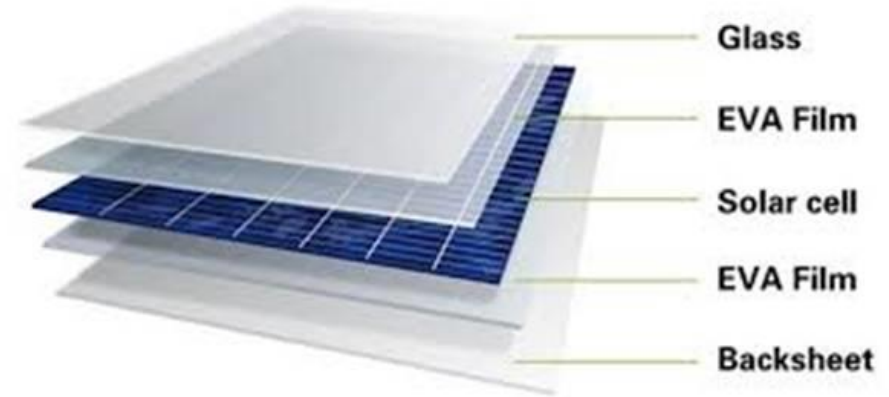
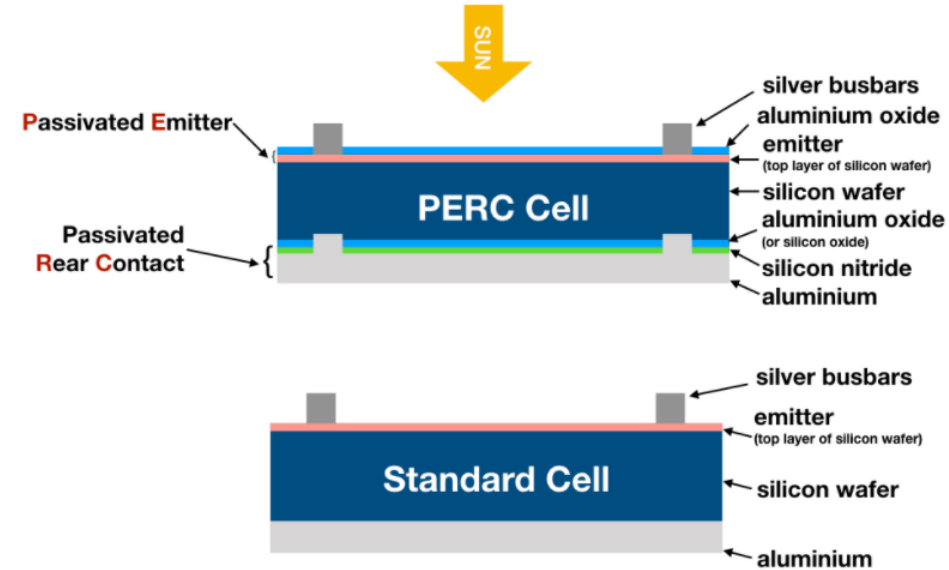


PV PANEL TEKNOLOJİ KIYASLAMASI

PV Panel Teknoloji Kıyaslaması



PV Panel Ekipman Üretici Kıyaslaması

ENF Top 10 EVA Manufacturers

Rank	Brand	Market Share
1	 Hangzhou First PV Material Co., Ltd.	61%
2	 Bridgestone Corporation	12%
3	 Jiangsu Akcome Solar Science & Technology Co., Ltd.	6%
4	 Du Pont-Mitsui Polychemicals Co., Ltd.	3%
5	 Shenzhen Sveck Technology Co., Ltd.	2%
6	 Wenzhou Ruiyang Photovoltaic Material	2%
7	 Zhejiang Feiyu Photoelectricity S&T Co., Ltd.	2%
8	 Coveme S.p.A	2%
9	 Specialized Technology Resources, Inc.	1%
10	 Zhejiang Research Institute of Chemical Industry Co., Ltd.	1%

ENF Top 10 Glass Manufacturers








Rank	Brand	Market Share
1	 CSG Holding Co., Ltd.	18%
2	 Flat Solar Glass Group Co., Ltd.	17%
3	 Xinyi Glass Holdings Limited	14%
4	 Henan Huamei New Materials Technology Co., Ltd.	7%
5	 Changshu SYP Special Glass Co., Ltd.	4%
6	 AVIC Sanxin Solar Glass Co., Ltd.	4%
7	 Henan Succeed Photovoltaic Materials Corporation	4%
8	 Tianjin Seed Glass Co., Ltd.	4%
9	 Ancai Hi-Tech Co., Ltd.	3%
10	 Changzhou Almaden Co., Ltd.	3%

PV Panel Ekipman Üretici Kıyaslaması

ENF Top 10 Junction Box Manufacturers

Rank	Brand	Market Share
1	 Renhe Photovoltaic Technology Co., Ltd.	22%
2	 Ningbo Zhonghuan Sunter PV Technology Co. Ltd	17%
3	 Ningbo GZX PV Technology Ltd.	12%
4	 Tyco Electronics Corporation	7%
5	 QC Solar (Suzhou) Corporation	6%
6	 Zhejiang Jiaming Tianheyuan Photovoltaic Technology Co., Ltd.	5%
7	 Zhenjiang TongLing Electrics Co., Ltd.	4%
8	 Ningbo Chuangyuan Photovoltaic Technology Co., Ltd.	4%
9	 Ningbo Condi Photovoltaic Technology Co., Ltd.	2%
10	 Sky Solar Holding Co., Ltd.	2%

ENF Top 10 Backsheet Manufacturers

Rank	Brand	Market Share
1	 ISOVOLTAIC AG	17%
2	 Coveme S.p.A	11%
3	 Toyo Aluminium K.K.	11%
4	 MADICO Incorporated	8%
5	 Hangzhou First PV Material Co., Ltd.	6%
6	 3M Renewable Energy	6%
7	 Taiflex Scientific co., Ltd.	6%
8	 DuPont	5%
9	 KREMPPEL GmbH	5%
10	 Jiangsu Huitong Photovoltaic Materials Co., Ltd.	4%

PV ÜRETİCİ SIRALAMALARI

PV Güneş Paneli Üretici Kıyaslaması

 TrinaSolar

6 GW

 CanadianSolar

7 GW

 JinkoSolar
We Build Your Trust in Sun

6.5
GW

 JA SOLAR

5.5
GW

 SUNTECH

3.3

 GCL
New Energy

5 GW

 TALESUN

4.5
GW

 ReneSola

2 GW

 RECOM

1.5

GW

 YINGLI SOLAR

2.35GW

*

*Not Bankable

 Hanwha Q CELLS

6.8

GW

 CHNT

2.5

GW

 LONGi Solar

5 GW

 First Solar

2.2

GW

 ZORLU

 ZORLU SOLAR

PV Hcre retici Kıyaslaması

Marka	Kapasite (MW/yıl)
Motech	3.2GW
NSP	2.2GW
Gintech	2.2GW
Solartech	1 GW

PV Panel Datasheet Karşılaştırması

	First Solar	Toshiba Solar	Recom Solar	Yingli Solar	Talesun Solar	Canadian Solar	Longi Solar	Jinko Solar	GCL Solar
Modül Teknoloji	CdTe	Polycrystalline	Polycrystalline	Polycrystalline	Polycrystalline	Polycrystalline	Monocrystalline	Polycrystalline	Polycrystalline
Modül Gücü (Wp)	120	320	280	270	280	280	280	280	280
Modül Tipi	FS4	TA72P320WB	RCM-280-6PB	YL270P	TP660P-280	CSK-280P	LR6-60-280M	JKM280P-60	GCL-P6/60-280
Modül Verimi (%)	16.7	16.4	17.2	16.6	17.2	17.1	17.1	17.1	17.2
Sıcaklık Katsayısı	-0.28%/°C	-0.413%/°C	-0.40%/°C	-0.42%/°C	-0.40%/°C	-0.41%/°C	-0.41%/°C	-0.40%/°C	-0.41%/°C
Yaşlanma	İlk yıl 98% , 25 yıl boyunca yıllık -0.5%	İlk yıl 97.5% , 25 yıl boyunca yıllık -0.7%	İlk yıl 97% , 25 yıl boyunca yıllık -0.65%	İlk yıl 98% , 25 yıl boyunca yıllık -0.7%	İlk yıl 97% , 25 yıl boyunca yıllık -0.7%	İlk yıl 97% , 25 yıl boyunca yıllık -0.7%	İlk yıl 97% , 25 yıl boyunca yıllık -0.55%	İlk yıl 97% , 25 yıl boyunca yıllık -0.7%	İlk yıl 97.5% , 25 yıl boyunca yıllık -0.7%

Sistem Kıyaslaması

	DC Güç (kWp)	Specific prod (kWh/kWp/year)	Performans Oranı (%)
First Solar	1188	1742	86.71
Jinko Solar	1183	1674	83.33
Talesun Solar	1183	1672	83.24
GCL Solar	1185	1668	83.03
Canadian Solar	1185	1663	82.76
Recom Solar	1185	1656	82.45
Toshiba Solar	1155	1654	82.31
Yingli Solar	1180	1624	80.82

Türkiye Konya

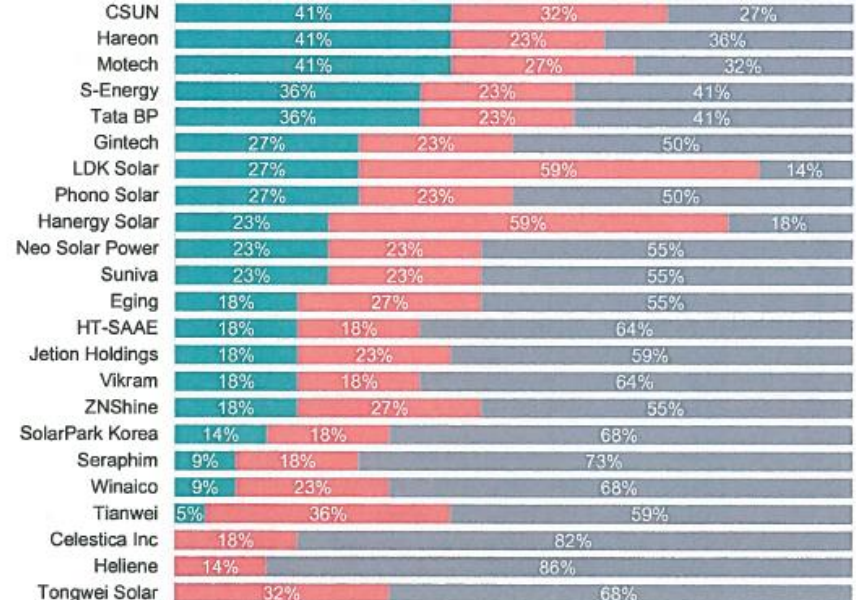
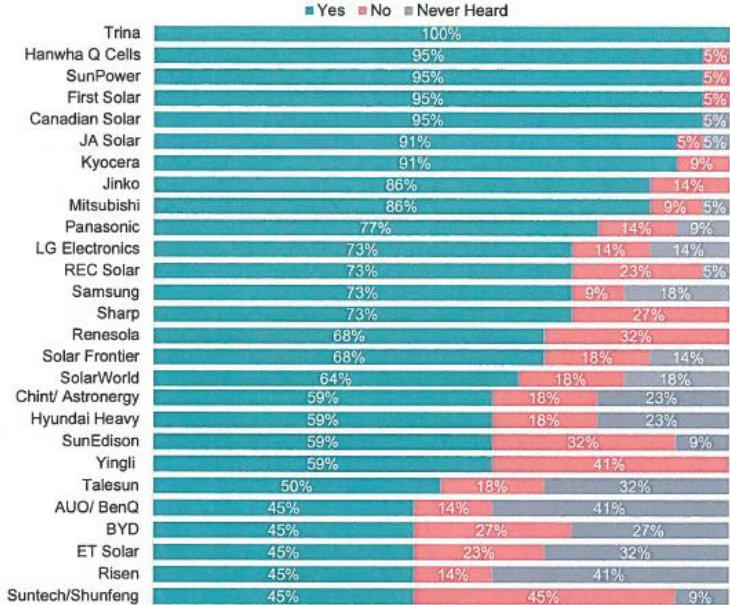
Pakistan Bahawalpur

	DC Güç (kWp)	Specific prod (kWh/kWp/year)	Performans Oranı (%)
First Solar	1188	2051	83.53
Talesun Solar	1183	1935	78.81
Jinko Solar	1183	1929	78.56
GCL Solar	1185	1928	78.53
Canadian Solar	1185	1921	78.26
Recom Solar	1185	1917	78.09
Toshiba Solar	1186	1910	77.81
Yingli Solar	1188	1882	76.64

PV Panel BNEF Bankability Kiyaslama

3. SURVEY RESULTS

Figure 3: BNEF's PV bankability survey



Source: Bloomberg New Energy Finance

PV Module Kıyaslaması

Rank	Manufacturer (2016)	Shipments (GW)	Manufacturer (2015)	Shipments (GW)	Manufacturer (2010)	Shipments (GW)	Manufacturer (2005)	Shipments (GW)
1	Trina	5.0	Trina	3.6	Suntech	1.6	Sharp	0.375
2	JA Solar	4.9	JA Solar	3.6	JA Solar	1.5	Kyocera	0.142
3	Hanwha	4.0	Hanwha	3.4	First Solar	1.4	Q-Cells	0.131
4	Jinko Solar	3.9	Canadian Solar	2.7	Yingli	1.1	Schott Solar	0.095
5	Motech	2.9	First Solar	2.5	Q-Cells	1.0	BP Solar	0.086
6	First Solar	2.7	JinkoSolar	2.4	Sharp	0.9	Mitsubishi	0.085
7	Longi Lerrı	2.7	Yingli	2.4	Trina	0.9	Sanyo	0.084
8	Canadian Solar	2.4	Motech	2.1	Motech	0.9	Shell Solar	0.055
9	Yingli	2.4	Neosolar	2.1	Gintech	0.8	Motech	0.045
10	Shunfeng-Suntech	2.2	Shunfeng-Suntech	2.0	Kyocera	0.6	Isofoton	0.039
Other		36.4		26.8		6.8		0.270
Total		69.5		50.9		17.4		1.410

YENİ GÖZETİM UYGULAMASI

Yeni Gözetim Uygulaması

- Ekim 2017'de yapılan bir düzenleme ile yeni alınan gözetim belgelerinde ve ithal edilen güneş panellerinin KDV hesabında baz alınacak değerler ürünün fatura bedeli yerine 150 USD/m² sabit fiyat olarak alınmıştır.
- Buna göre ithalat esnasında yaklaşık 9 USDcent/W geri alınamayacak bir vergi yükü oluşmuştur.
- Örnek:
270 W'lık panel alanı: 1,65 m²; 0,35 USD/W fatura bedeli
Eski sisteme göre KDV = 0,35*0,18 = 0,063 USD/W
Yeni sisteme göre KDV = 150*1,65/270*0,18 = 0,165 USD/W
MW başına 63.000 USD yerine 165.000 USD KDV ödenmiş olacaktır.
İthalatçının müşteriye yansıttığı KDV = 0,40*0,18 = 0,072 USD/W = 72.000 USD/MW
İthalatçıda kalan KDV yükü = 165.000 – 72.000 = 93.000 USD/MW

PV PANEL HATALARI

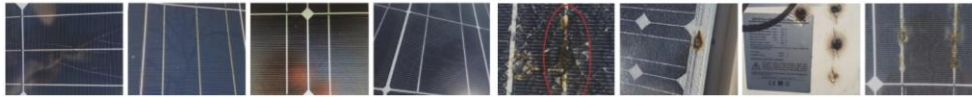
PV Panel Hataları



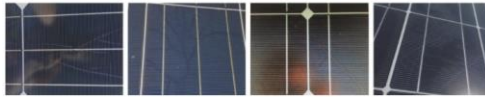
PV Panel Hataları



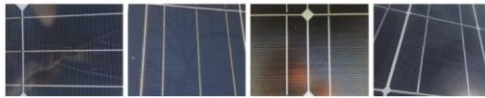
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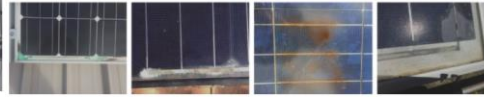
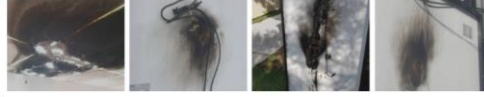
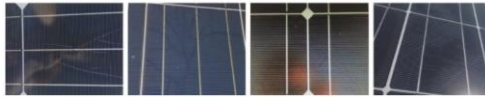
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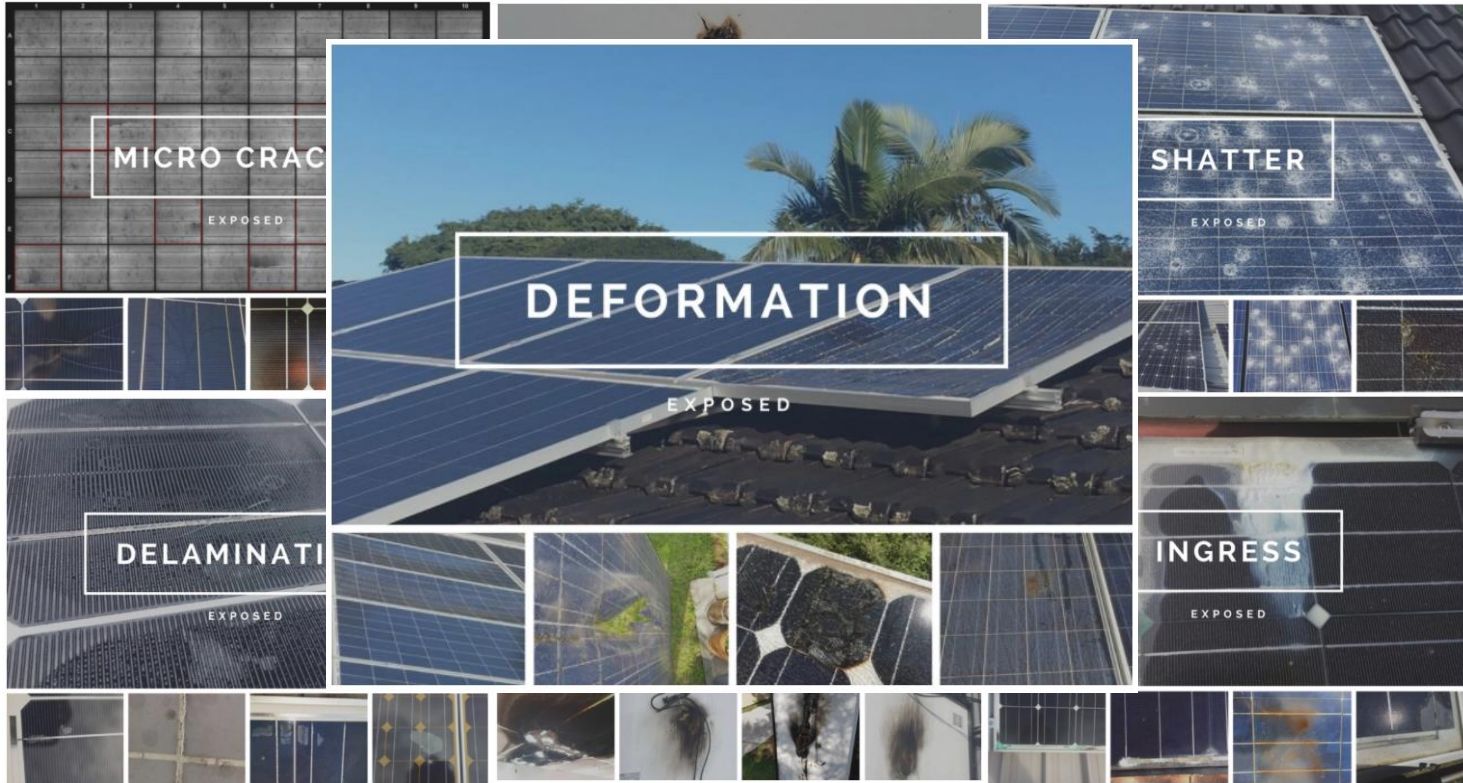
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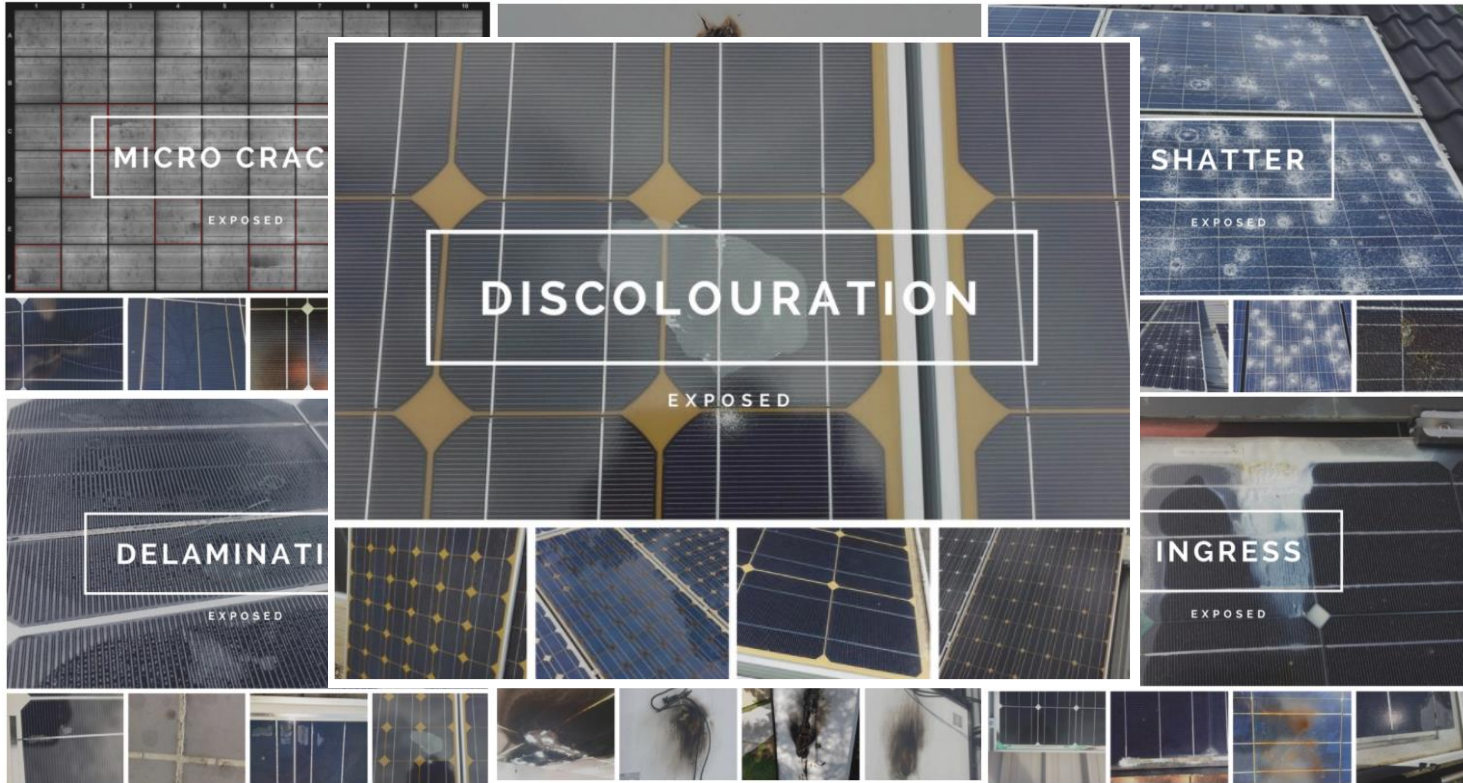
PV Panel Hataları



PV Panel Hataları



PV Panel Hataları



PV Panel Üretim Kıyaslaması



Teşekkürler