- > SLAVERY FREE
- > LEAD FREE
- > FLUORINE FREE
- > PFAS-FREE
- > BETTER LOW-LIGHT BEHAVIOUR
- > HIGHER POWER DENSITY
- > LOWER NOCT
- > MORE YIELD

30 Years Premium Warranty
(conditions see website)

Manufacturing, international distribution,
projects & special applications

DC SOLAR SYSTEMS | *Powered by innovation.*

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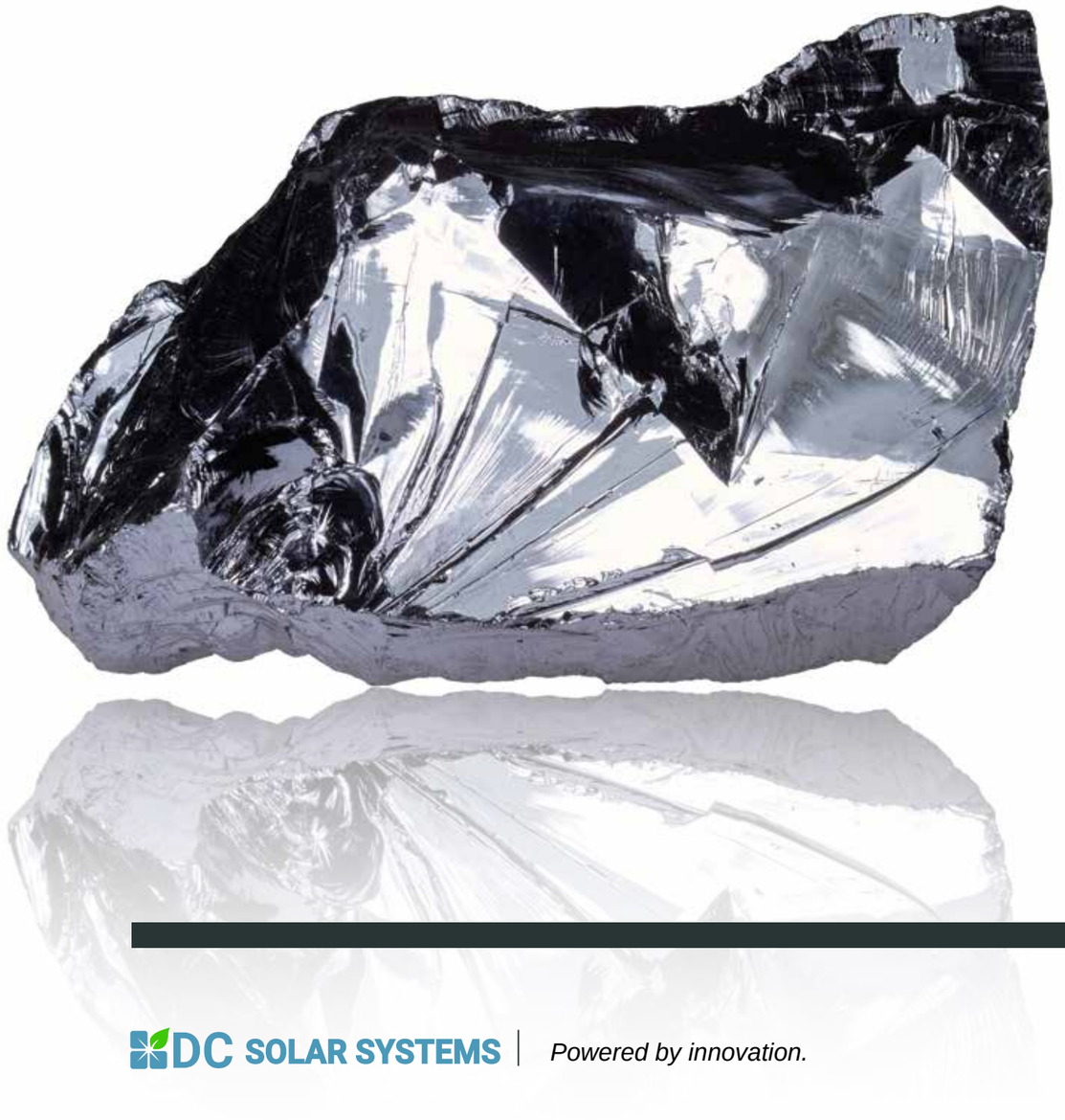
BEAUTY MADE OF SILICON
OUR SOURCE OF POWER

EUROPEAN QUALITY
MADE IN HOLLAND



V1.0-03-22

DC SOLAR SYSTEMS | *Powered by innovation.*

THIS WHY OUR CUSTOMERS **CHOOSE DC Solar Systems**

DC Solar Systems back contact (MWT) PERC modules challenge the traditional solar panels with a real kWh solution, combined with sustainable, European and renewable materials with a unbeaten return on investment over the entire lifespan.

NON SLAVERY PUTTING PEOPLE FIRST

According to research, more than half of the global supply of silicon cells, an key component in the solar industry, is depending on forced labour. Of course it won't be called forced labor or slavery. More mystical names like "surplus labour" and "labor transfer programs" are used to prevent these practices conceal. Insight is therefore a mandatory standard in our purchasing process. We do not shy away from sensitivities. And "no forced labour" is thereby just a spec. We take our role and our responsibility. And it's actually very simple: we too love a good sleep.

BILL OF MATERIALS THE 'INGREDIENTS' OF OUR MODULE

It is for obvious reasons that leading module manufacturers focus eyes and efforts on back contact cell- and module technology. Reliability, maximum power harvest, more freedom of design and a sturdy, sustainable product architecture are setting the newest standards. It is only a matter of time until it will be mainly preferred worldwide. Setting new standards. But there is much more to it, to make a quality product.

LEAD FREE

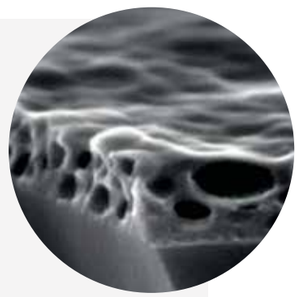
It is the inconvenient truth that globally we manufacture and import solar panels where lead is a key ingredient in the interconnection and busbars of the solar cells. The modules of DC Solar Systems, based on back contact technology, lack these connections or busbars as a whole and the technology applied (originating from the automotive industry) is 100% lead-free.

FLUORINE FREE

Fluoropolymers in PV modules are largely made of polyvinylidene fluoride (PVDF) or polyvinyl fluoride (PVF), also known in our industry as Kynar® and Tedlar® respectively. In addition to the known disadvantages, the presence of these fluorine compounds makes it difficult, if not impossible, to recycle the solar panels cost-effectively. There are solutions, but they are more expensive, and therefore not an industry standard. A no-brainer for us: we have fully committed to being 100% fluorine-free. And will continue to do so.

PFAS-FREE

DC Solar Systems introduced the first PFAS-free module in 2018. Proud as we were, it took us a lot of time to explain the importance: PFAS was not a very exciting theme in those days.Much has changed Our PFAS-free approach now appeals to more and more parties who want an environmentally friendly solution. They know how to find us.



AR-COATING SAME SUN, MORE POWER

Where air meets glass, about 4% of the light at a perpendicular angle is reflected. This percentage is way higher when the light angle of incidence increases (as usually the case in our dusk Europe). A missed opportunity. That is why we use a nano-coating patented by Royal DSM: KhepriCoat. It gives us the record light transmission performance surpassing all other coatings currently available.

TECHNOLOGY

REAL BENEFITS FROM BACK CONTACT PV

We are glad to highlight some of the key benefits of the back-contact platform vs. traditional tabbing-and-stringing and/or wiring technology. Research, indepently carried out by Royal DSM and Silfab, covers the differences between multi-busbar (MBB, 5 >) and the Endurans Conductive backsheet technology as applied by DC Solar Systems.

Market-relevant module designs are compared for each technology starting from the same PERC solar cell and with a focus on:

POWER-DENSITY: **+5.6%**

EXTRA YIELD (STC, AMSTERDAM): **+2.5%**

LOWER NOCT: **+3.5%**

HIGHER EFFICIENCY

The increased module efficiency for the backcontact technology is also due to the reduced cell-to-cell spacing allowed by this technology is made. Another standout factor is the full absence of the soldered string and busbar connections which traditionally needed are at the top, mid and bottom of the 5BB and MBB (Multi Busbar) half-cell modules.

BETTER LOW-IRRADIANCE BEHAVIOR

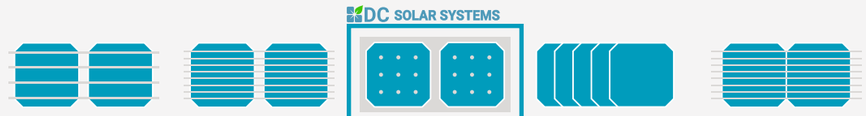
The use of half-cells is becoming the norm in the PV module industry to increase nameplate power at STC by reducing resistive losses. Due to the reduced cell current, half-cell modules generally have a lower series resistance than full-cell modules. This improves module peak power but reduces low-irradiance performance. CBS modules enable a high module power by using full cells and optimizing low-light performance by tailoring series resistance in the CBS design.

LOWER NOCT

In traditional modules, heat is primarily dissipated from the rear of the cells where the heating has a negative effect on the known yield. However, in a CBS backcontact module, the presence of the (metalized) backsheet increases the heat dissipation and works as a kind of cooling element/ heatsink. The research showed the NOCT for CBS modules 5-7ºC to be lower than with the conventional modules. This gives a extra benefit with the CBS modules, resulting in extra energy yield.

CONDUCTIVE BACKSHEET BASED MODULES SHOW INCREASED OUTPUT PER MODULE THAN ANY OTHER INTERCONNECTION TECHNOLOGY.

Apricum p-PERC-cel case-study, 2020

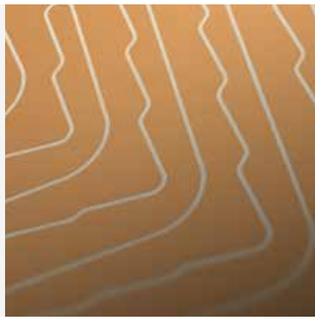


Cell-interconnection technology	Ribbons	Multiwire	Conductive backsheet (CBS)	Shingling	Paving/tiling
Cell-to-Module loss (CtM)	3.8%	3.8%	2.4%	2.2%	3.6%
Power Density	189 W/m²	189 W/m²	202 W/m²	195 W/m²	199 W/m²
Output	314 Wp	314 Wp	334 Wp	297 Wp²	314 Wp

Note: The study assumes the same starting cells for all module technologies with comparable efficiency. Excludes the 1% cell efficiency drop due to laser cutting on divided cells. Source: Apricum value model analysis; 1) For half-cell modules with 120 cells (60 full cells); 2) Smaller module, 60 full cells cut into 5 parts.

MICROCRACK SAFE

DC Solar Systems backcontact modules are considerably more robust than conventional modules thanks to the integrated Conductive Backsheet (CBS). The innovative copper design ensures optimal contact with an incredible number of contact points all over the cell, it acts as an extra (metal) environmental barrier to protect the cells and keep them firmly in place, maintain and strengthen the contact architecture. Quality cells combined with high-quality - European, low carbon footprint - solar glass and a sturdy frame make DC Solar Systems modules virtually immune to microcracks under real-world conditions.



WP ≠ ENERGY YIELD

Terms such as Wp and power or yield are often confused with each other. Some panels generate more energy, even if the 'label power' or the advertised Wp value are the same. And those differences can add up, especially under 'normal' outdoor conditions where – unlike in the laboratory with perpendicularly incident light – the amount of daylight, angle, temperature, cloud cover or shadow will also play a role. For comparison: Two lamps, both 10 Watt. One: a traditional light bulb. The other a LED lamp. The same power indication. But the LED lamp gives a factor 10 more light (...).

DC Solar Systems
PV MODULES

At DC SolarSytems we don't produce: we create solar panels. Based on innovative back contact technology. The best-known, premium technology of the moment. Instead of traditional techniques in which the solar cells need to be soldered. The technology and materials we use - developed by ECN-Petten (now: TNO) - ensures for high-efficiency modules without using a lead containing cell-interconnect or a back-sheet with fluorine compounds. PFAS-free and slavery-free. And that's all much better for our environment. And people.

DC Solar Systems ECLECTIQ
MWT MONO PERC BLACK

Small roof, high yield
When every square meter of roof surface counts - and when not? - the real yield (kWh/m2) is essential. The compact DC Solar Systems ECLECTIQ solar panels have an unprecedented efficiency and power density. In addition to the additional benefits of the backcontact technology.

DC Solar Systems ICONIQ
IBC MONO ZEBRA BLACK

The future is near ...
The solar cells in this module - which provide the unprecedented performance - are based on the 'ZEBRA' IBC (Interdigitated Back Contact) technology developed by ISC Konstanz. Today's most economical IBC technology, with a cell efficiency of more than 24% in production.

DC Solar Systems DYNAMIQ
MWT MONO PERC BLACK

Ultra Light
From 1.8 kg/m², depending on the need or application. Industry specific adaptable. While retaining the proven and highest power yield per m².

DC Solar Systems DEFLECTIQ
MWT MONO PERC BLACK

No glare, no flare
Non-reflective PV modules for delicate applications near (motor- or high-)ways, (military-) airports or vertical-urban use. Pretty cool actually.

OUR CODE OF BUSINESS CONDUCT AND ETHICS
GUIDES US IN ALL DECISIONS AND ACTIONS WE TAKE, EVERY DAY.
WE GLADLY SHARE THEM WITH YOU.

https://www.dcsolarsystems.co.uk/values