



 **DUALSUN** | SMART SOLAR FOR SMART HOMES



En route to a new, smarter energy world

Homes and buildings represent 30% of total energy consumption in the world – which poses an environmental problem as well as an economical problem. On the environmental side, buildings are the number 1 cause of global warming, and on the economic side, energy prices are growing significantly for the consumer.

DualSun aims to meet these challenges and reduce the energy consumption of buildings by proposing a competitive and local solar solution that provides our daily energy needs: electricity and hot water.



DUALSUN IN NUMBERS



- Created in 2010 by two engineers from one of France's top engineering schools (Ecole Centrale Paris)
- A dynamic and international team supported by national and regional governments as well as numerous prestigious institutions
 - ✓ **> 800** installations around the world
 - ✓ **10,000 m²** of panels sold
 - ✓ **573 %** growth over 3 years (Deloitte Fast 50 Prize)
 - ✓ **4** international patents
 - ✓ **2M€** in R&D investment
 - ✓ **3,2M€** in equity capital raised



ADEME



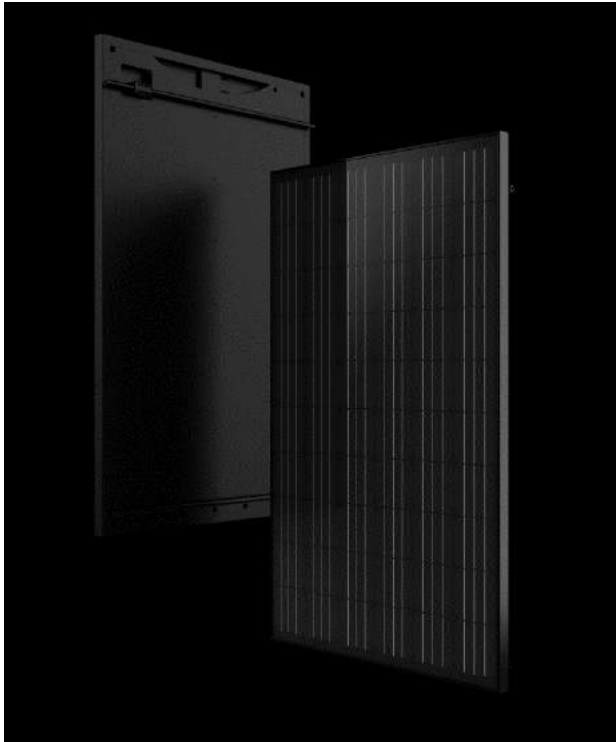
Agence de l'Environnement
et de la Maîtrise de l'Energie

Deloitte. | **In Extenso**





ENERGY INDEPENDANCE WITH DUALSUN



By combining photovoltaic and thermal components, the DualSun solar panel allows to:

- **Produce 15% more electricity than a standard photovoltaic panel**
- **Heat the running water of your home, office, building, or swimming pool**



15 % more electricity due to the cooling of the photovoltaic cells:



Standard photovoltaic panels generate a lot of heat and their efficiency decreases as temperature increases. The DualSun panel integrates a heat exchanger behind the photovoltaic module, and **the water running through this exchanger cools the photovoltaic cells and in effect, increases the PV efficiency.**



A compact design for a significant optimization of roof space:

Thermal + photovoltaic panels



- Requires a large surface
- Complicated installation
- Unattractive roof design

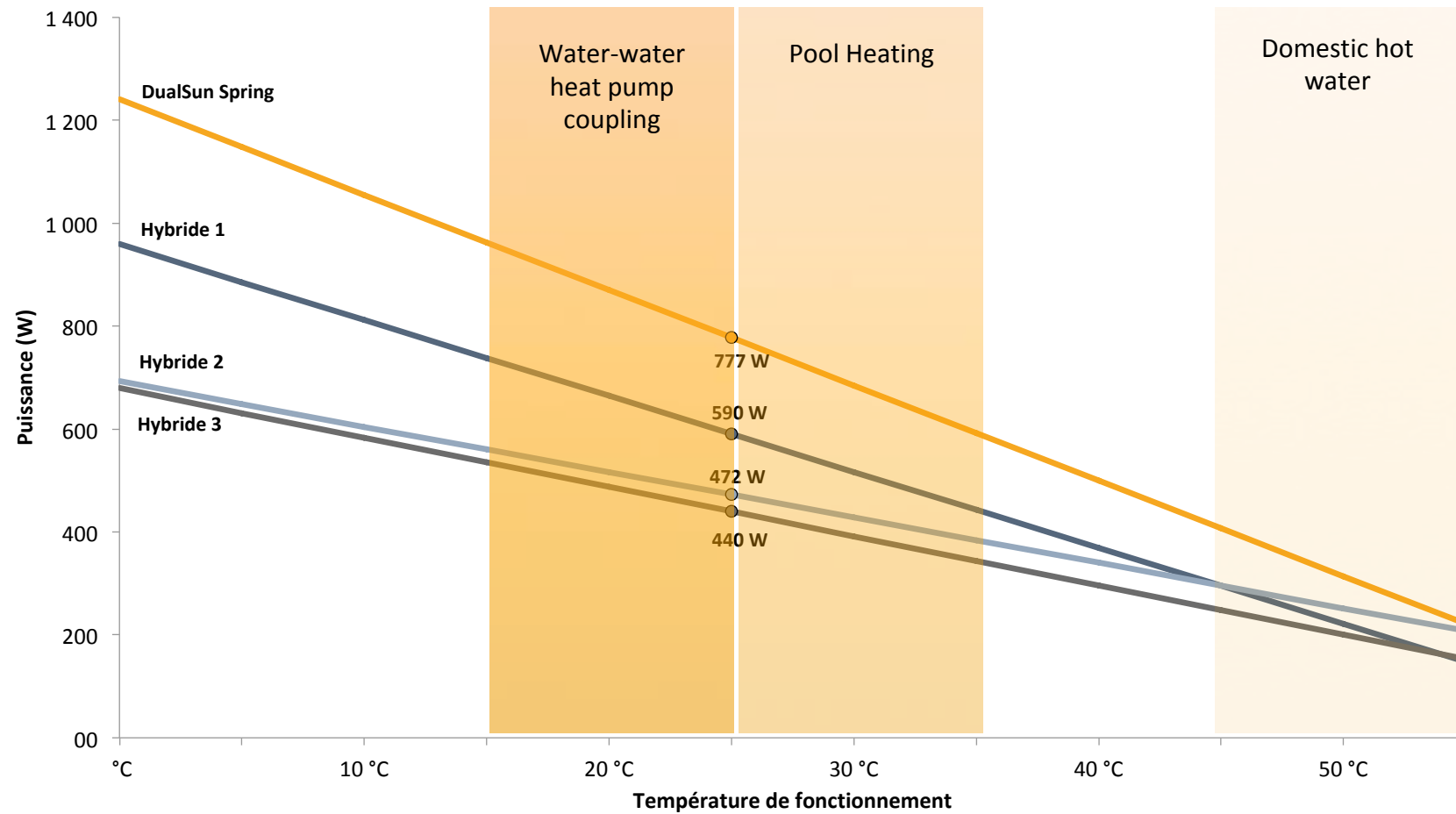
DualSun 2-in-1 panels



- Optimized roof space
- Simplified installation
- Smooth, attractive roof design

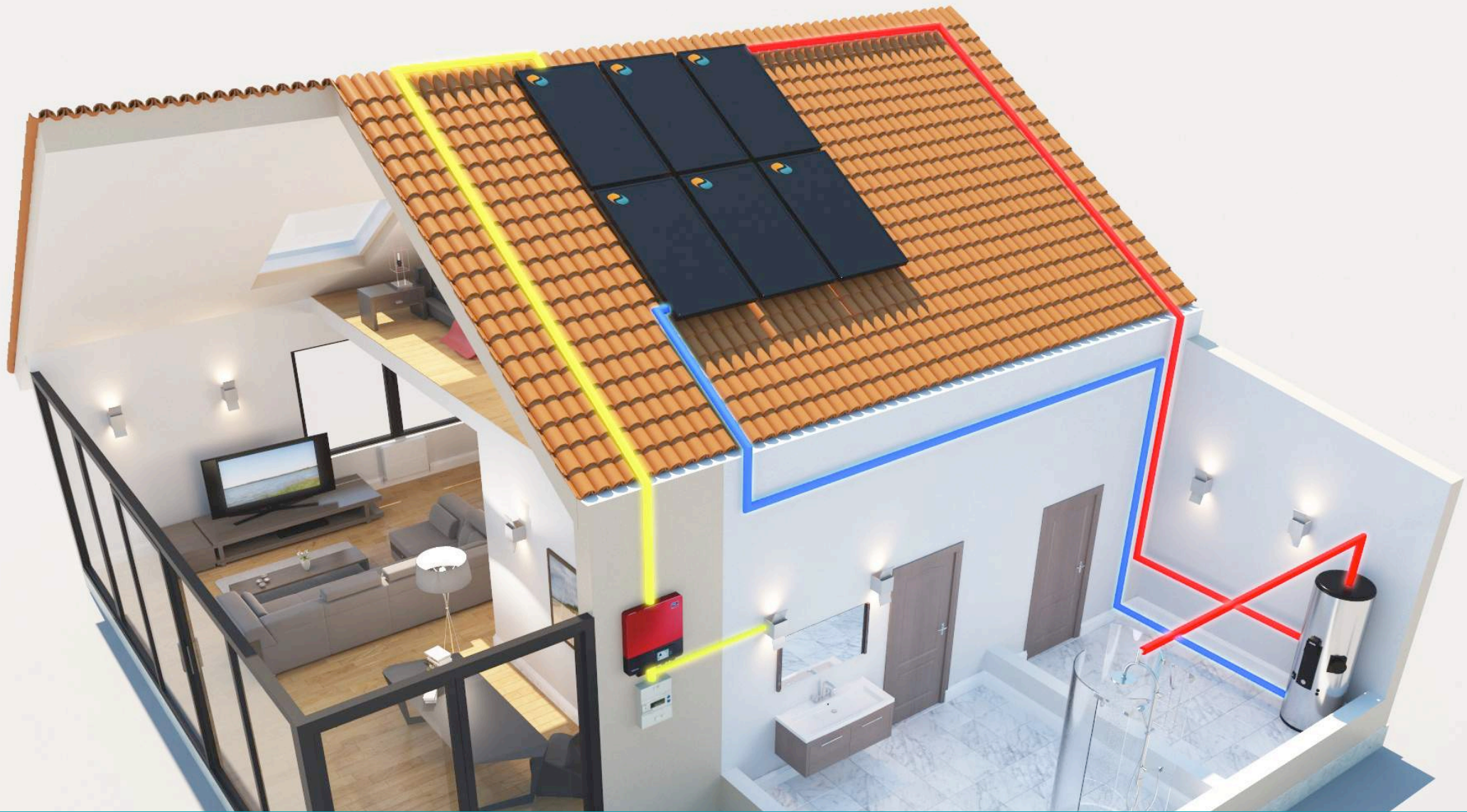


THE BEST HYBRID PANEL IN THE WORLD



The power output of the DualSun panels is greater than the power output of the other panels at all temperatures!

Comparaison faite par l'Institut National de l'Énergie Solaire (INES) avec conditions suivantes :
Régime permanent, $G = 1000 \text{ W/m}^2$, température ambiante de 25°C , surface d'ouverture et un vent à $1,5 \text{ m/s}$



DualSun, meeting our daily energy needs

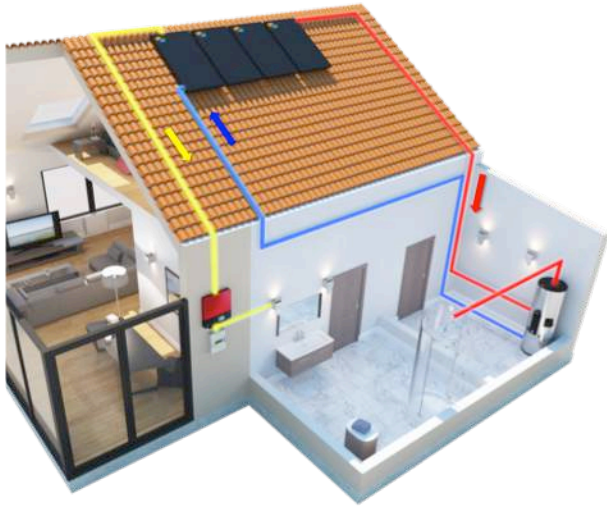
Electricity and hot water are part of our everyday needs. DualSun combines in one unique panel the solution to these two essential needs!

We use these resources every day because today, they are still accessible.



HYBRID SOLAR FOR THE INDIVIDUAL HOME

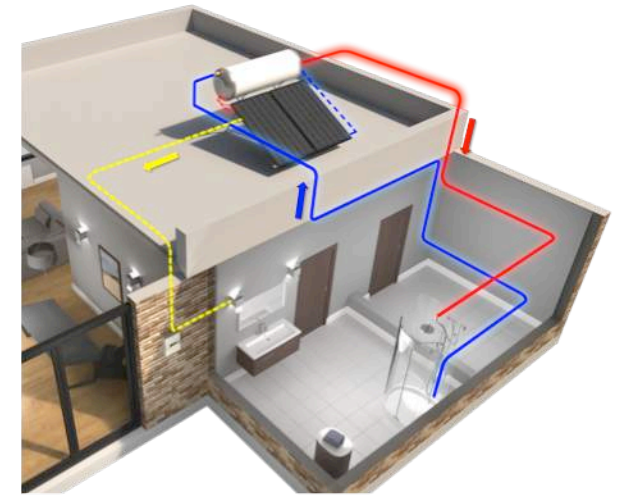
Domestic hot water



Pool heating



Thermosiphon



Heating: Solar & Wood



Heating: Solar & Heat pump

Offre Daikin ECH2O Sun
L'autonomie énergétique à votre portée !

GEIMBOREURS Daikin + CUVES Daikin + PUMPEAUX Daikin

=

ÉLECTRICITÉ Eau chaude sanitaire CHAUFFAGE RAFRAÎCHISSEMENT



COMMERCIAL APPLICATIONS FOR HYBRID SOLAR

Apartment buildings



Refuges de haute montagne



Company cafeterias



Schools



Municipal swimming pools



Hospitals, hotels, campsites,...





CLOSELY MONITORED INSTALLATIONS

- > **800** installations
- Majority of which are **remotely monitored**



Paris



Bourgogne



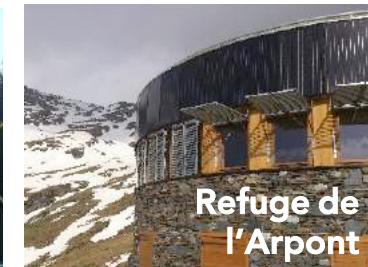
Montpellier



Avignon



Alsace



Refuge de l'Arpont



DUALSUN FOR COMMERCIAL, AS WELL RESIDENTIAL, MARKETS

180 DualSun panels installed at the Bouygues Construction Headquarters near Paris.



"One thing is certain: we will always need to produce domestic hot water (DHW) and the space on our buildings' rooftops is not infinite..."

**Martin Bouygues,
CEO of Bouygues**

180 DualSun panels installed for a municipal swimming pool in the south of France.



The DualSun panels keep the cars cool and the pool warm, reducing 33% of the building's primary energy needs.



FOR PHILIPPE STARCK, DESIGN COMES FIRST

Philippe Starck selected DualSun to provide solar power for his new line of positive-energy homes, P.A.T.H. (Prefabricated Accessible Technology Homes).



"... 2 in 1, 3 in 1, 4 in 1, ... anything that we can consolidate intelligently makes sense. To consolidate is to be more productive with less material. It's the right way to go."

Philippe Starck, world-renowned designer

THE DUALSUN ADVANTAGES

DualSun built its reputation and its values based on three pillars, present in every project:

- **Quality**
Because a quality installation is a long-lasting and high-performing installation
- **Credibility**
So that your installation performs as promised
- **Profitability**
Because what's good for the planet can also be good for your wallet



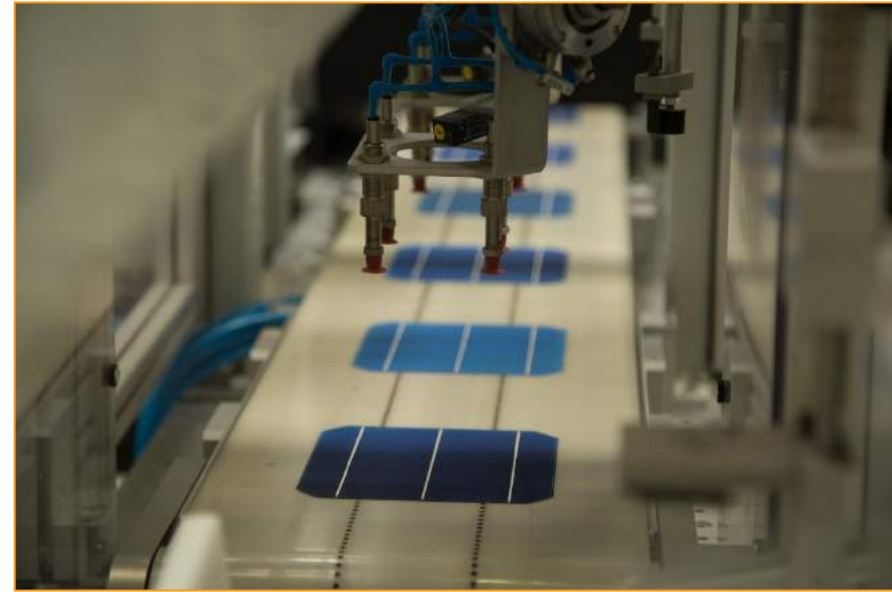
A RELIABLE TECHNOLOGY – MADE IN FRANCE



DESIGNED IN PROVENANCE

The design and development of the DualSun panel is realized by our team of engineers in Marseille.

Because we believe in quality manufacturing and being close to our manufacturers, our manufacturing is done exclusively in France in a ISO-9001-certified facility near Lyon, France.





1ST HYBRID PANEL CERTIFIED IN THE WORLD



The DualSun panel is the first in the world to pass a new series of tests specific to solar PV/T technologies.

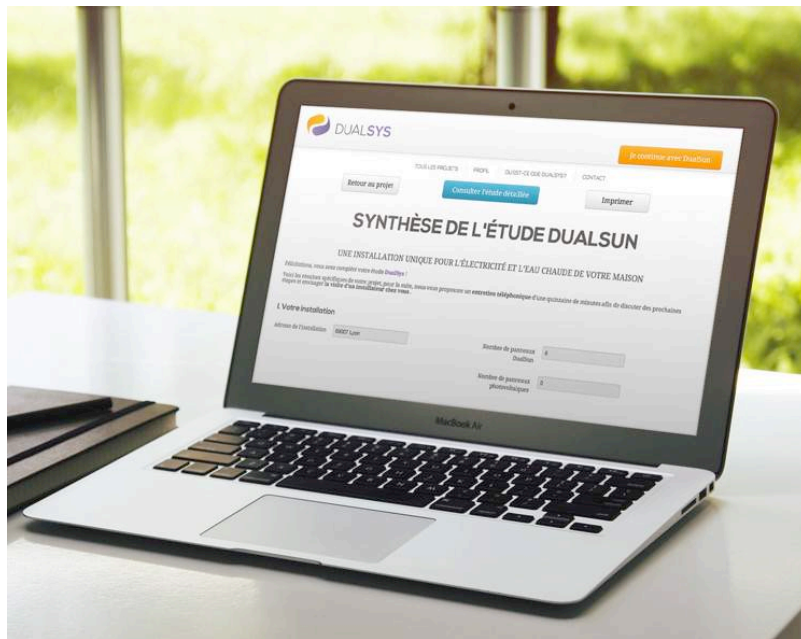
The rigorous Solar Keymark tests were performed on the DualSun panel at the TÜV Rheinland laboratory (Cologne, Germany), proving the panel’s resistance to extreme temperatures, accelerated aging cycles, fire tests, and more. By obtaining the IEC and Solar Keymark certifications, DualSun demonstrates its high-quality and robust technology



Ulrich Fritzsche, TÜV Rheinland, Project Manager of Hybrid PV.T systems:

“With the new chapter 13.7 of the Solar Keymark Scheme Rules, every hybrid solar panel must pass new specific tests that have been developed over the past years. In our laboratories, DualSun is the first manufacturer to pass these new tests. We believe strongly in the potential of the PVT technology... otherwise, we would not spend so much time developing these new relevant tests!”

MyDualSun is the central platform for managing projects, connecting DualSun and its customers.



After providing home or building characteristics like roof tilt, angle, heating needs... the MyDualSun web platform instantaneously provides a detailed and personalized report for your project.

1. **Configuration of the installation**
2. **Assessment of energy production**
3. **Financial assessment**





TRACKING ENERGY PRODUCED BY THE DUALSUN PANELS

The T-Box monitors the thermal production of the DualSun panels:

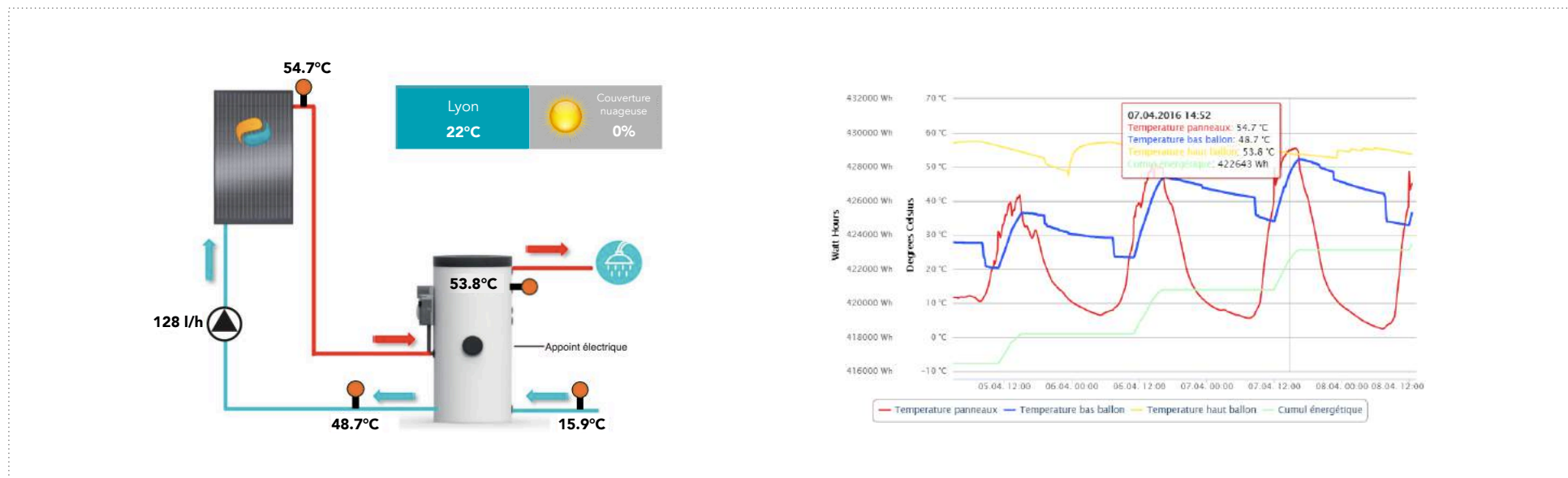


The T-Box tracks and communicates the temperature of the water in the DualSun panels.

The data is presented with graphs and tables on one's personal project space on MyDualSun.

The T-Box allows a double supervision, by the owners and by the DualSun technical team. The T-Box communicates continuously the **thermal performance of the installation** and validates the numbers announced in the MyDualSun pre-study.

Reliability is at the heart of DualSun projects, and the T-Box assures that!



DUALSUN IN THE PRESS





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