

Comparative Test PV-Modules:
Winner: ANTARIS SOLAR
ANTARIS ASM 185 AI – The module with the highest yield

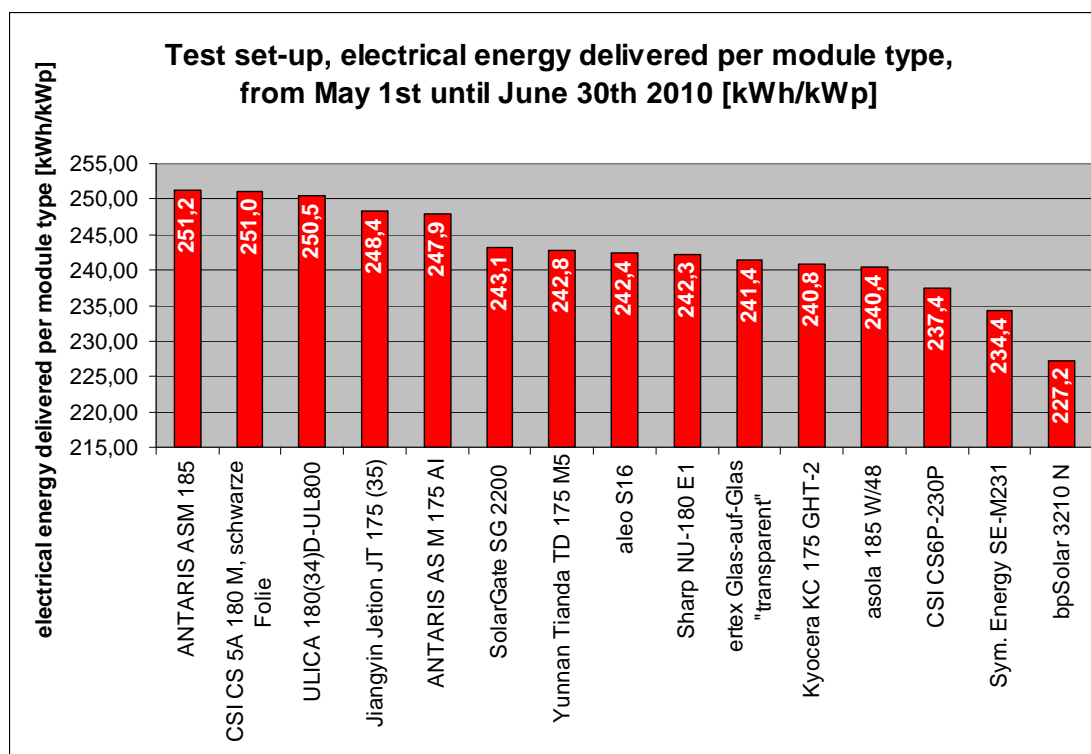
The choice in PV-systems is virtually unlimited. To know what is what however, it takes the right information. This year – just as in 2009 – TEC-Institute tested 15 modules from well-known manufacturers. The tests were performed under real-life conditions. To gain objective test results, testing in a laboratory would have had only limited validity.

Weather conditions ranged from a mix of sunshine to cloudy skies. The basic requirements for realistic measurements were given: TEC-institute operates their own weather station which records temperature, barometric pressure, wind, rain and atmospheric humidity, as well as a pyranometer which measures global irradiance (total sun and solar radiation impacting on a horizontal surface on the ground). Like this, the weather situation could be recorded exactly and in parallel with the obtained output values, which resulted in a more objective test result concerning the real yield of the different modules. The module ANTARIS ASM 185 AI achieved 99%, produced the highest energy yield among all individual modules, and thus, won the competition.

The Module with the highest energy yield

Measurements on the 15 modules were carried out between May 1st 2010 and June 30th 2010. Voltage and current were recorded on the module side at an interval of one minute. Power output on the DC-side and electrical energy provided by the module were calculated from these values. All modules were tested “stringwise” (2 or 3 each) and were oriented exactly South, without any shading. Another important criterion was the (whenever possible) exact same cable length of all test strings. The working-range of all modules was within MPP-range of the inverters. Each string fed into the grid via a “Mastervolt Soladin 600” inverter. On the AC-side, energy fed into the grid by one string was recorded with respectively one electricity meter.

The ANTARIS SOLAR module ASM 185 AI with its monocrystalline cell type achieved an energy yield of 251.2 kWh/kWp (this corresponds to 99% out of 100% expected energy yield.). The comparison to the competing modules from three other manufacturers, which also achieved above 95%, but remained slightly below the energy yield of ANTARIS ASM 185 AI, can be seen in the two diagrams.



Supplier and product	Cell type	nominal power [W]	nominal voltage [V]	nominal current [A]	dimensions	Measured energy yield according to testing series carried out by TEC-institute, per single module (kWh/kWp)	test result [%]
ANTARIS ASM 185 AI	monocrystalline	185	36.80	5.10	1580x808	251.20	99.00
CSI CS 5A 180 M	monocrystalline	180	36.10	4.99	1595x801	251.05	98.94
ULICA 180 (34) D-UL 800	monocrystalline	180	36.00	5.00	1580x800	250.52	98.73
Jiangyin Jetion JT 175 (35)	monocrystalline	175	35.30	4.96	1580x808	248.39	97.89
ANTARIS ASM 175 AI	monocrystalline	175	35.20	4.96	1580x808	247.89	97.70
SolarGate SG 2200	monocrystalline	220	30.29	7.23	1669x986	243.08	95.80
Yunnan Tianda TD 175 M5	monocrystalline	175	35.20	4.97	1589x806	242.85	95.71
aleao S16	polycrystalline	180	24.35	7.45	1660x830	242.40	95.53
Sharp NU-180 E1	monocrystalline	180	23.70	7.60	1318x994	242.27	95.48
ertex Glas-auf-Glas	monocrystalline	128.9	24.64	5.37	1500x800	241.40	95.14
Kyocera KC 175 GHT-2	polycrystalline	175	23.60	7.42	1290x990	240.85	94.92
asola 185W/48	monocrystalline	185	24.85	7.56	1356x990	240.37	94.73
CSI CS6P-230P	polycrystalline	230	29.80	7.71	1638x982	237.40	93.56
Sym. Energy SE-M231	polycrystalline	231	30.80	7.51	1636x982	234.39	92.37
bpSolar 3210N	polycrystalline	210	28.90	7.30	1667x1000	227.23	89.55