A close run between nine modules

JKM590N-72HL4-(V) delivers 30,688 kWh over 30 years at 0.45 c/kWh, which makes its energy 27% cheaper per kilowatt-hour than the dearest module in this report. It is not the cheapest sticker price in the set - €101.74 is - and it still wins.

BEST LONG-TERM CHOICE

JinKO Solar **JKM590N-72HL4-(V)** 590 Wp

Best composite in the set. It scores highest across lifetime energy, cost per kWh and warranty length taken together, even though it is not the cheapest energy in the set.

89 OF 100

COST PER KWH
0.45 c/kWh

RANKING LEADER	HIGHEST 30-YEAR YIELD	LOWEST COST PER KWH	MODULES COMPARED
JKM590N-72HL4-(V) Score 89 of 100	30,948 kWh 8,062 kWh above the lowest module	0.44 c/kWh 28% cheaper than the dearest	9 Prices entered by the requester

ASSUMPTIONS Cell temperature 50 °C · Installation Ground mount · Baseline yield 2,000 kWh/kWp · Horizon 30 years · Currency EUR

01 · SIDE BY SIDE

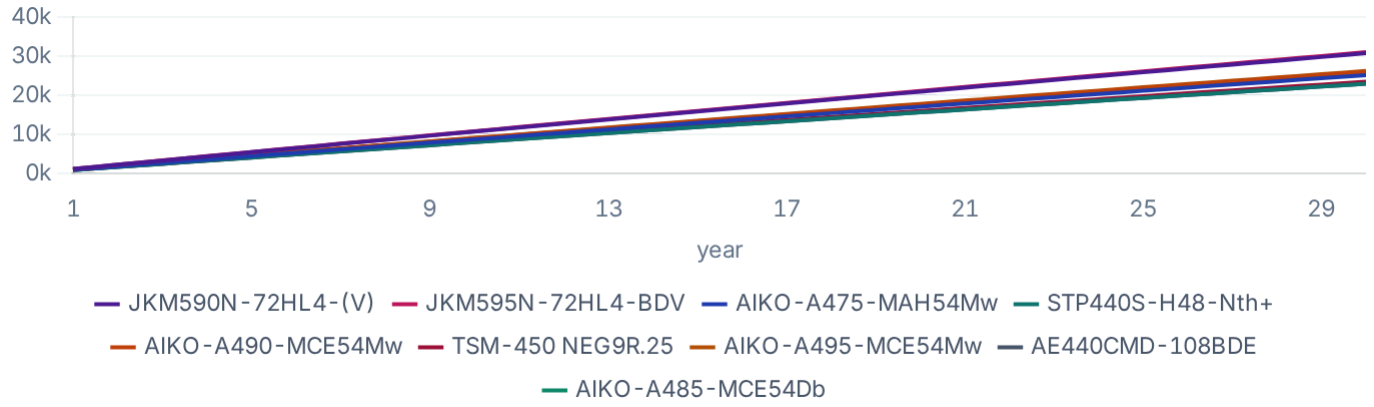
#	MANUFACTURER / MODEL	POWER	PRICE	YEAR 1	30-YEAR	PER KWH (C)	SCORE
1	JinKO Solar JKM590N-72HL4-(V)	590 Wp	€139.26	1,084	30,688	0.45	89
2	JinKO Solar JKM595N-72HL4-BDV	595 Wp	€146.65	1,093	30,948	0.47	86
3	AIKO AIKO-A475-MAH54Mw	475 Wp	€119.36	879	25,085	0.48	53
4	SUNTECH STP440S-H48-Nth+	440 Wp	€101.74	808	22,886	0.44	52
5	AIKO AIKO-A490-MCE54Mw	490 Wp	€147.78	907	25,877	0.57	36
6	Trinasolar TSM-450 NEG9R.25	450 Wp	€123.91	826	23,406	0.53	33
7	AIKO AIKO-A495-MCE54Mw	495 Wp	€161.99	916	26,141	0.62	30
8	AESOLAR AE440CMD-108BDE	440 Wp	€124.48	808	22,886	0.54	30
9	AIKO AIKO-A485-MCE54Db	485 Wp	€159.15	898	25,613	0.62	27

better worse — Colours and scores are relative to the 9 modules in this report only.

02 · WHERE THE DIFFERENCE COMES FROM

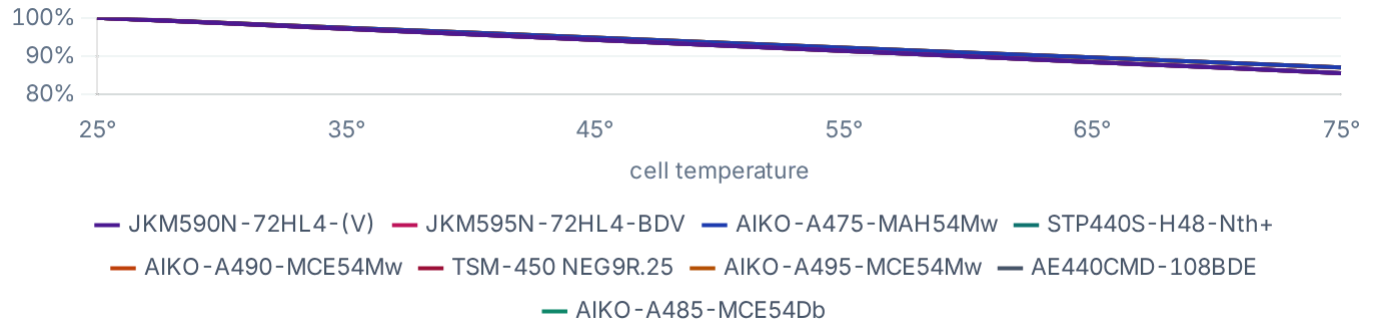
Cumulative energy over 30 years

Kilowatt-hours added up year by year. The gap widens with every year - by year 30 it is 8,062 kWh between the highest and lowest module.



Output retained as the cell heats up

A module is rated at 25 °C; a working roof sits well above it. At 50 °C the -0.26 %/°C module still delivers 93.5% of nameplate, the -0.29 %/°C module 92.8%.



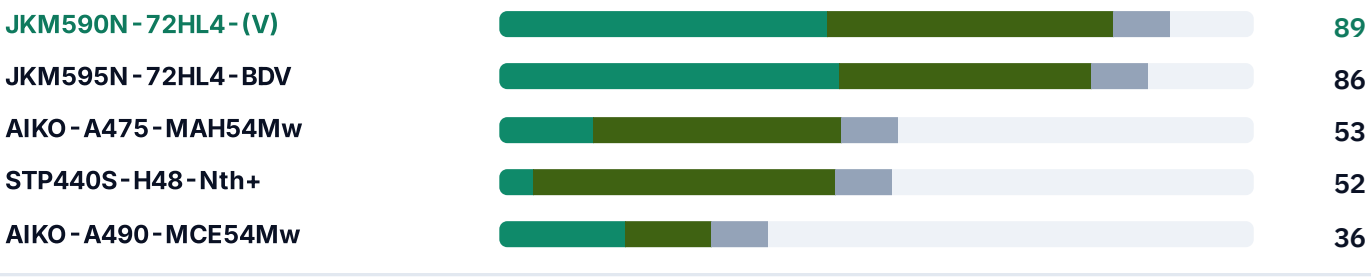
03 · MILESTONES

Cumulative kWh per module

MODULE	Y5	Y10	Y15	Y20	Y25	Y30
JKM590N-72HL4-(V)	5,374	10,642	15,805	20,866	25,826	30,688
JKM595N-72HL4-BDV	5,420	10,732	15,939	21,043	26,045	30,948
AIKO-A475-MAH54Mw	4,366	8,656	12,872	17,015	21,085	25,085
STP440S-H48-Nth+	4,008	7,936	11,787	15,561	19,260	22,886
AIKO-A490-MCE54Mw	4,504	8,930	13,279	17,552	21,751	25,877
Difference, best to worst	+1,412	+2,796	+4,152	+5,482	+6,785	+8,062

Ranks 1 to 5 shown. The remaining 4 module(s) are in the table on page 1.

04 · WHAT DRIVES EACH SCORE



Ranks 1 to 5 shown. The remaining 4 module(s) are scored in the table above.

30-year yield · 45% Cost per kWh · 40% Warranty · 15%

05 · HOW EACH FIGURE IS BUILT

1 Annual yield
Panel watts times the installation baseline of 2,000 kWh/kWp, times a temperature factor from the module's own coefficient at 50 °C, times whatever degradation has left that year.

2 Degradation
Each module ages at its own datasheet rate - JKM590N-72HL4-(V) loses 1% in year one, then 0.4% a year. Where a manufacturer publishes no curve, the 2% / 0.55% convention is used.

3 Cost per kWh
Offer price divided by the thirty annual yields added together. The only figure that lets a dearer module win, and often it does.

4 Score
A 0-100 composite: lifetime energy 45%, cost per kWh 40%, warranty 15%, each normalised across this report's modules. A dimension they all tie on splits evenly.

⚠ What this report does not model

Energy price inflation, inverter and installation cost, local irradiance, weather, shading, or a degradation curve worse than the datasheet promises. Prices were entered by whoever requested this report, not quoted or verified by ComparePV. This compares modules against each other, not a full system business case.

06 · TERMS USED IN THIS REPORT

Cost per kWh (LCOE)
Offer price divided by lifetime yield. What one kilowatt-hour from this module actually costs. Lower is better.

Tc Pmax
Temperature coefficient of maximum power, %/°C. How much output drops per degree above 25 °C. Smaller is better in heat.

Baseline yield
Energy one kWp produces per year. Set by installation type: ground mount around 1,100, pitched equator-facing 1,050, east-west 950.

Score
Relative ranking of this offer within this set only. The same module at the same price scores differently against different competition.

The live version stays online

Change the temperature, the installation type or the prices and the comparison recomputes. Anonymous and shareable.

comparepv.com/panel-report/13ed7122-0565-49f5-a1ab-9d15919fbcf6