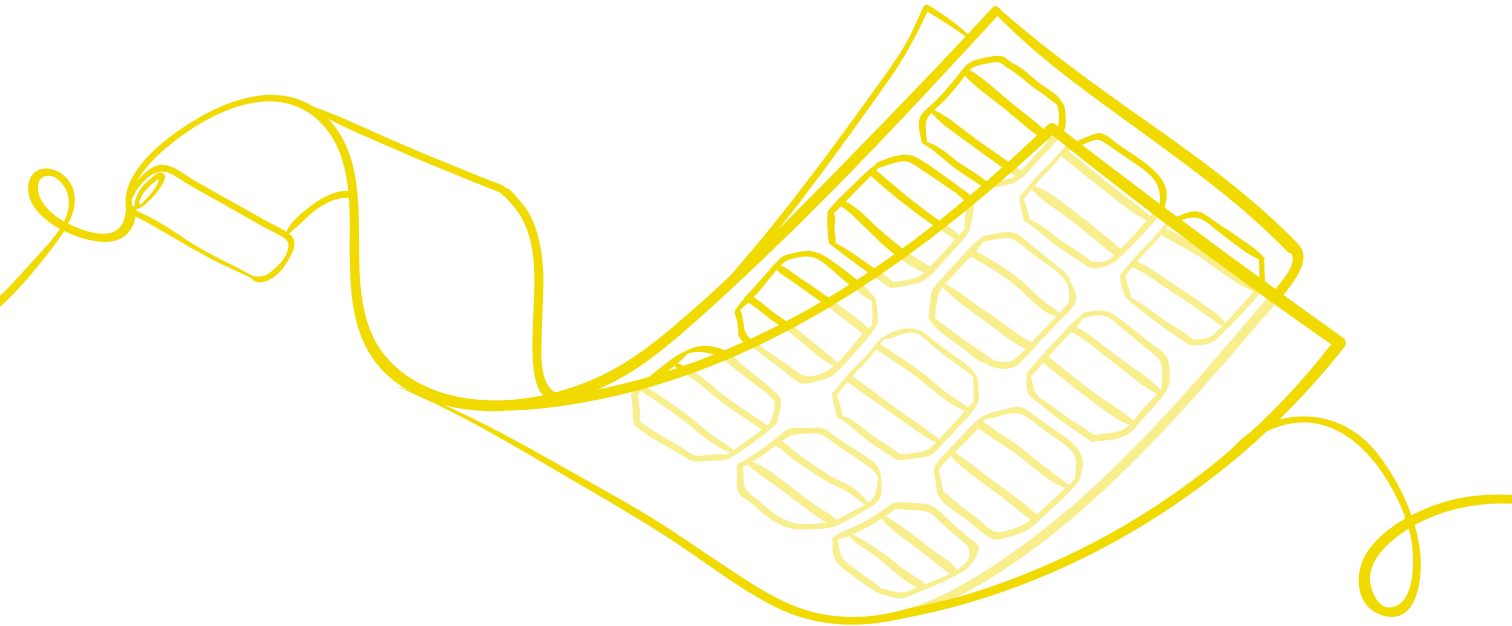


COVEME PHOTOVOLTAIC

*Transparent backsheets and frontsheets
for Bifacial and Flexible Modules*



COVEME

THE VALUE OF INNOVATION

CLEAR BACKSHEETS AND FRONTSHEETS FOR BIFACIAL AND FLEXIBLE PV

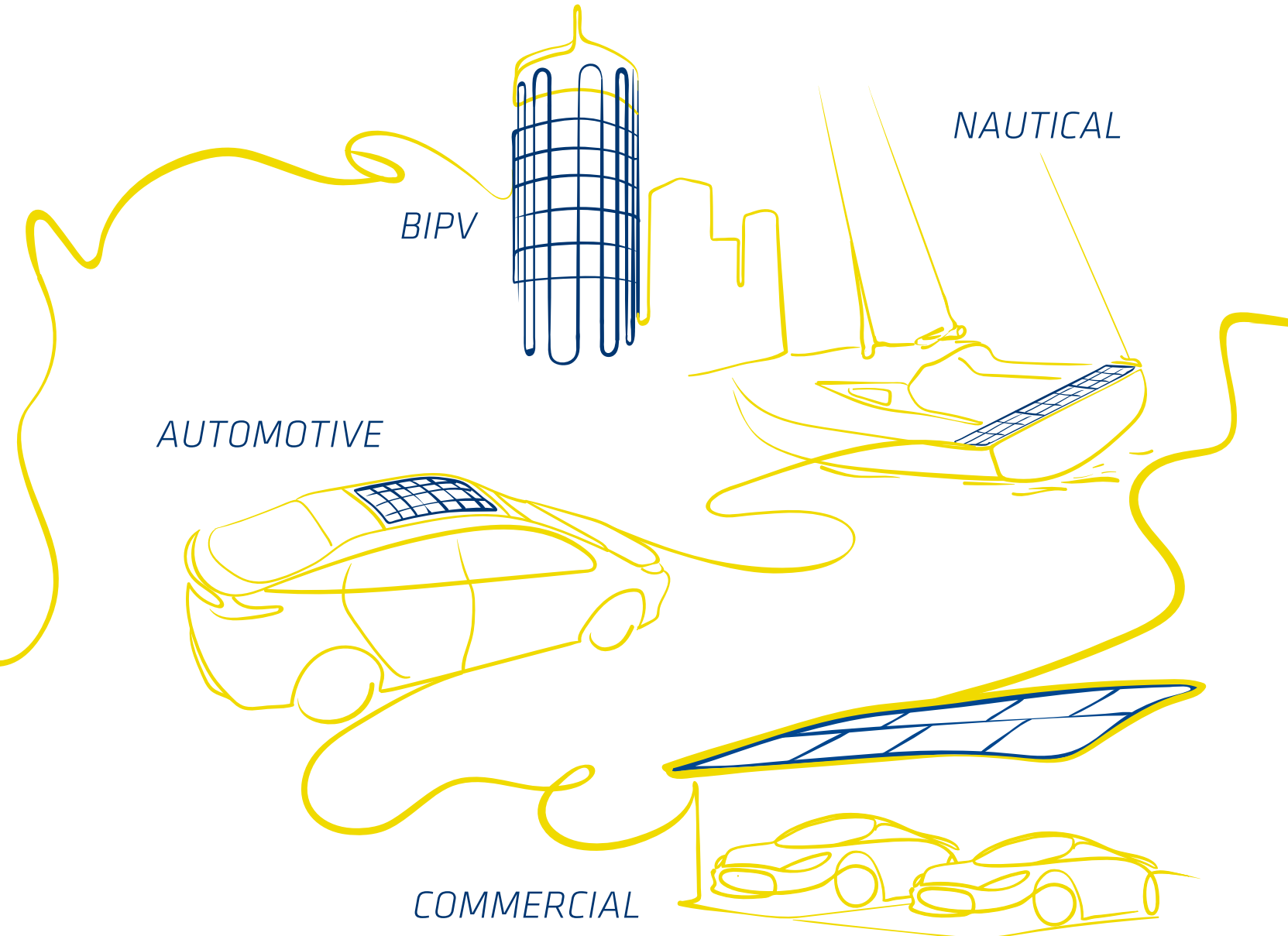
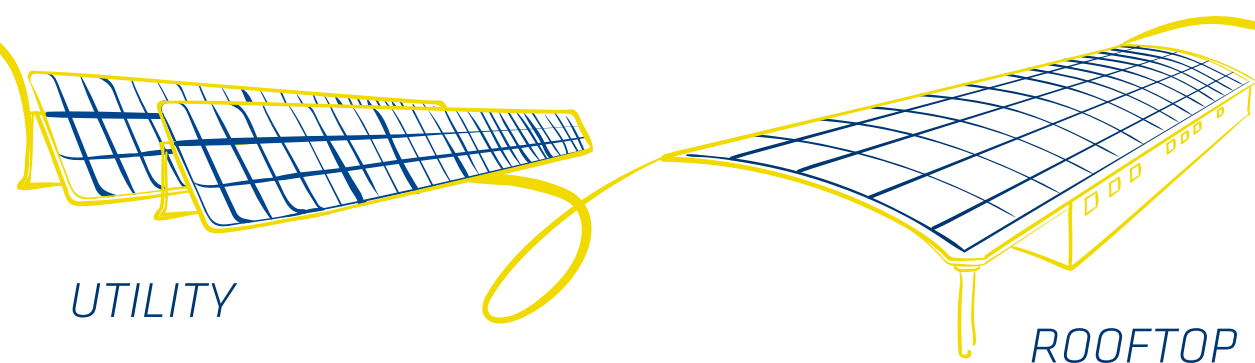
Coveme, headquartered in Italy, is a leading manufacturer of polymer laminates with 20 years supplying the PV industry. Today over 50 GW of solar panels installed worldwide are protected by Coveme's dyMat® backsheets and frontsheets. The privately owned company has two production sites in Italy and China and three fully equipped research centres in Italy, Germany and China. Coveme's 14 production lines are equipped with the latest technologies for coating, laminating, heat stabilizing, treating and customized cutting of polymeric films.

The company's latest product development within the dyMat® range for the photovoltaic market are highly transparent monolayer and multilayer backsheets and frontsheets. They are specifically designed to offer a unique solution for manufacturers of bifacial and semi-flexible modules, as well as standard and thin film modules.

Thanks to their ultra-high transparency, lightweight and extra low vapour barrier dyMat® transparent backsheets and frontsheets are a valid alternative to glass. They feature an innovative and reliable coating that protects the module from scratches, abrasion, corrosion and UV thus enhancing the module durability and performance over time.

There are 1000 VDC and 1500 VDC versions for final applications in grid and off-grid installations on rooftop and commercial buildings, in utility plants, and special applications like BIPV, nautical and automotive.

Besides a guaranteed and certified product performance Coveme offers a number of green solutions that include recyclable materials as well as backsheets and frontsheets made of recycled polyester film (rPET).







dyMat® Clear OVERVIEW

TRANSPARENT BACKSHEETS AND FRONTSHEETS

Coveve offers high grade Polyester based and Tedlar® based transparent backsheets specifically developed to provide a lightweight alternative to glass on the backside of bifacial modules. The Pet based frontsheets with an innovative UV Coating are a highly performing solutions for semi-flexible and flexible pv modules.




Functions

dyMat® Clear Backsheets and Frontsheets for highly performing modules

-  *Strong UV coating*
-  *Guaranteed durability*
-  *High humidity resistance*
-  *Electrical insulation up to 1500 VDC*







Green solutions

Ecological product and service proposals for a sustainable industry

-  *Polyester 100% recyclable*
-  *Pet components made of recycled Pet (rPET)*
-  *Pet scrap recycling and converting*




Added values

Innovative coatings and materials make dyMat® Clear products unique in its performance

-  *Specific primer and coatings for extra UV protection*
-  *Strong abrasion and scratch resistance*
-  *Excellent heat dissipation properties*
-  *Lightweight*
-  *Options for increased output*
-  *Extended life time up to 30 years*

Quality

dyMat® products are certified by the world's major certification bodies

-  *TÜV RHEINLAND CERTIFIED*
-  *TÜV SUD CERTIFIED*
-  *UL REGISTERED*



dyMat® CLEAR PET BACKSHEETS

A new generation of transparent high grade polyester backsheets to be employed as an alternative to glass in Bifacial modules or in other module types for installations where transparency is required (eg. greenhouses). The polymers, primer and adhesives specifically developed for these products provide an extra high resistance to UV and humidity. dyMat® Clr PYE Mono CX is a monolayer product for 1000 VDC with UV protection all across the whole thickness thanks to its bulk technology. dyMat® Clr HDPYE CX is a double layer product for 1500 VDC with a thicker inner PET layer in order to comply with the new IEC rules for 1500V insulation and has a proven track record being employed in the world's first bifacial 1500V installation.

PRIMER TYPES :

- LO: Extra UV protection on cell side
- LD: High humidity barrier
- LDO: High humidity barrier + UV protection

Clr PYE Mono CX

1000
VDC

CELL SIDE

CLEAR UV PRIMER

PET COEX

Transparent PET
UV Stable
Hydrolysis Resistant

AIR SIDE

Clr HDPYE CX

1500
VDC

CELL SIDE

CLEAR UV PRIMER

PET

Transparent PET
Hydrolysis Resistant (HR)
Electrical Grade

PET COEX

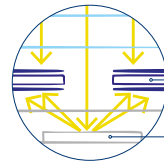
Transparent PET
UV Stable
Hydrolysis Resistant

AIR SIDE

OUTPUT INCREASING OPTIONS:

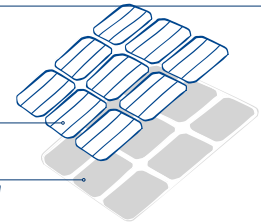
dyMat® Selective:

Optional white grid incorporated in the backsheet that turns the space in between the cells and the borders into a highly reflective area for significant output improvement. The grid layout is defined according to customer's cell shape and size.



PV CELLS

BACKSHEET WITH WHITE GRID

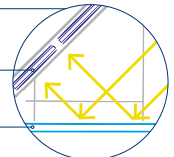


dyMat® HMirror LR:

Optional reflective laminate that can be used for retro-fitting of Bifacial PV installations to increase the albedo value of ground reflectivity and therefore the final module output.

BIFACIAL MODULE

DYMAT HMIRROR LR



dyMat® CLEAR TEDLAR® BACKSHEETS

A new generation of transparent Tedlar® backsheets to be employed as an alternative to glass in Bifacial modules or in other module types for installations where transparency is required (eg. greenhouses). The primer and adhesives specifically developed for these products provide an extra high resistance to UV and humidity. Fluorinated coating as alternative to primer on cell side available. dyMat® Clr TsL 50/158 is a double layer product for 1000 VDC, whereas dyMat® Clr TsL 50/285 is a double layer product for 1500 VDC with a thicker inner PET layer in order to comply with the new IEC rules for 1500V insulation.

PRIMER TYPES :

- LO: Extra UV protection on cell side
- LD: High humidity barrier
- LDO: High humidity barrier + UV protection

Clr TsL 50/158

1000
VDC

CELL SIDE

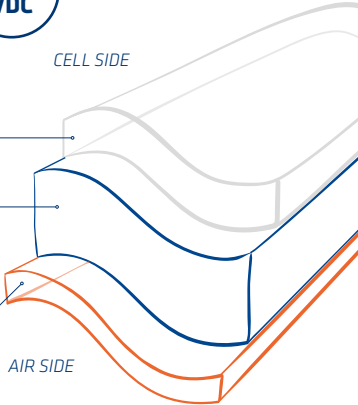
CLEAR UV PRIMER OR
FLUORINATED COATING

PET

Hydrolysis Resistant (HR)
Electrical Grade

TEDLAR® Clear

AIR SIDE



Clr TsL 50/285

1500
VDC

CELL SIDE

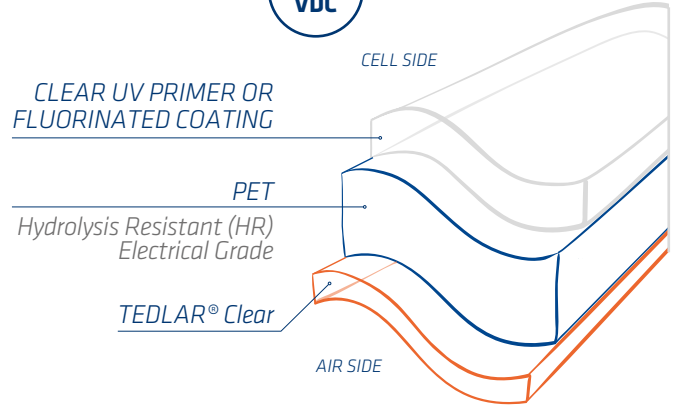
CLEAR UV PRIMER OR
FLUORINATED COATING

PET

Hydrolysis Resistant (HR)
Electrical Grade

TEDLAR® Clear

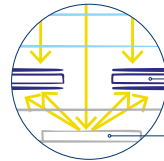
AIR SIDE



OUTPUT INCREASING OPTIONS:

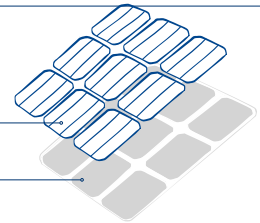
dyMat® Selective:

Optional white grid incorporated in the backsheet that turns the space in between the cells and the borders into a highly reflective area for significant output improvement. The grid layout is defined according to customer's cell shape and size.



PV CELLS

BACKSHEET WITH WHITE GRID

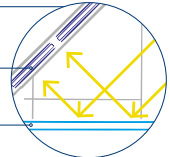


dyMat® HMirror LR:

Optional reflective laminate that can be used for retro-fitting of Bifacial PV installations to increase the albedo value of ground reflectivity and therefore the final module output.

BIFACIAL MODULE

DYMAT H MIRROR LR



dyMat® CLEAR PET FRONTSHEETS

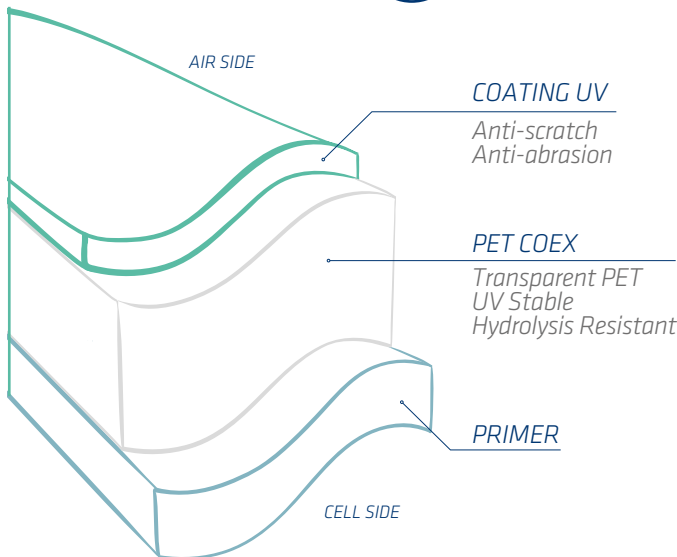
dyMat® transparent frontsheets are the ideal solution to be employed instead of glass in lightweight flexible photovoltaics. They combine the properties of a co-extruded polyester film with those of a special UV coating applied in a high-tech EB curing production process. dyMat® frontsheets have been specifically developed to guarantee an extra high UV and hydrolysis resistance together with outstanding anti-scratch and anti-abrasion properties. dyMat® Clr FS PYE MONO CXG is a monolayer pet based product for 1000 VDC, whereas dyMat® Clr FS HDPYE CXG features a double layer pet for 1500VDC applications. Both products can be supplied with the UV coating in a matt anti-glare finish for output enhancement.

UV COATING PROPERTIES:

- ✓ UV resistance
- ✓ Anti-Scratch
- ✓ Anti-Abrasion

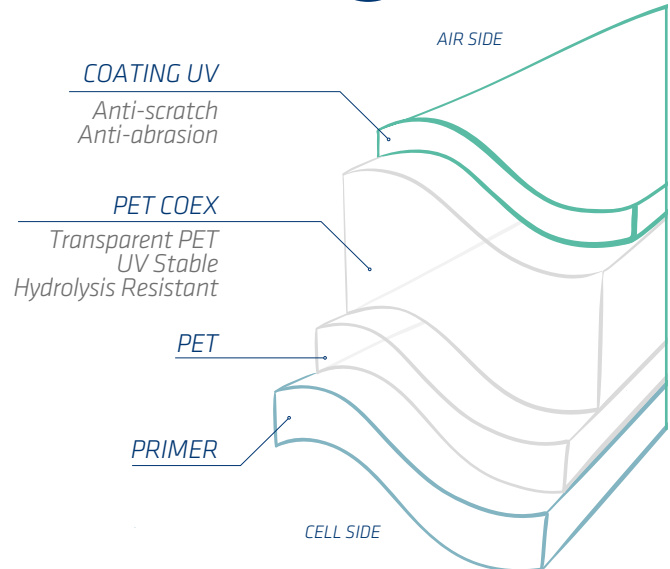
Clr FS PYE MONO CXG

1000
VDC



Clr FS HDPYE CXG

1500
VDC



Coveme is certified ISO 9001 for quality management standards, ISO 14001 for environmental management and OHSAS 18001 for occupational health and safety.



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