

ange solarbox

FOS  
SIL  
FUEL-FREE  
HEAT &  
ENERGY  
SYSTEMS

HEATING AND VENTILATION SYSTEM  
WITH SOLAR HEAT PUMP

# ENGE SOLAR HEAT PUMP



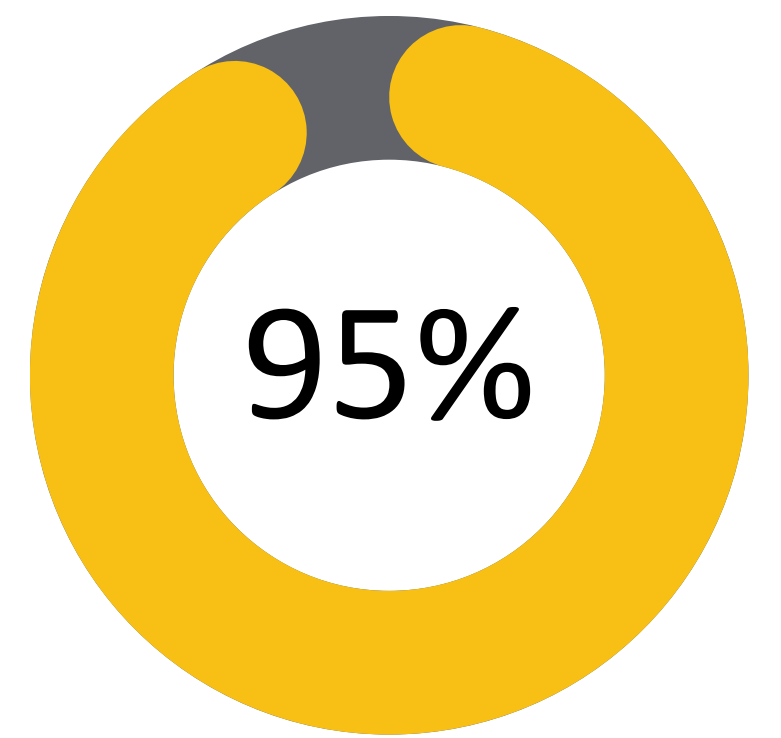
**zero fuel,  
zero waste,  
zero carbon.**

- The Enge Solar Heat Pump is a heating and ventilation system that integrates solar hot air collectors and a solar heat recovery unit.
- On sunny days, fossil fuel consumption is minimized thanks to the solar hot air collectors. When there is no sun, the solar heat recovery unit is activated to save on fossil fuels.
- Enge Solar Heat Pump systems operate with up to 95% efficiency in heating applications, depending on the usage area and location.
- Fresh air and mixed air ratios can be adjusted as needed.
- Hot exhaust air is recovered by the system to achieve energy savings.
- The system provides homogeneous ventilation, ensuring that the entire area is heated and ventilated evenly.
- The World Health Organization (WHO) has set a daily limit of 1000 ppm for CO2 in indoor air. Being in an environment with CO2 levels above 1000 ppm can lead to health problems. Our systems significantly reduce the CO2 ratio by providing effective ventilation, creating a healthier indoor air environment.

## Enge Solar Heat Pump and Other Heat Pumps Comparison Table

Description	Enge Solar Heat Pump	Standard Heat Pump
Heating Capacity	2-90 kWh	6-75 kWh
Space Heating	15-70 °C	15-25 °C
Energy Savings	95%	40%
Solar Energy Usage	Yes	N/A
Energy Source	Sun + Air	Air Water Ground
Energy Consumption	Low	Medium
Space Ventilation	Yes	N/A
Space Cooling	Passive Cooling (Night)	Yes
Dehumidification of Ambient Air	Yes	N/A
Investment Cost	Low	High
Service Requirement	N/A	Yes
Maintenance Cost	N/A	Yes
Fluid Circulating in the System (Gas, Water, etc.)	N/A	Yes
Gas Leak Risk	N/A	Yes
Fire and Explosion Risk	N/A	Yes
Fossil Fuel (Electricity)	Low	High
Carbon Emission	N/A	Yes
Harm to Nature	N/A	Yes
Indoor Air Quality	Yes	N/A

## Total System Efficiency



# APPLICATION METHODS OF THE ENGE SOLAR HEAT PUMP SYSTEM

## 1. Field Type Installation:

- Field type installation is ideal for large and open areas. In this type of installation, solar hot air collectors and solar heat recovery units are fixed to the ground, ensuring efficient use of the area. It is particularly preferred for large-scale commercial buildings, industrial facilities, and houses with large gardens. Field type systems provide maximum energy efficiency on sunny days and offer energy savings by heating and ventilating a large area homogeneously.

## 2. Wall Type Installation:

- Wall type installation is suitable for structures with more limited space. This installation type saves space by being integrated into the building walls and offers an aesthetic solution. Wall type systems effectively perform both heating and ventilation functions. They improve indoor air quality by reducing CO2 levels and protect the health of users.

## 3. Roof Type Installation:

- Roof type installation involves systems mounted on the roof of the structure and is especially preferred in urban buildings and buildings with limited outdoor space. This type of installation is an excellent solution for collecting solar energy from the roof. While high efficiency is achieved through solar hot air collectors on sunny days, the solar heat recovery unit is activated when there is no sun, providing energy savings. Roof type systems significantly reduce the CO2 ratio and provide clean air by heating the air inside the building homogeneously.

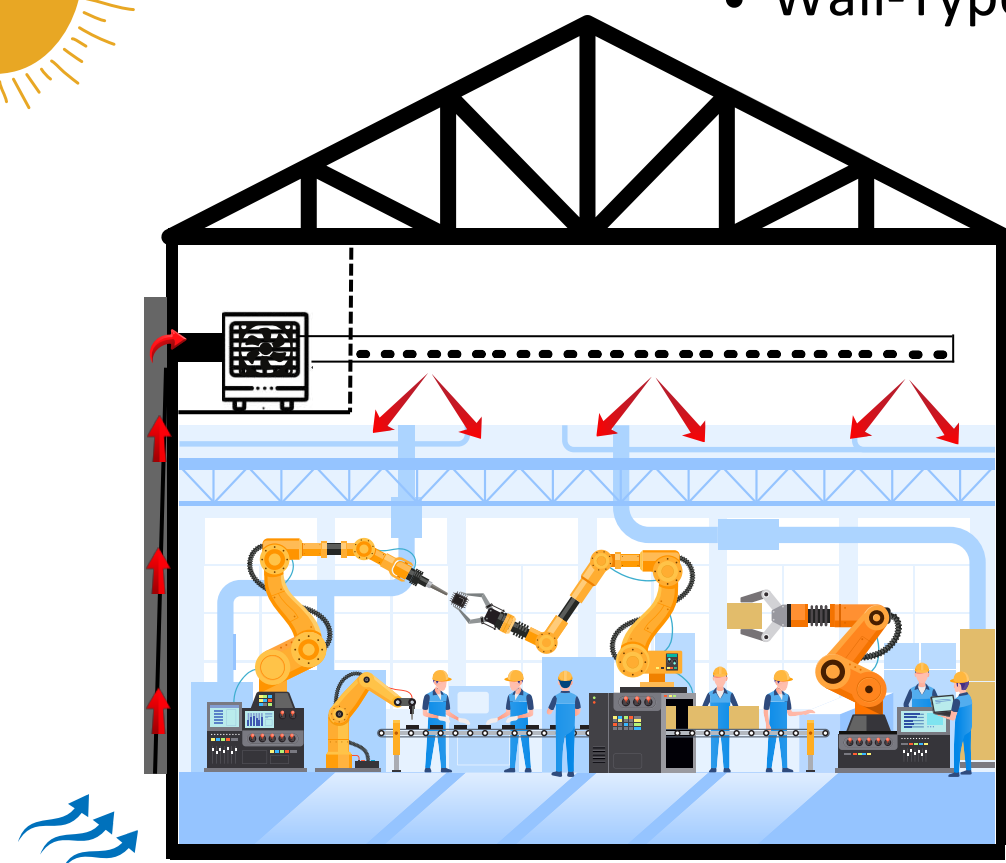
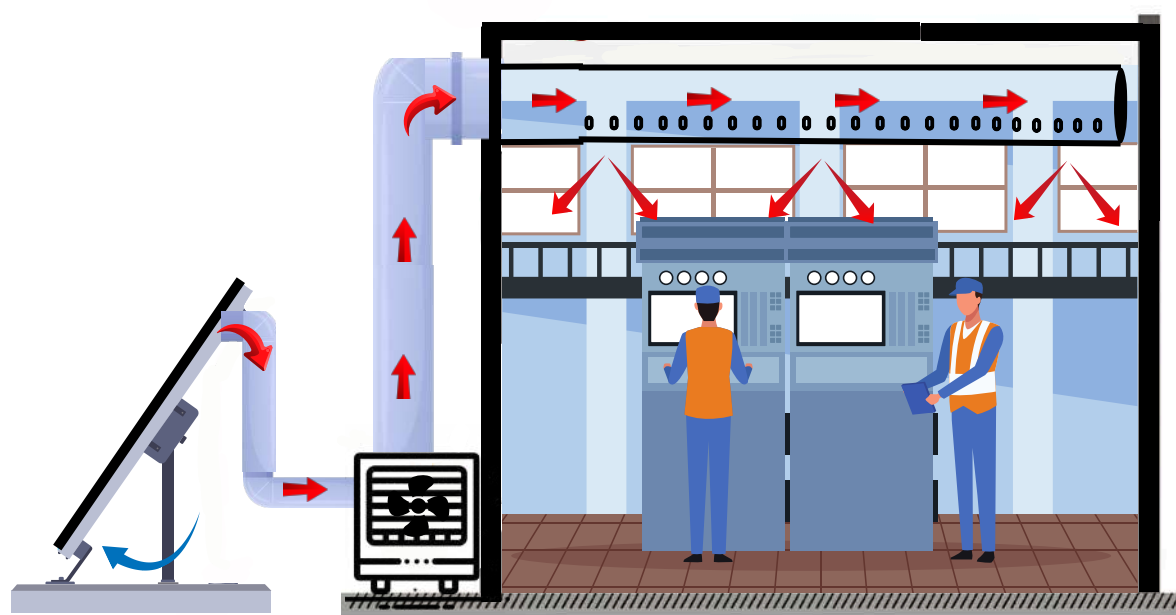
All three installation types operate with up to 95% efficiency depending on the characteristics of the usage area and minimize fossil fuel consumption by providing energy savings.



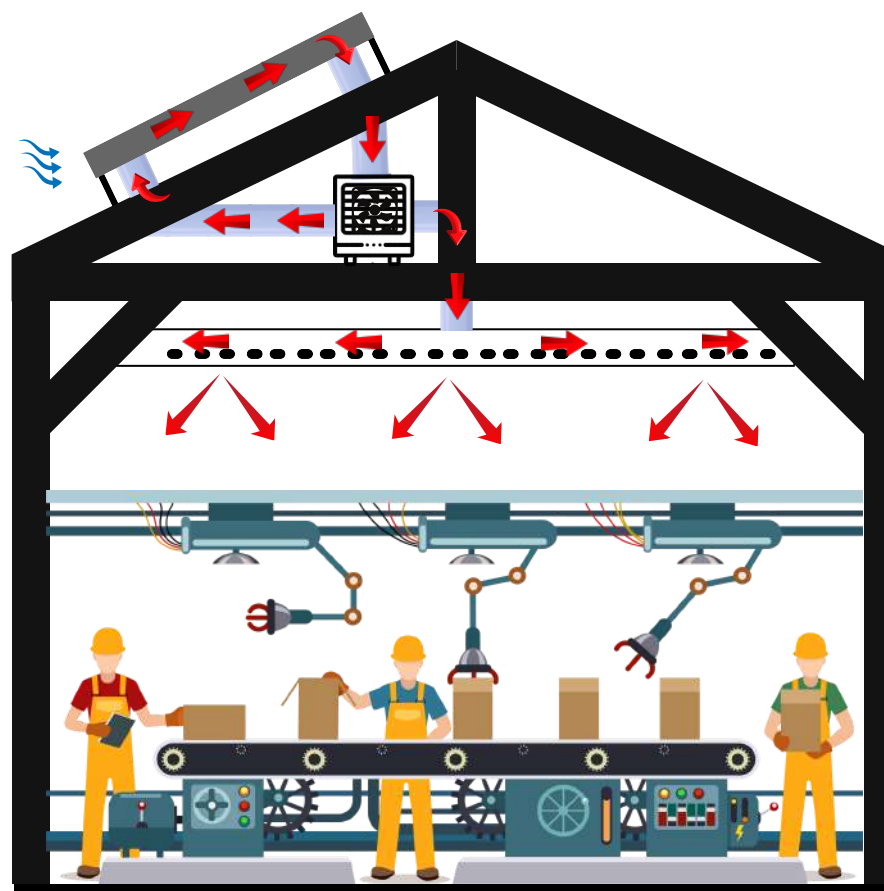
• Field-Type Installation



• Wall-Type Installation



• Roof-Type Installation



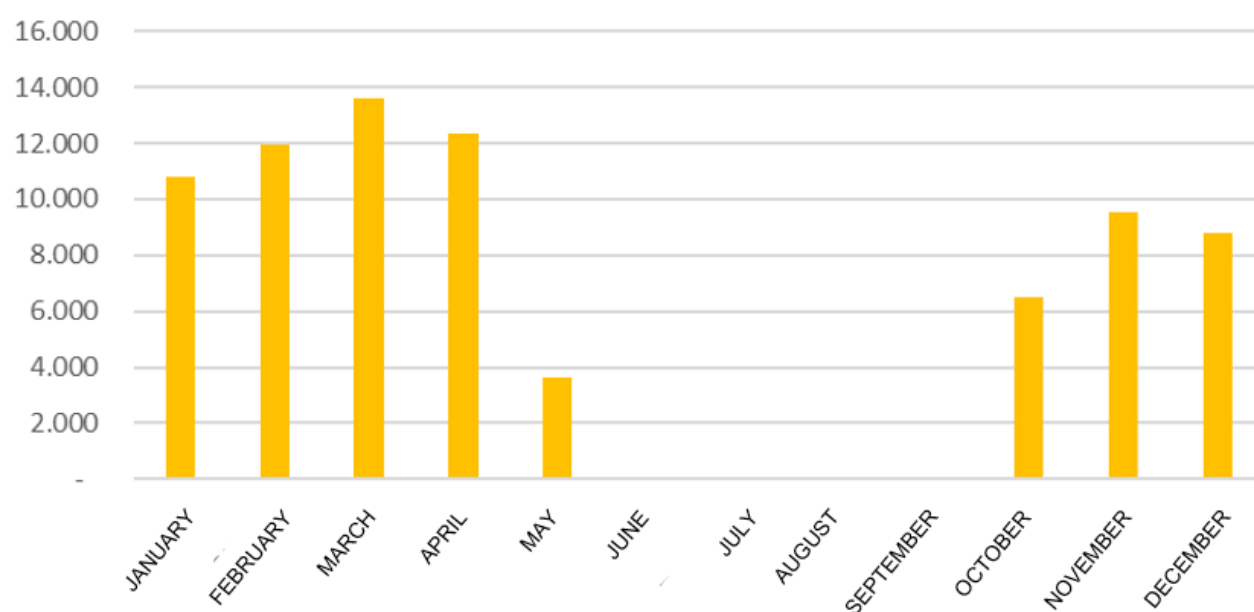
# ENERGY EFFICIENCY OF ENGE SOLAR HEAT PUMP

## SOLAR HEAT PUMP SYSTEM EFFICIENCY

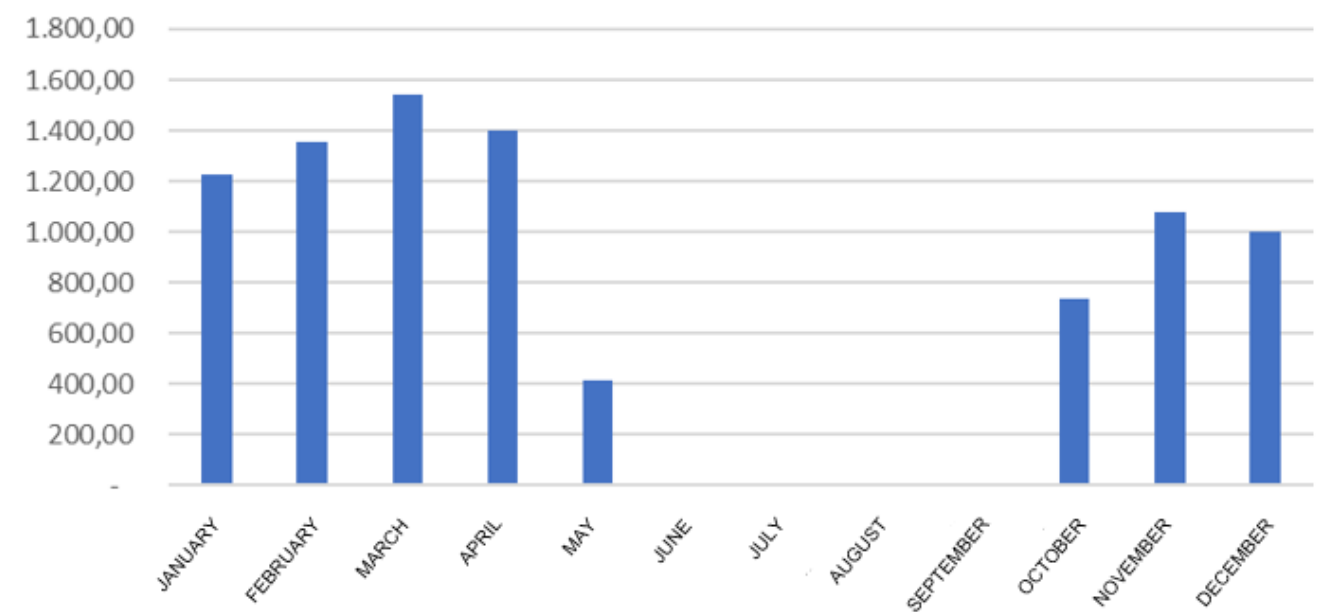
The table below has been prepared based on a factory area of 2,500 m<sup>2</sup> and a height of 10 m. The calculations were based on the general climate data for Türkiye. The operating temperature was assumed to be 20°C.

ACROSS TÜRKİYE	Total System Savings (kWh/month)	Saved Natural Gas (m <sup>3</sup> /Year)	Saved Lignite Coal (kg/Year)	Prevented Carbon Emission (Ton/Year)	Trees Reintroduced into the Natural Environment (Unit/Year)
JANUARY	83.989,26	9.516,57	14.446,15	19,22	46,65
FEBRUARY	81.055,83	9.184,19	13.941,60	18,55	45,02
MARCH	85.401,23	9.676,56	14.689,01	19,55	47,43
APRIL	71.072,79	8.053,04	12.224,52	16,27	39,48
MAY	27.659,93	3.134,06	4.757,51	6,33	15,36
JUNE	-	-	-	-	-
JULY	-	-	-	-	-
AUGUST	-	-	-	-	-
SEPTEMBER	-	-	-	-	-
OCTOBER	41.966,79	4.755,13	7.218,29	9,61	23,31
NOVEMBER	68.783,46	7.793,65	11.830,76	15,74	38,20
DECEMBER	74.840,24	8.479,92	12.872,52	17,13	41,57
TOTAL	534.769,54	60.593,12	91.980,36	122,40	297,03

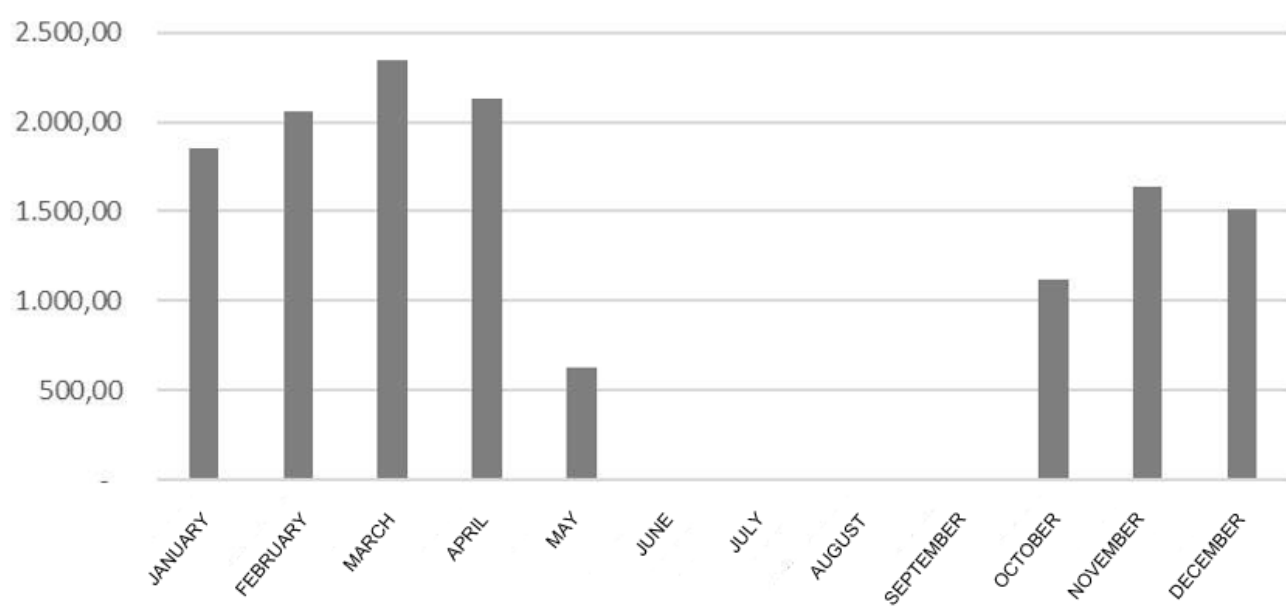
Total System Savings (kWh/month)



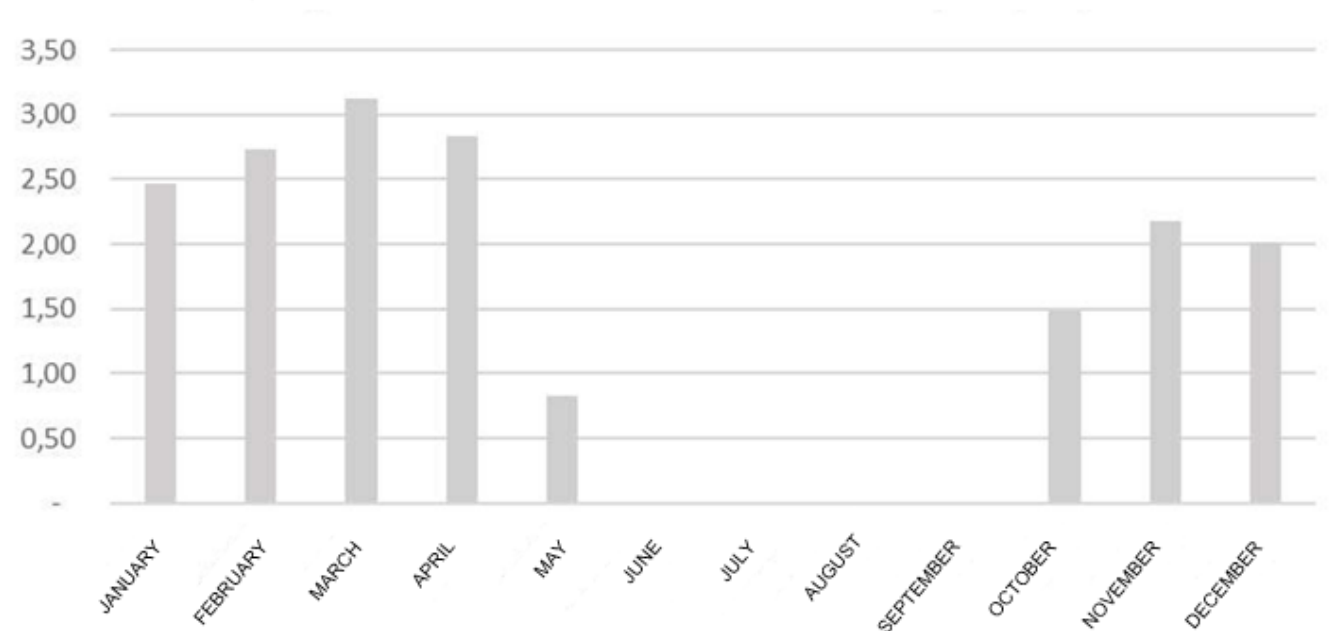
Saved Natural Gas (m<sup>3</sup>/Year)



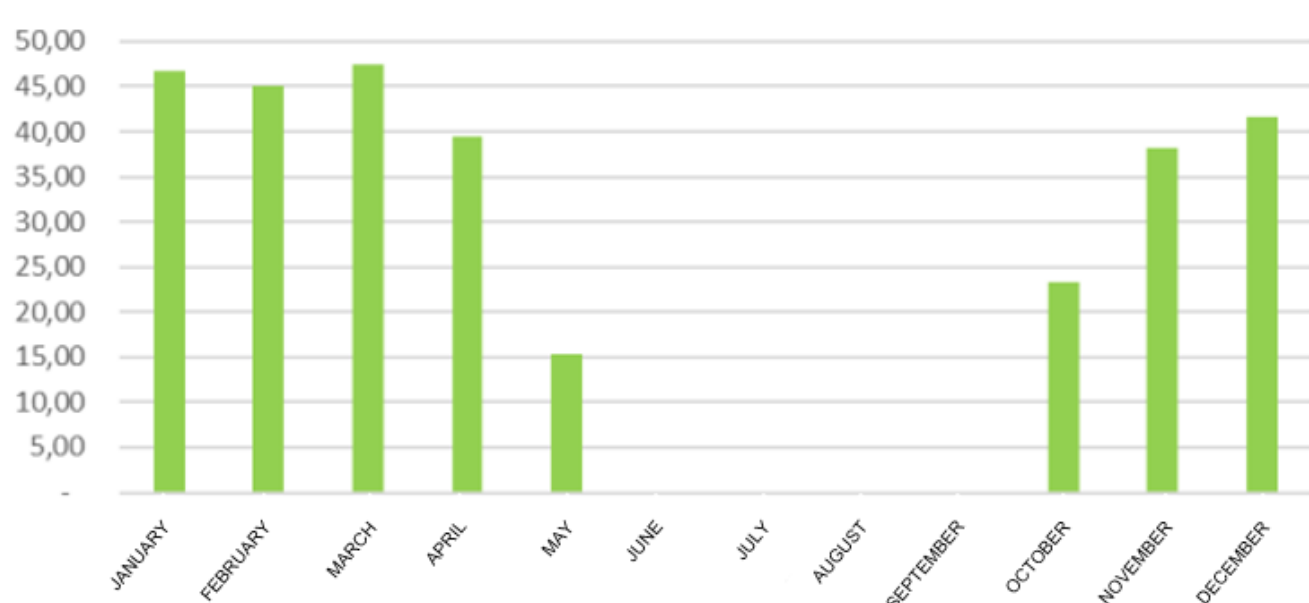
Saved Lignite Coal (Kg/Year)






Prevented Carbon Emission (Ton/Year)



Trees Reintroduced into the Natural Environment(Unit/Year)



The table below has been prepared based on the reference to a factory area of 2,500 m<sup>2</sup> and a height of 10 m. The calculations were based on the general climate data for Türkiye.

 Total System Savings	<b>€21.207/Year</b>
 Trees Saved Per Year	<b>297 Units</b>
 Prevented CO <sub>2</sub> Emissions Per Year	<b>122 Tons</b>

# USAGE AREAS OF ENGE SOLAR HEAT PUMP

• Automotive



• Machine



• Drying Food



• Residential



• Greenhouse



• Paint Shop



• Curing



• Workshop



• Ceramics



• Showroom



• Pumice



• Tiny House



• Hospital



• Wood Drying



• Mining



• Food Processing



• Textile



• Paper



• Chemistry



• Hangar



• Leather Drying



• Construction



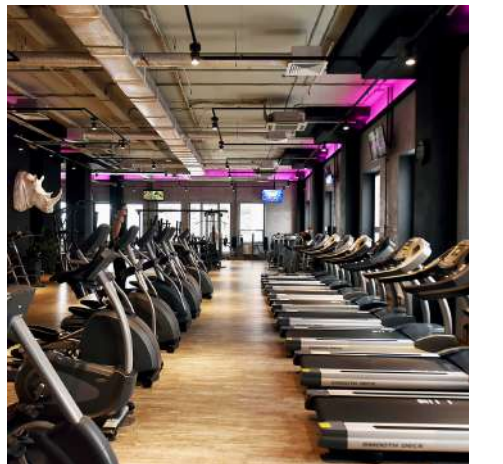
• Brick



• Hotel



• Gym



and wherever you need hot air.



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F O S  
S I L  
FUEL-FREE  
HEAT &  
ENERGY  
SYSTEMS

ENGE ENERJİ ISITMA SOĞUTMA HAVALANDIRMA  
SOLAR TEKNOLOJİLERİ SAN. TİC. LTD. ŞTİ.

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