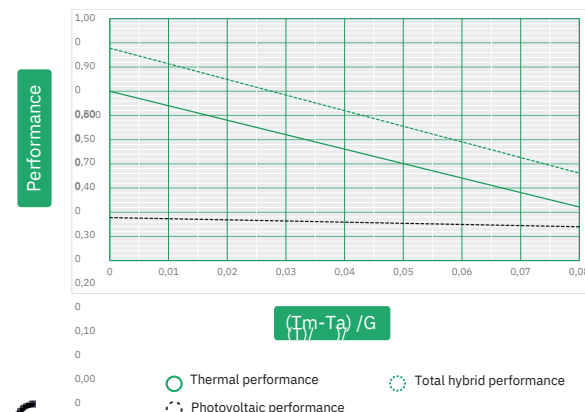
Dimensions



Head loss



Yield curve



aHtech®

Healthcare centre

Save up to 70% on your centre's energy costs thanks to Abora Solar's hybrid solar panel.

The hybrid responds to your

- High DHW demand
- Electricity demand
- Limited roof space
- EU and customer obligation to lower your emissions



● Space optimisation

Hybrid solar panels save space by combining two functions in one system. If your building has limited roof space, installing hybrid panels can be a more efficient use of that space than separate PV and thermal systems. This can be especially advantageous in urban areas where space for solar installations is limited.

● Cost reduction

Hybrid solar panels with aHtech® technology are certified and patented as the most efficient solar panel in the world, with an efficiency of 89%. This high efficiency translates directly into profitability, as our panel will produce more energy in a smaller space.

● Sustainable development

With **hybrid** solar panels, you can help reduce your site's carbon footprint by reducing your CO2 emissions by 4. This green approach can improve the sustainability profile of your site.

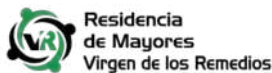


aHTech®

The ideal solution for your healthcare facility.

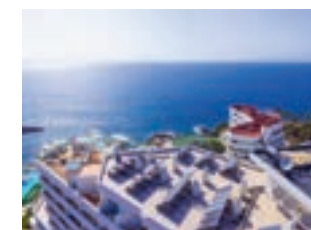
The **most efficient and cost-effective** solar panel, 100% made in Spain, in the world. More than 40,000 m² installed in more than 38 countries.

They already trust Abora.





More than 40 000 m² installed





HYBRID SOLAR PANELS

SUCCESS CASE STUDIES



www.abora-solar.com/en

HYBRID SOLAR PANEL INSTALLATION

Rest Home Vitalia

Sector

Rest Home

Emissions avoided

33 920 KgCO₂/year

Hybrid solar panels

64

Location

Málaga

Year of installation

2018



HYBRID SOLAR PANEL INSTALLATION

Hospital La Maz

Sector
Hospital

Emissions avoided
66 684 KgCO₂/year

Hybrid solar panels
90

Location
Zaragoza

Year of installation
2023





HYBRID SOLAR PANEL INSTALLATION

CIBA - Biomedical Investigation Centre

Sector

Hospital

Emissions avoided

83 020 KgCO₂/year

Hybrid solar panels

58

Location

Zaragoza

Year of installation

2023



www.abora-solar.com/en





HYBRID SOLAR PANEL INSTALLATION

Rest Home Vitalia

Sector

Rest Home

Emissions avoided

33 920 KgCO₂/year

Hybrid solar panels

64

Location

Zaragoza

Year of installation

2018



HYBRID SOLAR PANEL INSTALLATION

Rest Home

Sector

Rest Home

Emissions avoided

55 640 KgCO₂/year

Hybrid solar panels

126

Location

Kungsbacka

Year of installation

2023



HYBRID SOLAR PANEL INSTALLATION

Rest Home Campotejar

Sector

Rest Home

Emissions avoided

27 030 KgCO₂/year

Hybrid solar panels

51

Location

Granada

Year of installation

2019





HYBRID SOLAR PANEL INSTALLATION

Rest Home Vitalia

Sector

Rest Home

Emissions avoided

33 920 KgCO₂/year

Hybrid solar panels

64

Location

Toledo

Year of installation

2018





HYBRID SOLAR PANEL INSTALLATION

Rest Home

Sector

Rest Home

Emissions avoided

44 716 KgCO₂/year

Hybrid solar panels

63

Location

Rosales del Canal

Year of installation

2019





HYBRID SOLAR PANEL INSTALLATION

Rest Home Torre Monreal

Sector

Rest Home

Emissions avoided

67 145 KgCO₂/year

Hybrid solar panels

100

Location

Tudela

Year of installation

2022





HYBRID SOLAR PANEL INSTALLATION

Rest Home Vitalia

Sector

Rest Home

Emissions avoided

37 242 KgCO₂/year

Hybrid solar panels

78

Location

Torrejón de Ardoz

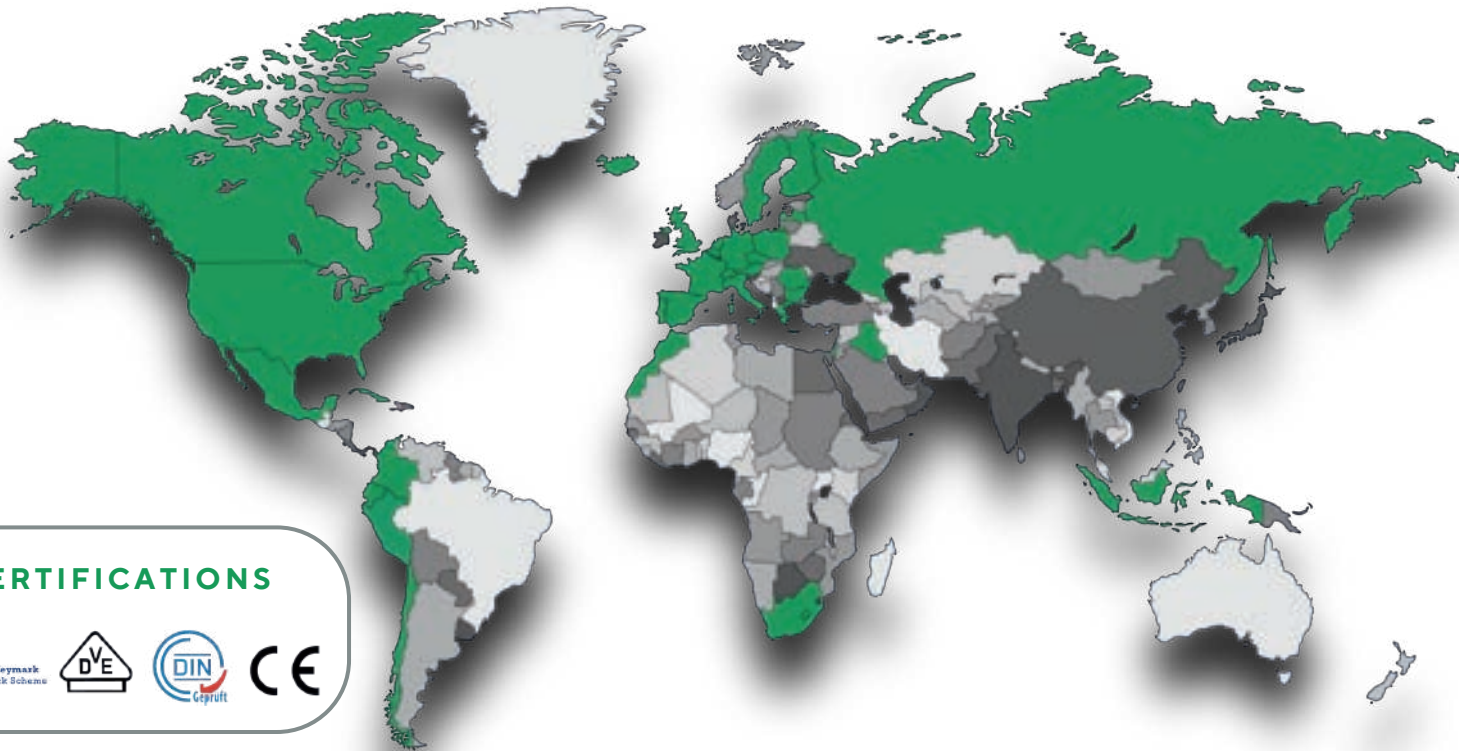
Year of installation

2019



THE DATA DON'T LIE

Our panels have already reached 38 countries around the world.
Don't settle for less when you can choose the best, choose **Abora**.



INTERNATIONAL PARTNERS

EUROPE

- Spain
- France
- Germany
- Ireland
- England
- Netherlands
- Romania
- Czech Republic
- Portugal
- Poland
- Finland

AMERICAS

- Colombia
- Peru
- Ecuador
- Canada

CERTIFICATIONS





ARTICLE

Hybrid solar panels in the healthcare sector

Hybrid solar panels in the healthcare sector

In recent years there has been a clear trend towards environmental sustainability, but as long as this is not combined with economic sustainability it will remain a letter of good intentions. Europe has already set clear targets for decarbonising our continent in the coming years. This energy transition has been accelerated by rising energy prices at all levels due to our dependence on energy resources from third countries.

This decarbonisation is a major challenge in which we have to take into account that, of all final energy consumption in Europe, 50% is heat (hot water, heating, industrial processes, etc.), only 20% is electricity and 30% is transport. Therefore, if we want to decarbonise our cities, we have to put an important part of the focus and solutions on the thermal demand of our buildings.

One concept to keep in mind in this process is that you can electrify consumption, but not demand. This means that our building can consume energy from outside only in the form of electricity and thus avoid gas consumption, but our shower will always be hot water and not electricity.

And therefore, the most relevant question is how we heat that water. Of the different equipment that allows us to heat water (electric water heaters, boilers, fan heaters, etc.) all of them have an energy consumption either in the form of gas or electricity that impact us every day more and more on our monthly energy bills. In fact, leaving aside the expenditure on equipment and materials to carry out the hospital's work, the most important costs of a hospital are: energy and salaries. And the big question is: when it comes to cost optimisation, where do we cut? Cutting back on salaries, materials or equipment in most cases affects the smooth running of the hospital, so reducing energy costs is a very interesting option. The focus has to be on how much we are able to save with our roof in order to reduce energy consumption from the outside.

The current trend is to install photovoltaic panels, but this technology has a limitation as its efficiency is only 20-23%, which means that of all the solar irradiation that a photovoltaic panel receives, it is only capable of converting 20% into electricity (the rest is not used). Nor does it make much sense to generate electricity and then convert that electricity into heat to heat water for showers, laundry, cooking...

Hybrid solar panels in the healthcare sector

However, there are other lesser-known technologies such as hybrid solar technology. A hybrid solar panel (also known as Photovoltaic/Thermal PVT) is a technology that not only generates electricity but also heats water at the same time, achieving an efficiency of 89%. This means that of all the solar radiation received, 89% is converted into energy which allows us to save on our electricity, gas and diesel bills. It is therefore a technology that allows maximum savings to be made with the building envelope.

If we add to this the fact that our buildings have a limited roof, i.e. we do not have enough roof to generate the energy we consume, the more efficient our roofs are, the more economic savings we can achieve with them. Therefore, the more available roofs a hospital has, the more savings it can make and the more competitive it can be. As an example, let's assume a hospital with 250 beds located in Madrid where the hot water and laundry is heated by a gas boiler with a gas price of 0.085 €/kWh and 0.17 €/kWh for electricity.

If for reasons of limited roof space this hospital were to install 100 photovoltaic panels (35 kWp) it would achieve an annual saving on its electricity bills of €10,171/year, and would not see a reduction in its gas consumption bill. However, by installing the same area of hybrid panels (100 panels) the savings on electricity and gas bills would be €31,532/year. Therefore, the hybrid panel allows the hospital to save 3 times more on its bills than if it installs photovoltaic panels by losing an opportunity cost to make the hospital more economically sustainable. Moreover, the additional savings in emissions allow the hospital to be more environmentally sustainable, because if with those 100 photovoltaic panels it would stop emitting 23,691 kgCO₂/year into the atmosphere, with 100 hybrids it stops emitting 87,022 kgCO₂/year, i.e. almost 4 times more emissions reduction.

In any case, the instability of energy prices that we have suffered in Europe in recent years means that price stability is increasingly valued and any investment made in renewable energy allows for a lower price than that consumed from the grid, but also stable for the next 25 years, which is the estimated useful life of this type of installation.

Hybrid solar panels in the healthcare sector

Continuing with the example of the hospital mentioned above, with those 100 hybrid panels the cost of the energy generated by the panels is €0.041/kWh, much lower than what is currently paid for both gas and electricity.

In the hospital sector there are also numerous solar thermal collector installations in operation and in many cases savings on electricity bills are also sought but the roof is already occupied to save on hot water. In these cases, removing the thermal collectors means no longer achieving these gas savings, however, replacing them with hybrids allows you to continue to save on gas and also achieve the desired electricity savings.



Zaragoza - Installation of hybrid solar panels in La Maz hospital



aHTech®

Testimonial

Guillermo de Vilchez, Managing Director of Mutua Maz

*'We are going to manage to reduce approximately 78 or 80 tonnes a year, which is the equivalent of planting around 2,000 trees a year, more or less, and we have done this at MAZ, as part of our idea of doing our bit for sustainability, at our hospital in Zaragoza, which is the largest of the 80 work centres we have in Spain, which is the largest of the 80 work centres we have in Spain, and also with the help of an Aragonese company, **Abora Solar**, to whom we are grateful because we have set up the panels very quickly, with much more efficient technology than the traditional photovoltaic panels.'*



COMPARISON: INSTALLATION IN A HOSPITAL

Madrid

Location

Hospital

Type of building

250 beds

Capacity

Flat roof

Type of roof



- According to CTE 2019
- DHW temperature: 60°C
- Daily consumption: 55L/day* pers.
- 100% occupancy every month



- The electricity produced is self-consumed in the building



COMPARISON: INSTALLATION IN A HOSPITAL

Photovoltaic system

59 829,41 kWh/year

10 171 €/year

Payback 5 year

15% a 25 year (317 843€)

23 691 kg CO₂/Emissions avoided

Hybrid system

235.745 kWh/year

30 108 €/year

Payback 4 year

25% a 25 year (1.290 908 €)

87 022 kg CO₂/Emissions avoided

x4

x3

-1

x3,5

x4



The hybrid to save more with your solar installation.

Thanks to their dual power generation, electricity and heat, our **hybrid** solar panels silently convert sunlight into energy for decades. Their hybrid technology makes it possible to achieve four times as much energy as photovoltaics in a minimum of space.

ASK FOR YOUR STUDY AT ABORA-SOLAR.COM

