

Development Product 2

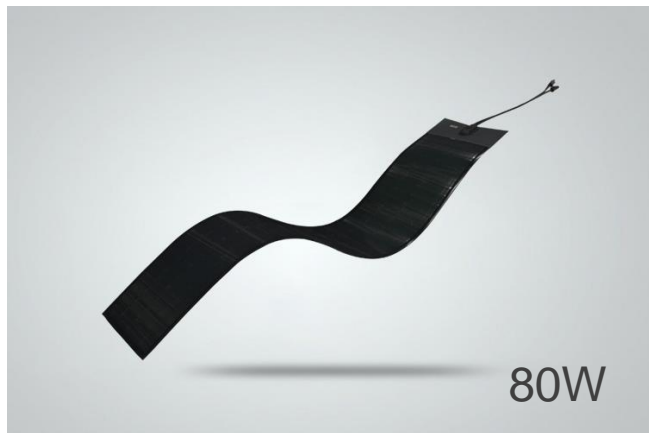
CIGS thin film photovoltaic system

「CIGS solar cell」 ······(Cu)、(In)、(Ga)、(Se) The above elements are the main raw materials
Compound semiconductor solar cell

- LIGHTWEIGHT (2.3 KG/m²) FOR LOAD-RESTRICTED STRUCTURES.
- When installed in a newly built building, it contributes to the cost reduction of the frame.
- can be applied directly to the roof.
- Significant reduction in installation costs possible.
- Since the light absorption efficiency is high, power generation is generated faithfully according to the amount of light.
- Compared to the crystal type, the amount of power generated per year is about 10% higher.
- Good temperature characteristics (-40°C~+90°C) • Relatively little aging (substantial long-term deterioration is less than 10%)
- High durability, excellent stress and impact resistance.
- Suitable for curved and irregular surfaces and can be customization.
- IEC, TUV, UL certified Features of CIGS lightweight and flexible solar cells Speaking of solar cells, <Overview> silicon crystalline solar cells are generally known, but since they are very difficult to install directly on buildings, thin-film lightweight flexible solar cells have attracted attention. Thin-film silicon (amorphous type), compound semiconductors (CIGS), organic thin films, etc. have been developed and put on the market. In terms of performance, reliability and cost, the CIGS type is currently the most popular. market size of solar cells was approximately 73 GW in 2016, according to reports from research companies. Of these, about 22 GW are commercially installed systems. The market size of lightweight and flexible is said to be 3GW in 2016 according to a survey by PVMC of the United States, a major market research company. It is expected to increase further in the future and increase to 6GW in 2025. The market size of the lightweight flexible panel offered is said to be about 50MW. (Silicon thin film type is the mainstream)

CIGS thin film photovoltaic system

(Dimensions are in millimeters)



80W

KXSF N36 (w348×L1,709)



220W~250W

KXSF M36 (w973×L1,709)



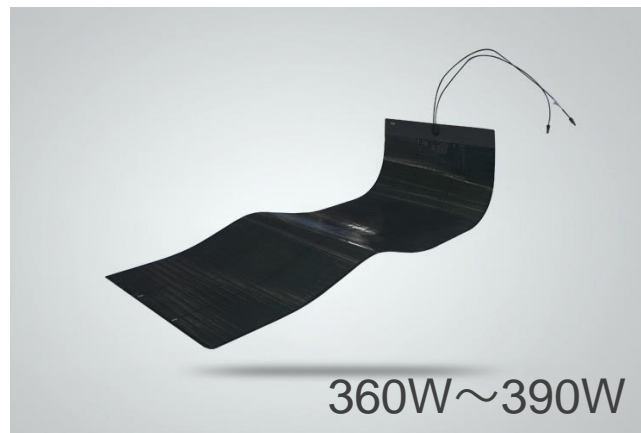
300W~320W

KXSF W36 (w1,292×L1,709)



115W~125W

KXSF N56 (w348×L2,583)



360W~390W

KXSF M56 (w973×L2,583)

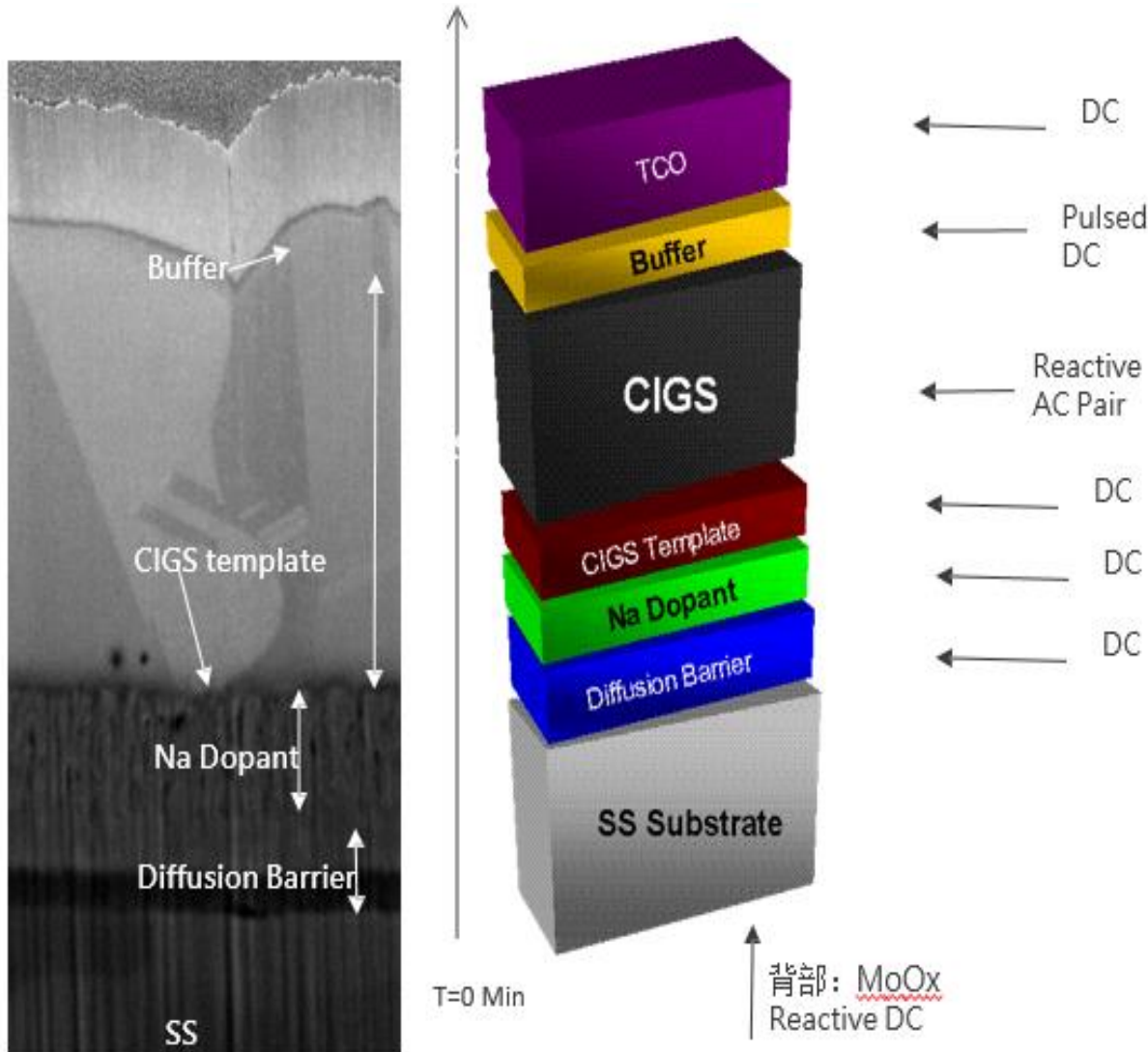


480W~510W

KXSF W56 (w1,292×L2,583)

CIGS thin film structure

CIGS薄膜構造
薄膜構造



Copper-indium-gallium-selenium compound (CIGS) thin-film solar cells represent the third generation of solar cells, with high efficiency, excellent stability, adjustable band gap, excellent performance, strong radiation resistance, and can be installed on flexible substrates to meet various applications. The thin film market has gained widespread attention around the world, enabling large-scale mass production.

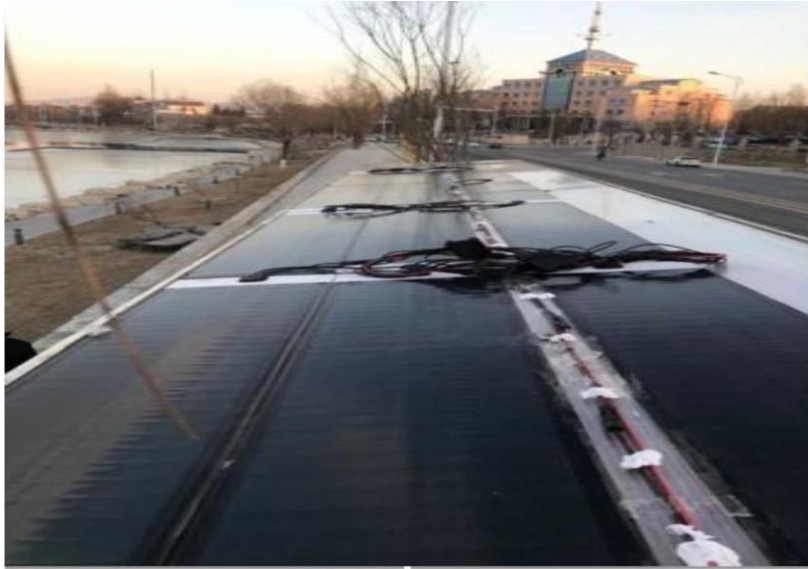


Impact test

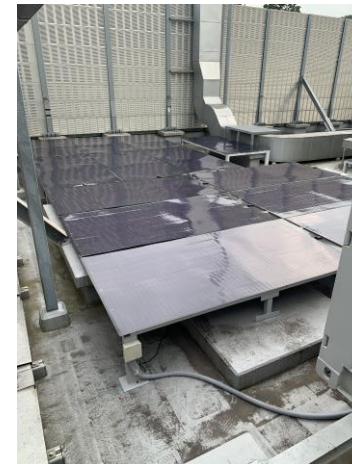
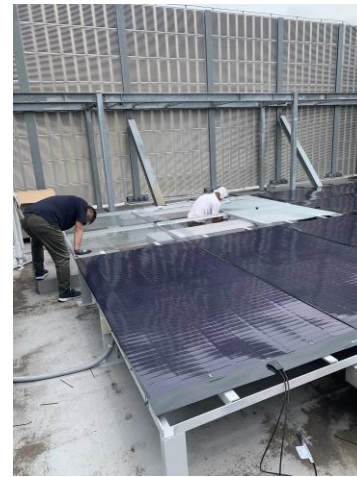
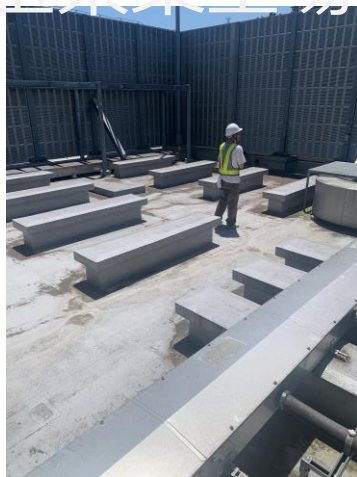


Iron ball drop impact test

Construction example 施工例



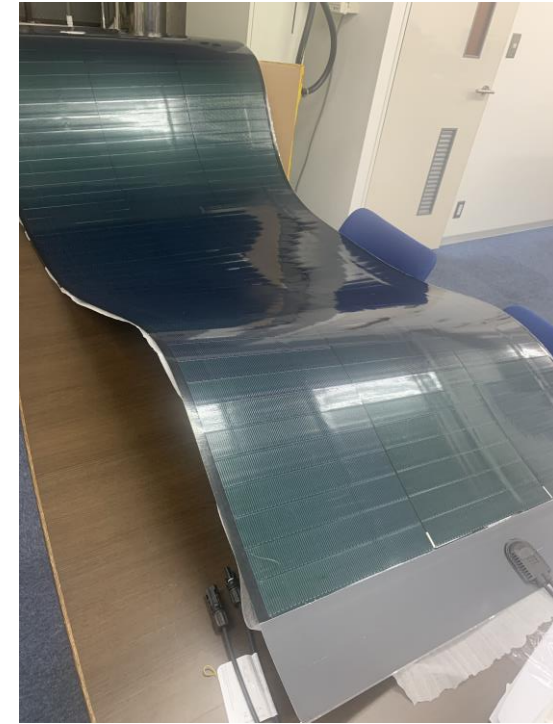
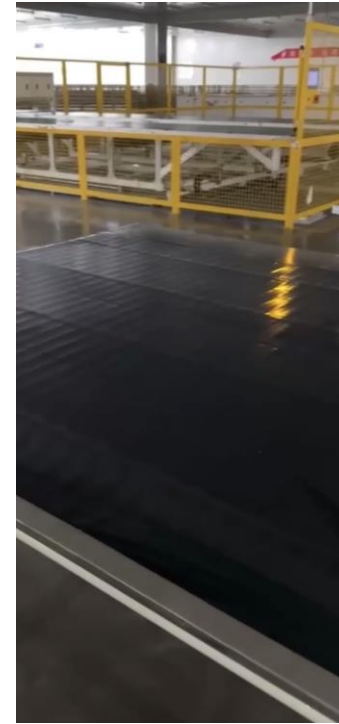
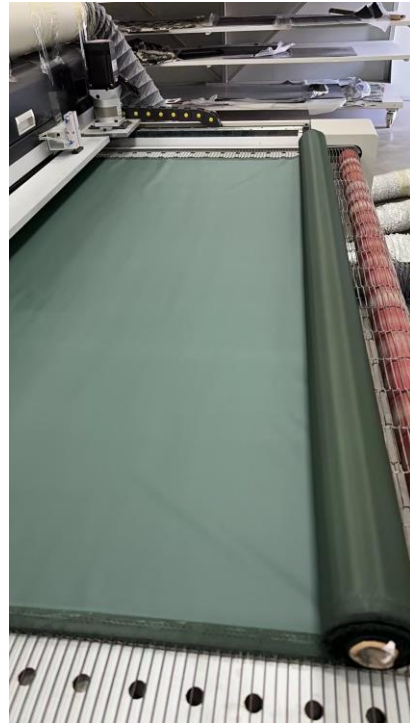
施 TAIYO INK MFG. CO., LTD Saitama-ranzan city under construction 工
例 埼玉県某工場 屋上



CIGS 500W
Vmp 62,4
Imp 8,03
18set
Pmax 9,000W

Manufacturing

施工例



Product standard specifications 施工例

Model	Size(mm)		Pmax	Voc (V)	Isc (A)	Vmp (V)	Imp (A)
	L	W					
KXSF N36	1.709	0.348	70	23.2	4.67	18.1	3.88
	1.709	0.348	75	24.0	4.60	19.1	3.95
	1.709	0.348	80	24.7	4.54	20.0	4.01
KXSF M36	1.709	0.973	210	23.2	14.00	18.1	11.65
	1.709	0.973	220	23.7	13.87	18.8	11.78
	1.709	0.973	230	24.2	13.74	19.4	11.90
KXSF N56	2.583	0.348	110	36.3	4.66	28.4	3.89
	2.583	0.348	115	37.0	4.62	29.3	3.93
	2.583	0.348	120	37.8	4.58	30.3	3.97
	2.583	0.348	125	38.6	4.53	31.2	4.01
KXSF M56	2.583	0.973	340	36.8	13.89	29.0	11.76
	2.583	0.973	350	37.3	13.81	29.7	11.84
	2.583	0.973	360	37.8	13.73	30.3	11.92
	2.583	0.973	370	38.3	13.64	30.9	12.00
KXSF W56	2.583	1.292	460	74.1	9.23	58.7	7.87
	2.583	1.292	470	74.8	9.19	59.6	7.91
	2.583	1.292	480	75.6	9.15	60.5	7.95
	2.583	1.292	490	76.4	9.11	61.4	7.99
	2.583	1.292	500	77.2	9.07	62.4	8.03

Performance characteristics

High temperature performance:

The CIGS temperature coefficient is -0.32%/°C, and there is no reduction in power generation even in a high-temperature environment.

▷ Conversion efficiency 17,5%

▷ Weight 2,3kg/1m²

Low light:

The power generation performance under oblique light and weak sunlight conditions is superior to that of crystalline silicon products. The average daily power generation time is 1~2 hours or more compared to the crystal system.

Occlusion resistance:

Under the same occlusion conditions, the power degradation rate of CIGS thin-film solar cells is 10% lower than that of crystalline silicon modules.

Best Research-Cell Efficiencies

