

#### "Your Energy is from Nature"

# Who are we?



Doğa Solar was established in 2010. In the first period of its establishment, it operated in the field of retail electricity sales. In 2014, it started to operate in the field of renewable energy and managed to become one of the leading companies in the renewable energy sector.

Mobile solar power plant, solar powered agricultural irrigation systems, solar power plant for residential-factory roofs, solar signaling applications and solar lighting applications have gained a say in the sector with its investments. Doğa Solar has proved its strength and competence in this field by implementing the "Largest Agricul-tural Irrigation Project" of our country. With the R&D studies initiated in 2015, Farm Power Mobil Solar Power Plant, which increased renewable energy efficiency by 41%, was presented to our farmers.

Farm Power Mobile Solar Power Plant has attracted the attention of the world as a result of the features it has and has been published as news in many European and American countries. As a result of this situation, it was presented as an antidote to the World Food Security and Nutrition report published by the Food and Agriculture Organization of the United Nations (FAO). Farm Power Mobile Solar Power Plant has provided a solution to a big problem in Turkey and in the world.

Our farmers in Turkey get rid of their electricity bills with Farm Power Mobile Solar Power Plant in agricultural irrigation and increase the yield of their crops. Although it is suitable for agriculture in our country, the lands that cannot be used because irrigation cannot be done will be brought to the agriculture of our country and the product range in agriculture will be increased and will contribute to the country's economy.

On this path, which we set out only to produce value for our country and to contribute to the country's economy, it makes us happy to see the advantages that the technologies we produce provide to our farmers, producers and people. The aim of Doğa Solar is to develop agriculture, increase yield, reduce foreign dependence on energy and present the needs of the age to the Turkish people. The projects and R&D studies we have carried out on this occasion have a complete 100% benefit

It makes us proud to hear from our customers. With our engineers trained by these lands, We will continue to serve our people and our country with our "Made in Turkey" products with all our strength.

> SONER ASMA Chairman of the Board



## Agricultural Irrigation Turkey's largest Solar Power Manufacturer

#### Mission

Doğa Solar in the renewable energy sector always improving itself to the country's economy to contribute, to increase productivity in agriculture and environmentalist, sustainable and appropriate for the Turkish people self-aim to provide costly solutions has acquired.

#### Vision

Producing value and contributing to the country's economy On this path we set out to provide innovative, eco-friendly, economical solutions By operating effectively in our country and in the world in the solar energy sector with a sustainable quality understanding by offering the energy of the future Develop solutions and position a leader is to come.











With the increase in the population day by day, the need for energy is also increasing. Our country meets a large part of its electricity needs from natural gas and coal. This increases energy costs in our country, which is dependent on foreign energy sources. In our country, which has a high solar energy potential, there is a rapid transition towards renewable energy sources. Solar energy, with its potential and ease of use, is the most efficient option in agriculture compared to other renewable energy sources.

Doğa Solar, Turkey's largest solar energy producer in agricultural irrigation, has accelerated its energy efficiency investments in agriculture in order to reduce energy costs. According to Doğa Solar, it is possible to increase productivity in agriculture and solve the energy problem in 2 ways; to bring back the agricultural lands that cannot be cultivated due to the energy problem and to increase the percentage of energy that our country receives from the sun. For this purpose, Doğa Solar has offered 2 important products that will contribute to Turkish agriculture to the use of our farmers as a result of R&D studies and investments for many years; Farm Power Mobile Solar Energy Systems and Tracking Solar Tracking Energy Systems.

# ENERGY NEED IS CONSTANTLY INCREASING

# LOST FARMLAND IS NOT





Doğa Solar has combined more than 10 years of experience and knowledge with today's technology and produced the first 100% domestic Tracking Smart Solar Tracking Systems and Farm Power Mobile Solar Power Plant, which is unique in the world. In 2015, it implemented the 125 hp agricultural irrigation project, which was the largest agricultural project of our country at that time. As of 2022, there are currently over 600 active systems and the total capacity of these systems is over 37900 kWp.





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# FARMPOWER





The Farm Power Mobile Solar Power Plant, developed by our company, offers our farmers the opportunity to make efficient agriculture in the lands where there are no energy transmission lines and which can be brought to agriculture. Farm Power Mobile Solar Power Plant is a system that farmers can easily take to their land with their tractor during the agricultural period and carry it to different agricultural lands.

However, it is a system that can also meet the winter energy needs of the farmer's house or gazebo after the agricultural period. Farm Power Mobile Solar Power Plant is produced in blocks, 1 block produces approximately 7.5 kWp (KiloWat Peak) electricity and the number of blocks can be increased according to the needs of our farmers. For example, for an irrigation engine with 5.5 Hp power, 1 block meets the needs of our farmers. For an irrigation engine with 10 Hp power, it uses 2 blocks. The first Farm Power Mobile Solar Power Plant, the prototype of which we made in 2016, operates a 75 Hp irrigation engine. This farmer of ours processes 310 decares of agricultural land and has no foreign dependency on energy.

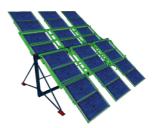
Today, approximately 110 farmers are actively using the Farm Power Mobile Solar Power Plant. The economic life of Farm Power Mobile Solar Power Plant is between 17 and 20 years is predicted to be.





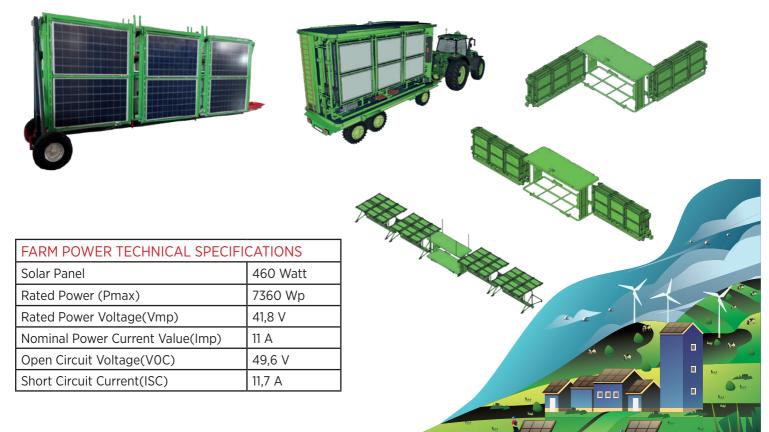








## 100% DOMESTIC CONSTRUCTION EASY TO CARRY EASY TO INSTALL

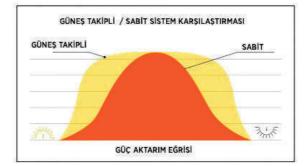


# TRACKING SOLAR MONITORED SOLAR POWER PLANTS

Thanks to our customer-oriented work Being the company with the highest customer satisfaction in Turkey

we are proud.

As Doğa Solar, we have produced the first 100% domestic smart solar tracking energy systems in Turkey. As of 2022, our company has approximately 620 active emplovee systems. Tracking solar monitoring power plants have 41% more efficiency than stationary systems thanks to their ability to adjust the continuous panel angle according to the sun. Tracking solar monitoring power plants are an ideal high-efficiency system to provide energy needs in agricultural areas with electricity and in agricultural areas without electricity transmission lines. Tracking solar energy systems, which produce 41% more electricity than fixed systems, have been the focus of our farmers. Fixed systems with the same power produce 100 thousand kW of electricity during the agricultural season, while Tracking systems produce 141 thousand kW of electricity. In this way, the investment completes the amortization period in a shorter time. For example; While the return on investment period of fixed irrigation systems is 5 years, the return on investment period of our tracking systems is 3.5 years. The system, which does not harm agricultural lands, provides maximum gain and maximum savings. Due to the fact that it pays for itself in a short time by reducing energy costs, it is an important source of savings and finance for our farmers.





Our systems with **5 years** mechanical warranty its economic life is about **27 years**.



## According to Stationary Systems

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# **MORE SOLAR**

# STATIONARY SOLAR POWER PLANTS

Stationary solar energy systems are ideal for saving money in agricultural areas with electricity and for providing energy in arid lands where there is no electricity. Due to the lack of electricity in the network in agricultural areas, agricultural irrigation is carried out with liquid fuel generator or tractor systems. However, such energy sources have costs, noise and continuous fuel costs. Agricultural irrigation with solar energy is economical, quiet and environmentally friendly in a completely natural way. Solar power plants are less costly and last longer than conventional diesel generators. While allowing the crop to develop better, it also puts an end to the farmer's electricity bill. Solar power plants used in agricultural irrigation are systems that provide low-cost and long-term solutions. It also does not require any additional battery system. Because it meets the energy and water needed by the plant during the day. As Doğa Solar, we are the only company that has implemented Turkey's largest agricultural irrigation project. Hundreds of water wells that we have implemented so far still continue to extract water with the performance of the first day.







# **ROOF** TOP

#### SOLAR POWER PLANTS

Rooftop solar power plant applications have a wide application area such as organized industrial zones, agricultural and livestock facilities, shopping centers, hotels, hospitals, fuel stations. With the solar power plant we will install on the roof of your home and workplace, it is possible to get rid of the cost of electricity and sell your surplus electricity to the state with a 10-year purchase guarantee. Doğa Solar designs the most suitable solar power plant project for your roof by taking into account your reimbursement and profitability and offers you turnkey solutions by undertaking the whole process from obtaining the necessary permissions for the installation of the power plant to the installation of the power plant to the completion of the relevant acceptances and the start of electricity sales.

# MAKE YOUR OWN electricity





#### **PERC MONOKRISTAL** 144PM-HC

- ◆ TT465-144PM-HC 465 Wp ◆ TT440-144PM-HC 440 Wp
- TT460-144PM-HC 460 Wp TT435-144PM-HC 435 Wp
- ◆ TT455-144PM-HC 455 Wp ◆ TT430-144PM-HC 430 Wp
- TT450-144PM-HC 450 Wp TT425-144PM-HC 425 Wp
- ◆ TT445-144PM-HC 445 Wp ◆ TT420-144PM-HC 420 Wp



**High Conversion Efficiency** Thanks to its high panel efficiency, it guarantees high power output.

Self-Cleaning and Glass that Reduces Reflection Special coating on glass reduces surface dust.



High efficiency at low irradiation High Panel Efficiency Even in Morning and Cloudy Weather Conditions

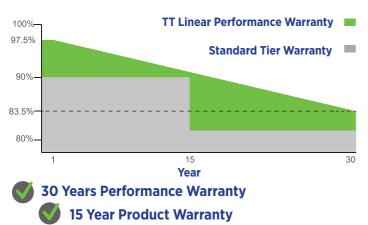
**Excellent Strength Capacity** 2400 Pa Wind Load, 5400 Pa Snow Load Resistance



0~+5Wp Positive Power Tolerance



#### **Easy Installation**







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Allianz (II)

IEC 61215 IEC 61730-1 IEC 61730-2 IEC 62804 PID (POTANSIYEL KAYNAKLI BOZULMA) IEC 61701 TUZ KOROZYON IEC 62716 AMONYAK KOROZYON ISO 9001:2015, ISO 14001:2015, ISO 45001:2018

ISO

PV CYCLE

## Half-Cut

MODEL	ТТ420 144РМ-НС	TT425 144PM-HC	TT430 144PM-HC	TT435 144PM-HC	ТТ440 144РМ-НС	TT445 144PM-HC	TT450 144PM-HC	TT455 144PM-HC	TT460 144PM-HC	ТТ465 144РМ-НС
Maximum Power (Pmax)	420 Wp	425 Wp	430 Wp	435 Wp	440 Wp	445 Wp	450 Wp	455 Wp	460 Wp	465 Wp
Module Efficiency	19.30	19.52	19.75	20.00	20.20	20.40	20.70	20.90	21.13	21.36
Maximum Power Voltage (Vmp)	40.20	40.40	40.60	40.80	41.00	41.20	41.40	41.60	41.80	42.00
Maximum Power Current (Imp)	10.45	10.52	10.60	10.67	10.74	10.81	10.87	10.94	11.00	11.07
<b>Open Circuit Voltage (Voc)</b>	48.00	48.20	48.40	48.60	48.80	49.00	49.20	49.40	49.60	49.80
Short Circuit Current (Isc)	11.17	11.25	11.32	11.40	11.47	11.54	11.61	11.67	11.74	11.80
Power Tolerance		0~+5W								
Max. System Rated Voltage		1500V DC								
<b>Operating Temperature Range</b>		-40 ~ +85°C								
Safety Class					C	>				
Max. Serial Fuse Current					20	A				

#### **MECHANICAL SPECIFICATIONS**

Cell Size(mm)	166x83
Number of Cells(pcs)	144 (24x6)
Weight(kg)	24.5
Panel Size(mm)	2095x1039x40
Max. Wind/Snow Load Resistance(P	a) 2400/5400
Junction Box Protection Class	IP68
Junction Box Cable Length(mm)	350-1200

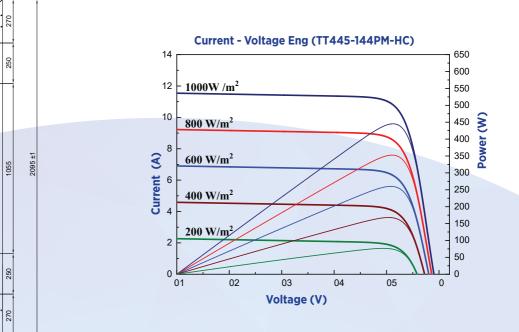
#### **TEMPERATURE COEFFICIENT**

Temperature Coefficient (Isc)	0.050%/°C
Temperature Coefficient (Voc)	-0.304%/°C
Temperature Coefficient (Pmax)	-0.360%/°C

#### **PACKAGE TYPE**

Container	20' GP	40' GP
Pieces per pallet	27	27
Pcs per Container	270	594
Pallets Per Container	10	22

#### **ELECTRICAL SPECIFICATIONS**



\*Note: The above data were obtained under standard test conditions (STC): solar radiation of 1000 W/m<sup>2</sup>, air mass of 1.5(AM) and cell temperature of 25°C. Measurement for all panels its uncertainty is 6%. The actual data will be subject to the contracts concluded. The technical values contained in this document are for informational purposes only and are not part of the contracts. Technical specifications notified in advance

#### **PHYSICAL SPECIFICATIONS**

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# We Are In The World



Farm Power Mobile Solar Power Plant has no other precedent in the world. Our international patent application attracted the attention of the Food Organization of the United Nations (FAO) and the Farm Power Mobile Solar Power Plant was published in the world press, especially in America and France, with the title of "Turkey Produced the Antidote to Hunger".



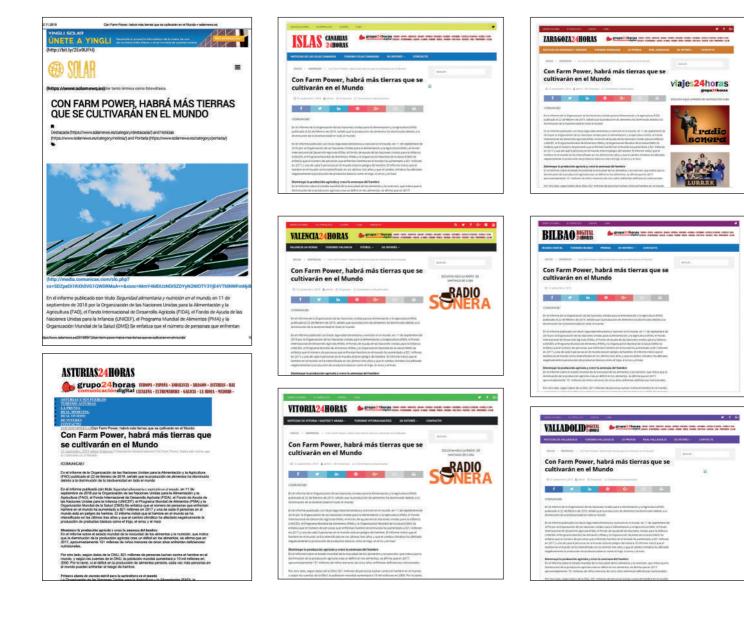
A big support from Turkey to the world's agriculture; there will not be any uncultivated land



According to the United Nations Food and Agriculture Organization's (FAO) report on February 22, 2019; It has been highlighted that the decline in food production due to a decrease in biodiversity worldwide.

UN Food and Agriculture Organization (FAO), International Agricultural Development Fund (IFAD), UN Children's Ald Fund (UNICEF), World Food Program (WFP) and World Health Organization (WHO), publicly announced on September 11, 2018 on Food Selety and Nutrition Status in the World Report that increasing the number of people facing hunger in 2017 has been emphasized that it has reached 821 million and one out of every 9 people in the world is in danger of hunger.

The report stated that the hunger in the world has climbed in the last 3 years and that climate changes have a negative impact on the production of basic products such as wheat, rice and corn.



## Referances

#### FARM POWER MOBILE SOLAR POWER PLANT

A total of 110 Farm Power Mobile Solar Power Plants have been installed and 100 of these plants have been financed by the United Nations Agriculture and Food Organization (FAO) within the scope of the Göksu Taşeli Basin Development Project. Some of our farmers with whom we have installed FarmPower Solar Tracking System;

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LÜTFÜ YURTMAN	KONYA/EREĞLİ
SALİH ER	ÇUMRA/BÜYÜKAŞLAMA
ABDURRAHMAN ARPA	ÇUMRA/BÜYÜKAŞLAMA
SEYFETTİN UYANIK	TAŞELİ/AHIRLI
MUSTAFA YAŞAR	TAŞELİ/GÜNEYSINIR
ALİ KARAARSLAN	TAŞELİ/HADİM



#### TRACKING SOLAR MONITORING SOLAR POWER PLANT

A total of 276 Tracking Solar Monitoring Solar Power Plant Projects have been implemented. Some of our farmers with whom we have installed a tracking solar tracking system;

ALİ YÖNET	ÇUMRA/APA
, er roner	ý or na yr a re
MUSTAFA CİCEKLİ	ÇUMRA/DİNLENDİK
FERHAT ER	ÇUMRA/BÜYÜKAŞLAMA
DURAN BULUT	ÇUMRA/BÜYÜKAŞLAMA
YAHYA KOÇAKER	KARAPINAR/SAZLIPINAR
RAMAZAN KOÇAKER	KARAPINAR/SAZLIPINAR













We are honored to implement more than 600 solar power plant projects on this path that we set out to produce value and contribute to the country's economy.

TAHİR DOĞANAY	KARAPINAR/SAZLIPINAR
ŞÜKRÜ AKDOĞAN	KARAMAN /BURUNOBA
ABDURRAHMAN ARPA	ÇUMRA/BÜYÜKAŞLAMA
KASIM ASMA	
KASIM ASMA	ÇUMRA /BÜYÜKAŞLAMA
CELALETTIN OT	KONYA/CİHANBEYLİ
HAYRİ POLAT	KARAMAN/SUDURAĞI
	NARAMAN/SUDURAU



#### STATIONARY SOLAR POWER PLANT

A total of 234 Fixed Solar Power Plant Projects were implemented. Some of Our Farmers Who Have Installed Fixed Solar Power Plants;

MEHMET ALİ BULUT	AKSARAY
MAHMUT DEMİREL	AKSARAY
RAMAZAN TÜRKMEN	AKSARAY
INALIAZAR FORMULER	
HASAN DOĞAN	AKSARAY
HASAN DOĞAN	AKSARAY
HASAN DOĞAN	AKSARAY
HASAN DOĞAN	AKSARAY
HASAN DOĞAN	AKSARAY
HASAN DOĞAN	AKSARAY
HASAN DOĞAN	AKSARAY
MAHMUT KÜRKÇÜ	AKSARAY
MAHMUT KÜRKÇÜ	AKSARAY
MAHMUT KÜRKÇÜ	AKSARAY
MAHMUT KÜRKÇÜ	AKSARAY
MAHMUT KÜRKÇÜ	AKSARAY



### 'Listen to Us From Our Happy Farmers''

CEMAL ÇETİNKAYA	ISPARTA/GELENDOST
İLMEN SULAMA K.	HÜYÜK/İLMEN KASABASI
DURAN ARSLAN	ÇUMRA/AVDUL
KÖKEZ MUHTARLIĞI	AKSARAY
HASANCALISKAN	
HASAN ÇALIŞKAN	KONYA/HADİM
HASAN ÇALIŞKAN	KONYA/HADİM
HASAN ÇALIŞKAN	KONYA/HADİM
HASAN ÇALIŞKAN	KONYA/HADİM
HASAN ÇALIŞKAN	KONYA/HADİM
HASAN ÇALIŞKAN	KONYA/HADİM
HASAN ÇALIŞKAN BAŞARAN KÖYÜ M.	KONYA/HADİM AKSARAY





# NO FRIEND OTHER THAN **doğa**





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