



SOURCE OF  
CLEAN POWER

Prepared By: **CİHAN VATANSEVER**

# RePG Energy

**Renewable Energy Power Generation  
Using Relative Humidity And Heat Differences**

[Electricity - Heating – Cooling-AWG](#)

**Smart Energy  
Production & Consuming**

## **Introduction**

## **Product**

## **How it Works**

## **Applications**

## RePG Technology is a

- **%100 new generation renewable energy technology** that can use ***Latent Heat*** and very '**Low Waste Heat**' to produce electricity
- mobile, very easy relocatable in a little space at home, office, factories, cars, drones, yatchs, HVAC & datacenters
- can be connected to different waste heat sources,
- produce water,
- and emits zero carbon

# Product – Energy Source, Specifications & Applications



RePG®

## Sources of Energy



Latent  
Heat



Solar  
Thermal



Waste  
Heat



Geothermal

## Specifications



Remote Monitoring &  
Management System



IoT based IOS –  
Android Mobil App  
control system



Heat Pump &  
HVAC basic  
functions



ON-GRID / OFF-GRID  
Applications



Zero CO2 Emission, Zero  
GWP (Global Warming  
Potential), Green Design

## Applications

### Home/Office

- Renewable Energy Power Generator
- Water Produce & Treatment Applications
- Hidden Heat, Waste heat and Sun heated

### Industrial

- Energy-Intensive Industries
- Low Waste Heat Industries
- Air Using Renewable Energy
- Latent heat applications

## Patent



### National Patents

### International Patents

**TUBITAK BIGG**

**Istanbul Technical University Project**



**RePG Aqua:** Production of devices that utilize waste heat from residential buildings, hotels, commercial establishments, and factories to produce water (potable, utility, and purified).

**RePG Industry:** Production of devices that generate energy between 25 kW and 1 MW by utilizing air or varying levels of waste heat in industrial environments.

**RePG Buildings:** Production of devices that generate energy between 0.1 kW and 25 kW by utilizing heat in open environments such as homes, hotels, and offices (only air & solar-thermal).

**RePG Vehicle:** Production of devices that generate distance-extending energy between 0.1 kW and 25 kW by utilizing air and waste heat in electric vehicles.

**RePG HVAC:** The production of devices such as heating, cooling, ventilation, and air conditioning systems using RePG technology.

**RePG Data Center:** Production of devices that generate energy and provide cooling by utilizing air, waste heat, and solar thermal energy in stationary or mobile data centers or rack cabinets.

**A New Renewable Energy**

**Patented 100% Domestic Technology**

**Energy and Water Production from Air**

**'Wireless Energy Transfer' and 'Pipeless Water Transfer'**

**New Products and Applications**

**Strong R&D Experience**

**Product Development**

**Energy Farmer**

**Zero Waste Heat**



**IP:**  
25 Registered Patents  
18 Registered Trademarks  
4 Proprietary Industrial Design

**Tubitak/ Kosgeb Projects:**  
4 Completed Projects  
1 Ongoing Project

**R&D Projects:**  
20 Completed Projects  
6 Ongoing Project  
5 Planned Projects

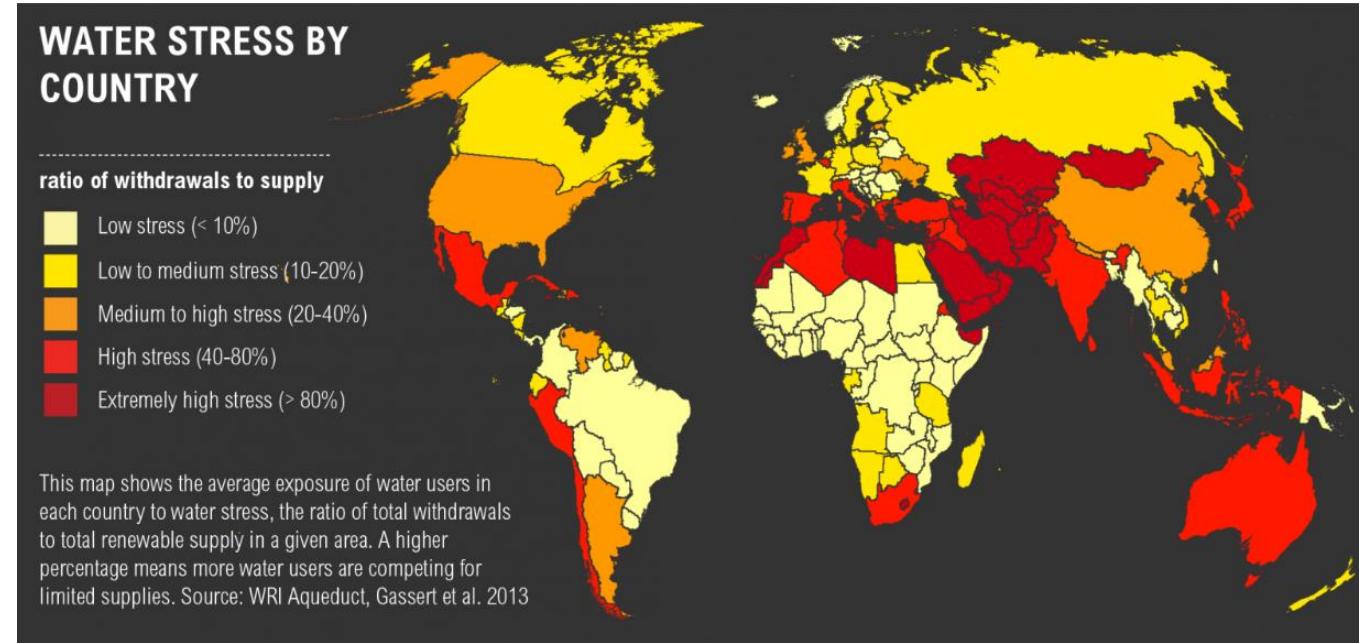
**Scientific Studies:**  
6 Papers  
2 Articles

**Events:**  
8 Congress  
9 Fairs

**Certificates:**  
5 CE Certification  
6 Quality Certificates  
2 Domestic Goods Certificate

**Awards:**  
WIPO Global Awards 2023 Finalists  
7 Project Awards  
5 Patent Awards  
4 Achievement Awards

Climate change cause difficulties to access clean water. Because of this difficulties all around the world AWG(Atmospheric Water Generation) products getting more popular. The growth expectations of this market are very high, which encourages manufacturers to invest in this area



In the last decade, the effect of global warming has caused a dramatic increase in the number of manufacturers and research for AWG products.



Category	Specification		Value Imperial
		Metric	
Dimensions	Length	270mm	10.6"
	Width	250mm	9.8"
	Height	1000mm	39.3"
	Weight (full of water)	30 kg	66.12 pounds
	Weight (no water)	11 kg	24.24 pounds
	Internal Tank	19 L	5 Gallon
Operation, storage and transportation climate	Operation	15°C - 40°C	59°F -104°F
		≥ 15%	
	Storage and transportation	- 10°C to 75°C	14°F-167°F
Air Filters	Filtration method	Single hydro- oleophobic barrier air filtration	
Water production and purification	Ph	6.5-8.5	
	Filtration Method	Removing heavy metals, particles filtration , biological treatment, organic compounds( VOC ,SVOC) and mineralization by cutting edge technologies	
	Production Capacity Per Day	2.64 gallons (26.6°C /60%RH)	10 L (26.6°C /60%RH)
	Refrigerant	3.96 gallons(Max)	15 L(Max)
Acoustic	Noise Levels	≤ 36 dBA	
Lifting and transportation platform	Transportation	Standard cargo	
	Lifting	Standard - Forklift	
Electricity	Nominal Operation Voltage	EU	1 Phase -3 Phase, 230/400 Vac ,50 Hz
		US	3 Phase, 120/208 Vac ,60 Hz
	Allowed Deviation on individual phases, Self Protected	Voltage ± 5% Frequency ± 1Hz	
	Power Consumption	Nominal	0.15 kW
		Max	Up to 0.36 kW
	Energy Efficiency (26.6 C°, 60%RH)	<b>350 Wh/L</b>	
	Circuit Breaker Current	Standard: IEC 60884- 2P+E 230/400 Vac: 1 x 16 A Slow	
		Standard: IEC 60884- 2P+E 120/208 Vac: 3 x 16A	
	Mains Power Connector	230/400 Vac :3 x 16A	
		An industry - approved electrical wire (to suit 110V/400V)is required to connect to the RePG Aqua connection box	

# AWG Products



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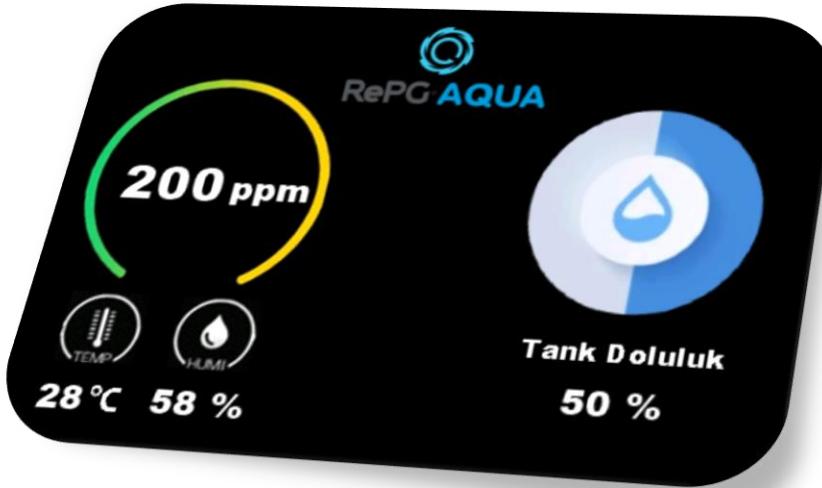


Residential Water Generation	Service Water Daily	Drinking Water Daily	Combined Daily
Service Water Production	25-400 L/Day	-	12.5-200 L/Day
Drinking Water Production	-	1-50 L/Day	0.5-25 L/Day

Semi Industrial Water Generation	Service Water Daily	Drinking Water Daily	Combined Daily
Service Water Production	100-1000 L/Day	-	50-500 L/Day
Drinking Water Production	-	25-400 L/Day	12.5-200 L/Day



Industrial Water Generation	Service Water Daily	Drinking Water Daily	Combined Daily
Service Water Production	1000-10000 L/Day	-	350-3500 L/Day
Drinking Water Production	-	100-1000 L/Day	35-350 L/Day



Air Quality Indicator

Drinking Water Tank Level Indicator

Air Temperature Indicator

Relative Humidity Indicator

Power Analyzer

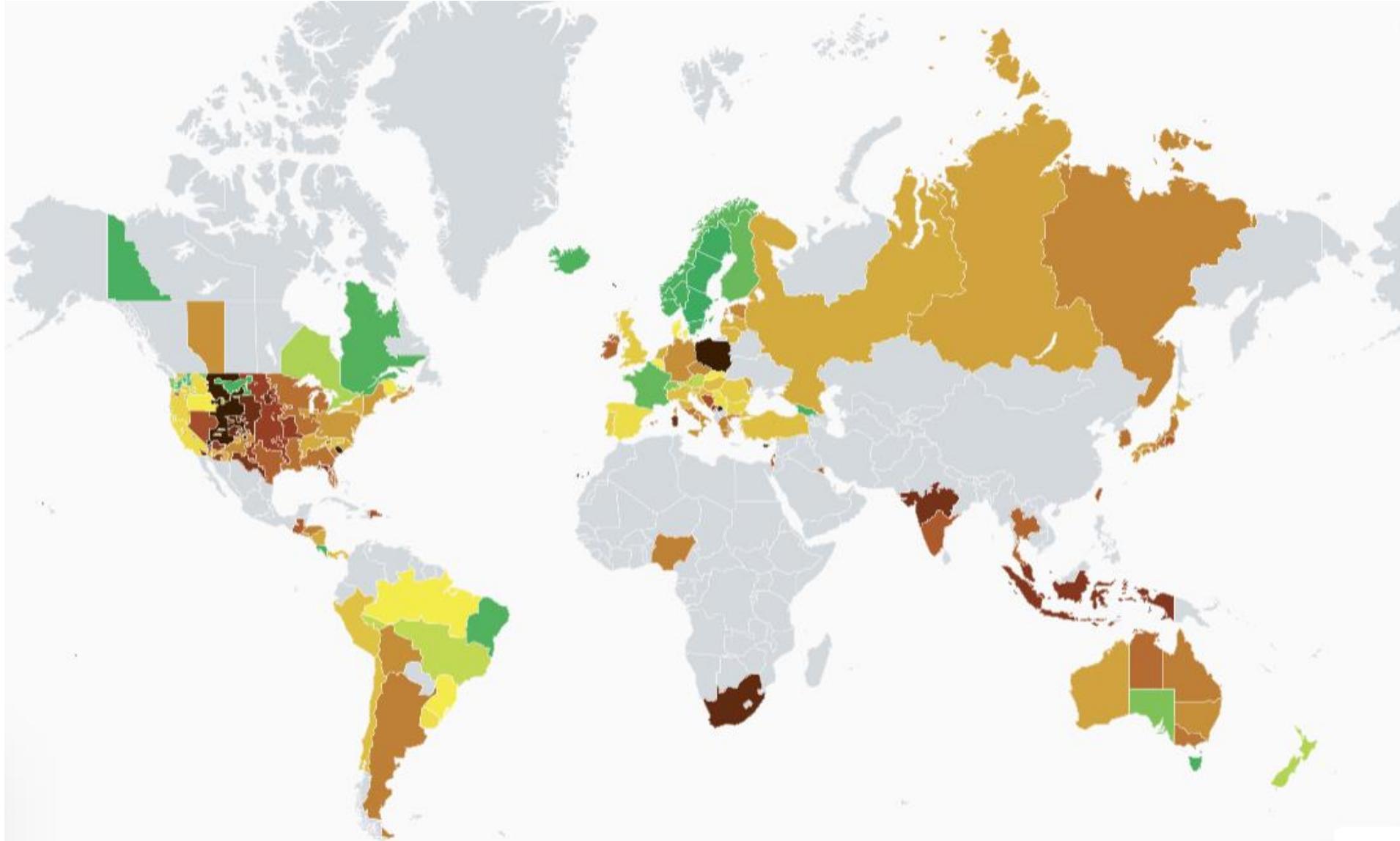
Filters Status Indicator



# Waste Heat and CO2 per kWh



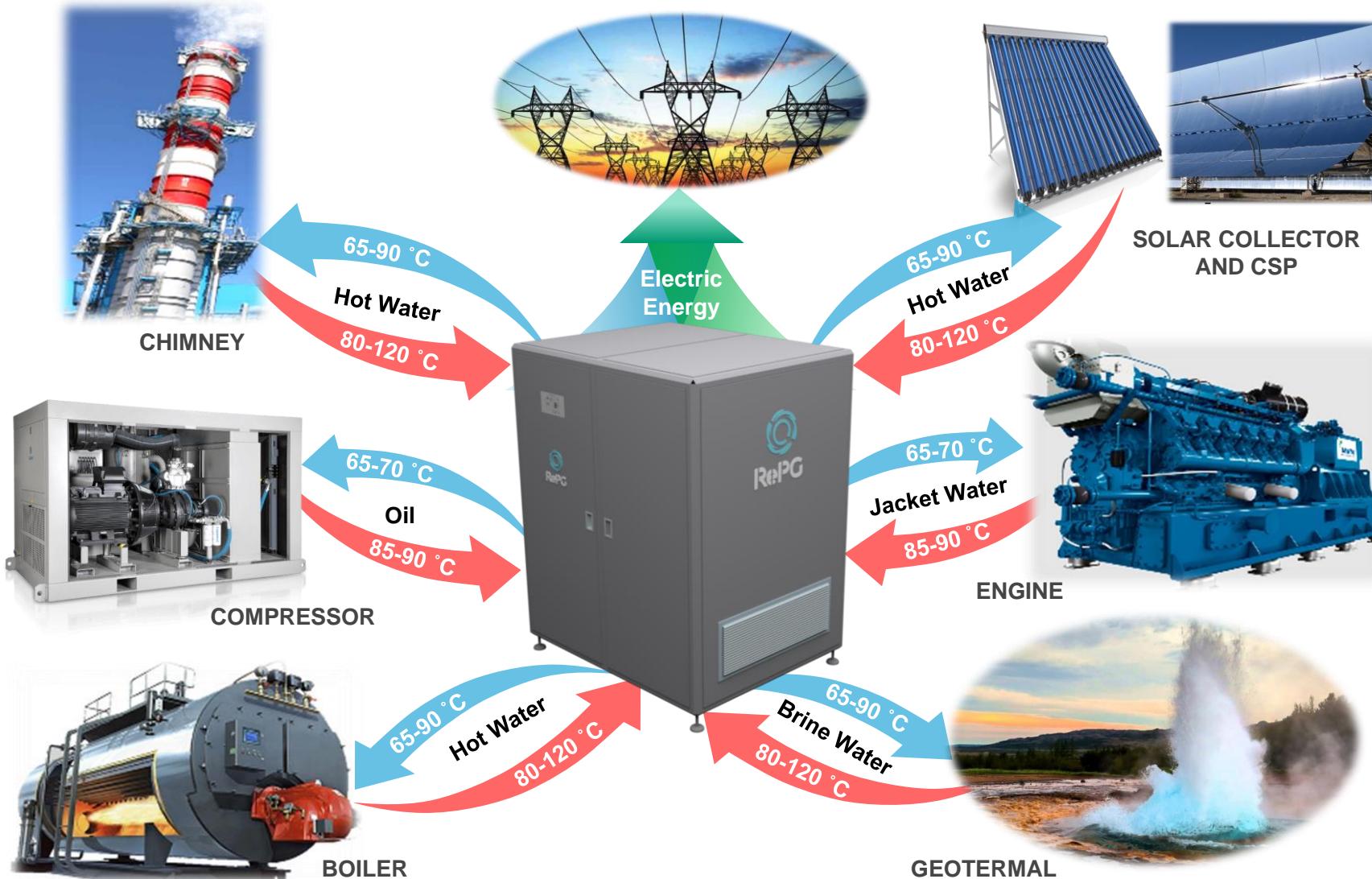
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# Industrial Products Application Areas



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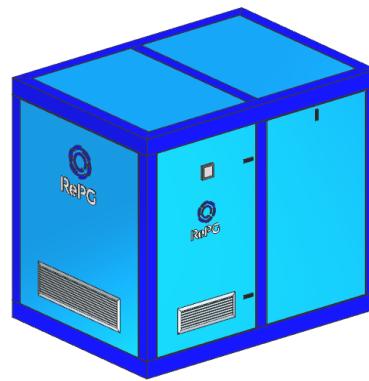


# Industrial Products



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- Renewable Energy Production Based on Relative Humidity and Temperature Change
- High-Efficiency Energy Generation from Low-Temperature Waste Heat
- Development of Hardware and Software Suitable for Renewable Energy Systems
- Development of IoT-based Mobile Applications
- 100% Domestic Turbine Production
- Range Extender Production
- Heating - Cooling - Air Conditioning Systems Production
- Relocatable design



# Industrial Products



RePG®



Energy Production Capacity	1-5 kWh	5-15 kWh	5-25 kWh
Heat Transfer Fluid	Water/Oil/Gas	Water/Oil/Gas	Water/Oil/Gas
Fluid Temperature	60-200 °C	60-200 °C	60-200 °C
Heat Transfer Fluid Connection	1" – Threaded or Flanged	2" – Threaded or Flanged	2" – Threaded or Flanged
Operating pressure	Max. 45 bar	Max. 45 bar	Max. 45 bar
Operating Frequency	50-60 Hz	50-60 Hz	50-60 Hz
Operating Voltage	400V AC	400V AC	400V AC
Phase Value	3	3	3
Size	850x850x1500 mm	1100x1450x1500 mm	1150x1650x1500 mm
Weight	250 kg	500 kg	750 kg

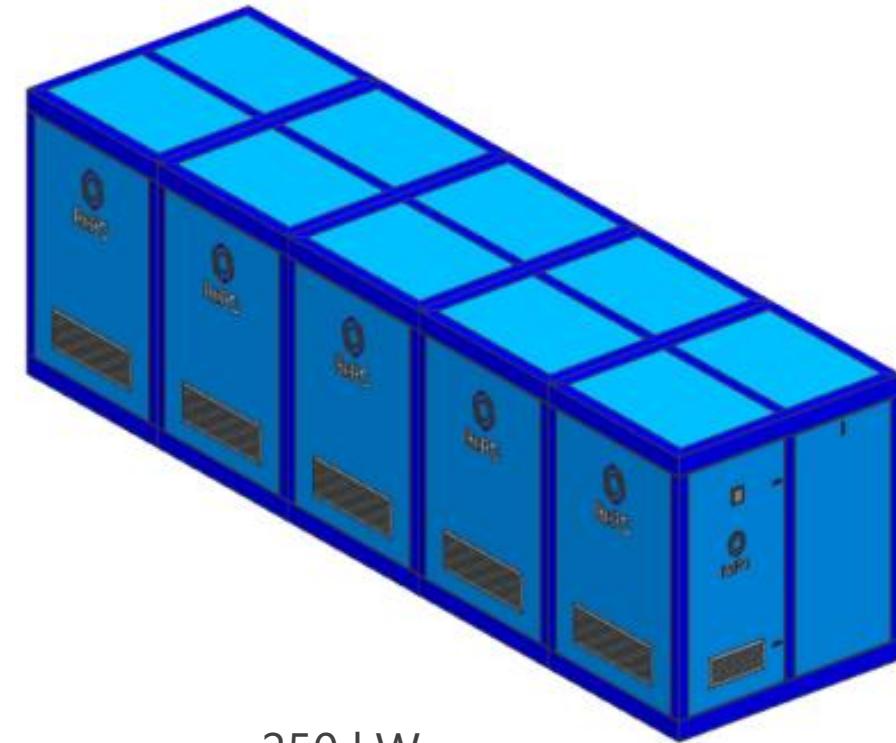
# Industrial Products



25 kW

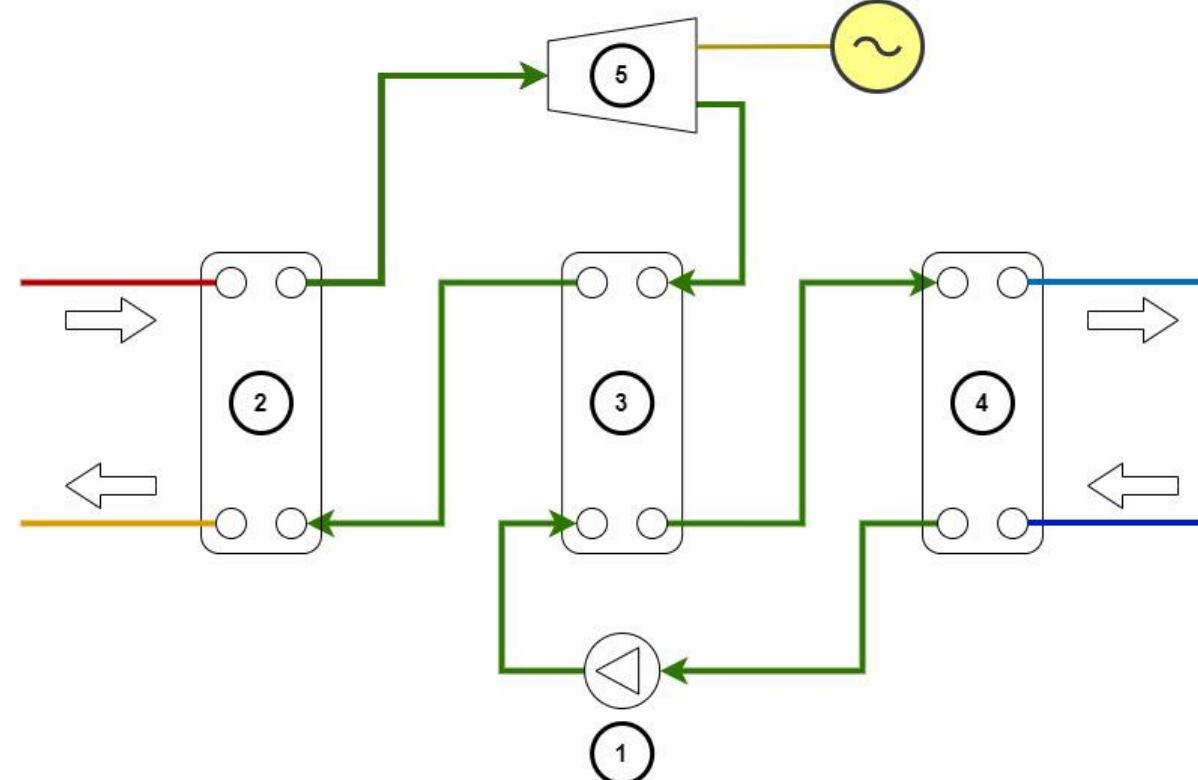


100 kW



250 kW

- **1) Pump:** It is used to pressurize the RePG fluid in the system.
- **2) Evaporator:** It is used for heat energy transfer from heat sources such as factory chimneys, geothermal resources, solar heating systems to RePG fluid.
- **3) Recuperator:** While increasing the overall efficiency of the system, it is used to provide heat transfer between the hot gas at the turbine exit and the cold fluid pressurized by the pump.
- **4) Condenser:** While providing the cooling of the gas at the turbine exit, it creates useful heat. This energy can be used in the water phase in heating systems.
- **5) Turbine:** It is used to generate electrical energy with high efficiency during the expansion of the RePG fluid.

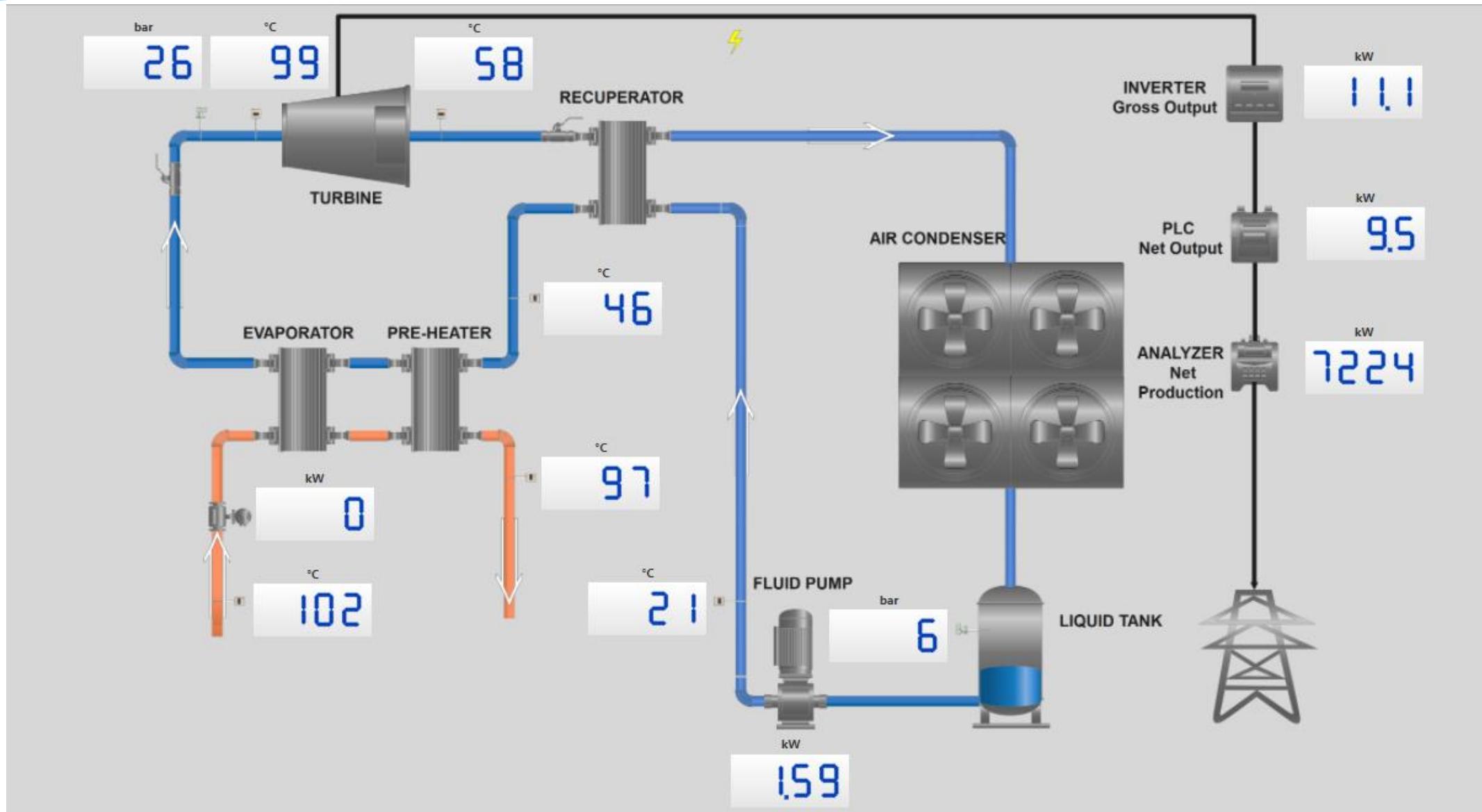


The RePG system evaporates the low-boiling fluid, which is pressurized with a pump, in the evaporator with the heat energy coming from the heat source. It provides electricity generation as a result of the pressurized fluid in the gas phase turning the turbine. The temperature of the fluid leaving the turbine is lowered in the recuperator to increase the overall cycle efficiency. Then, the fluid is liquefied by means of the condenser and transmitted to the pump suction. In this way, electricity is produced in a completely closed cycle without loss of fluid.

# Industrial Products



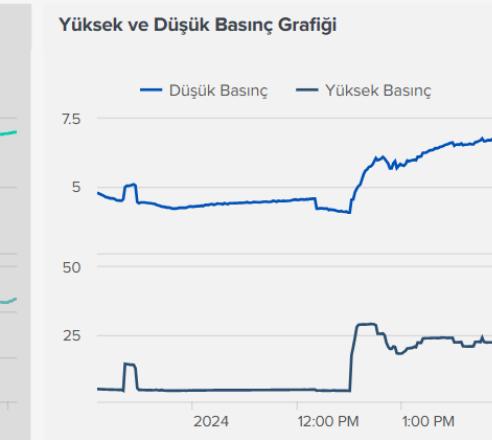
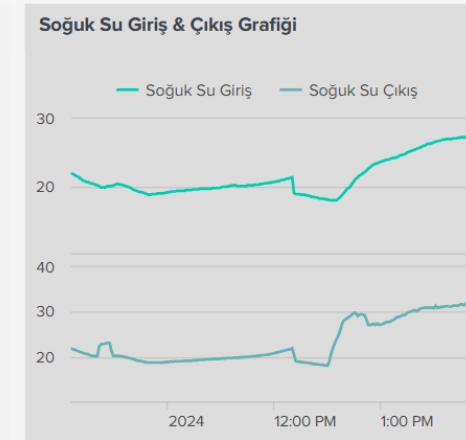
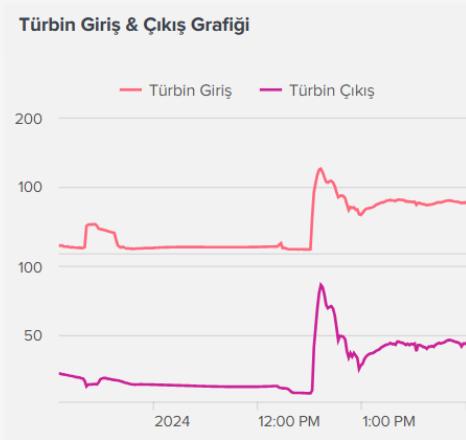
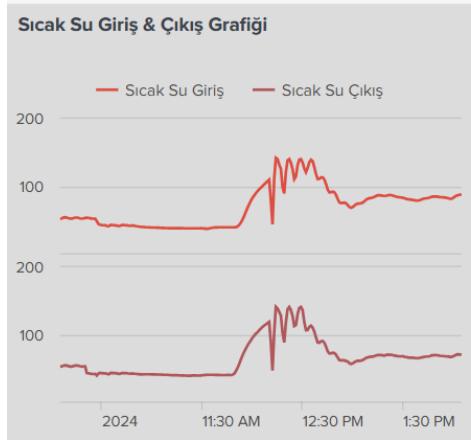
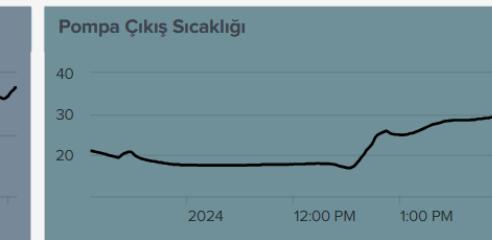
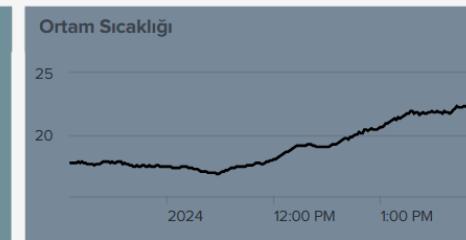
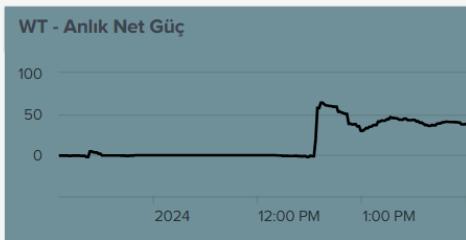
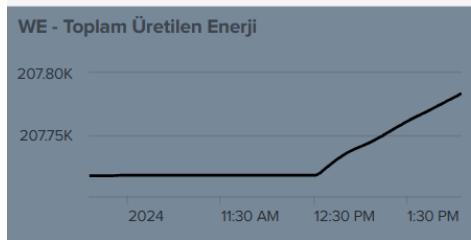
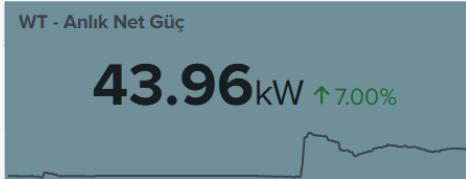
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# Industrial Products



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T1 - Sıcak Su Giriş

T2 - Sıcak Su Çıkış

T3 - Türbin Giriş

T4 - Türbin Çıkış

T6 - Soğuk Su Giriş

T7 - Soğuk Su Çıkış

P1 - Düşük Basınç

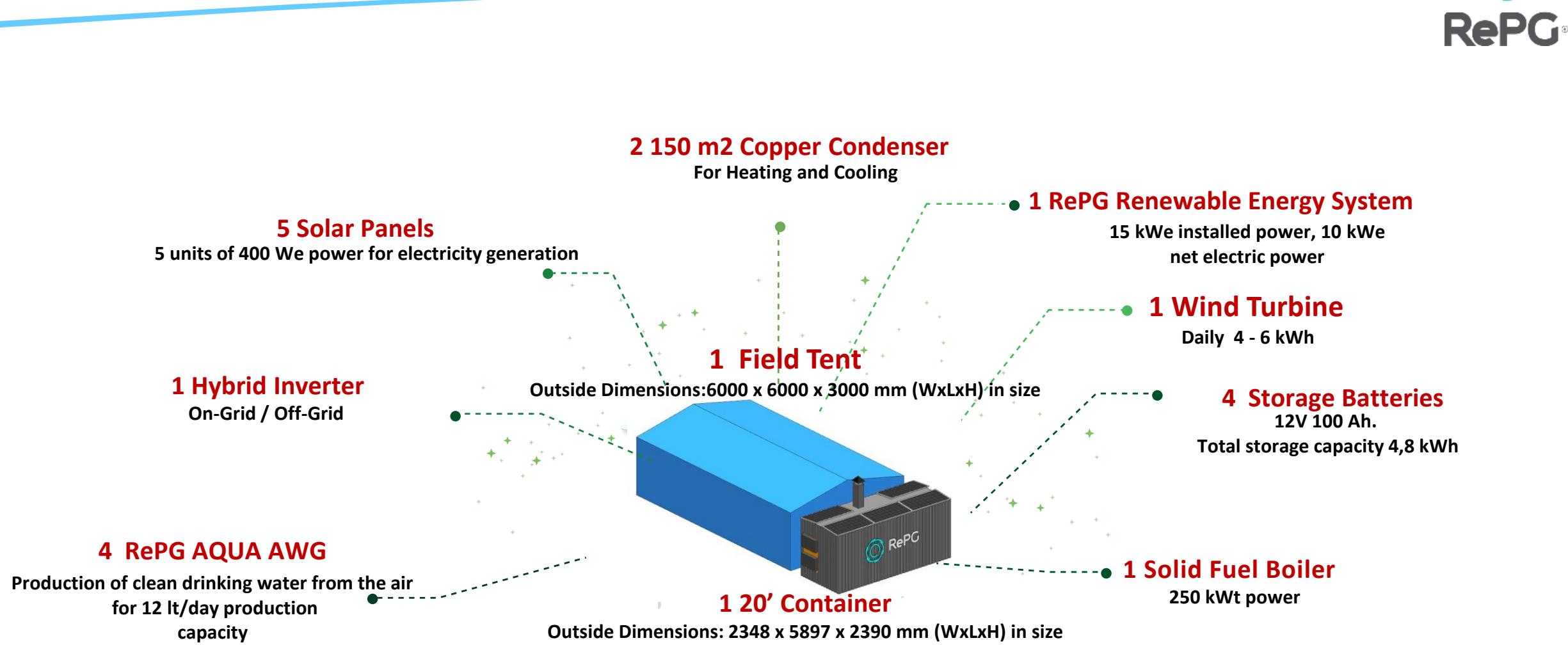
P2 - Yüksek Basınç

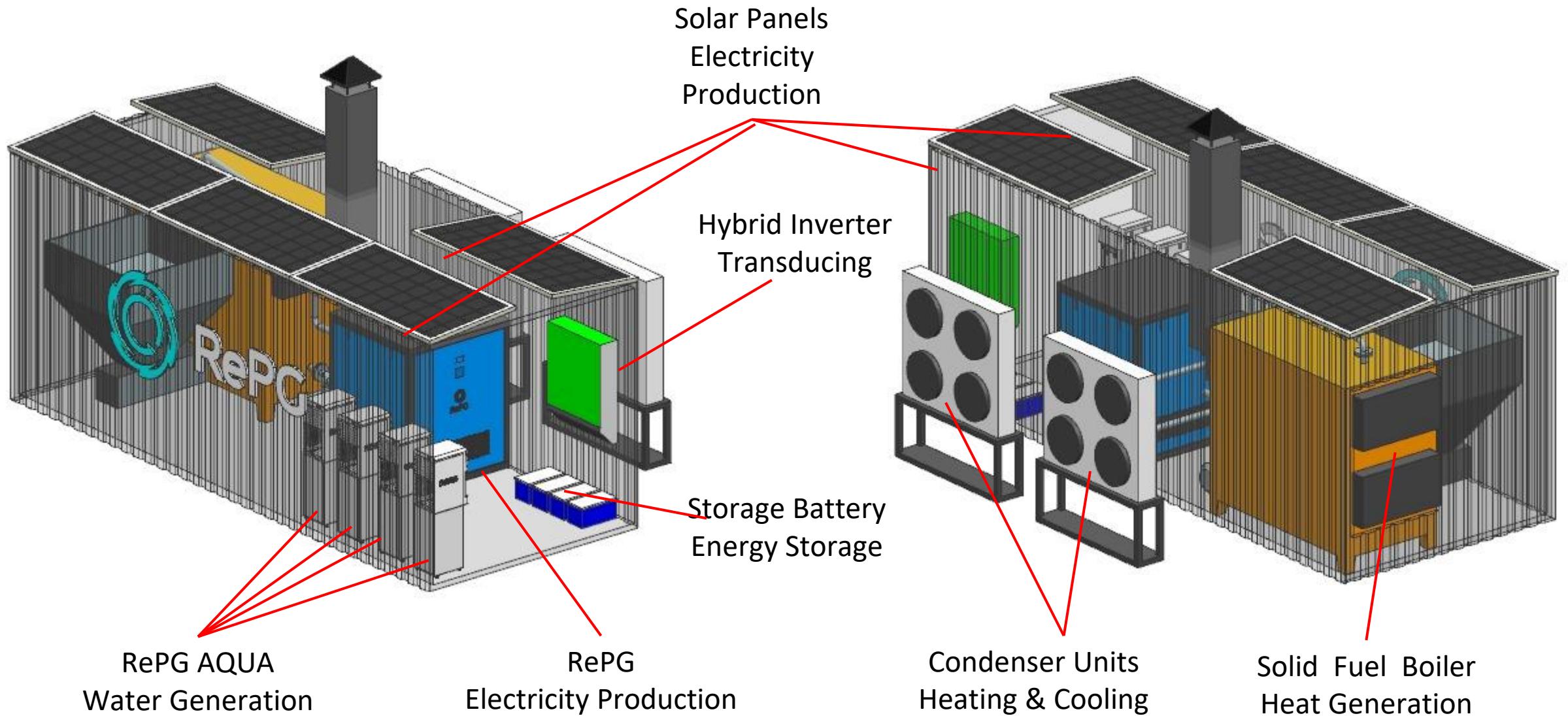
With the Splunk software, users can access all the information of their devices and get retrospective data.

# RePG Disaster Container



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# Solar UPS

Solar Panel with an integrated battery pack.



Onboard output 220V plug, 12V DC and 5V USB Type B



# Latent Heat Home Product

- ✓ RePG Systems can generate electricity using relative humidity and heat changes in ambient air.
- ✓ **Latent Heat Turbine Type: T0 ( Turbine Zero)**
- ✓ Zero CO2 Emission, Zero GWP (Global Warming Potential), Green Design
- ✓ Dimensions/Weight :L600 mm X H1200 mm X D600mm 40 kg @ 5 kWh/day
- ✓ ON-GRID / OFF-GRID Applications
- ✓ IoT based IOS – Android Mobil App control system
- ✓ **Remote Monitoring and Management System**



# Latent Heat Home Product

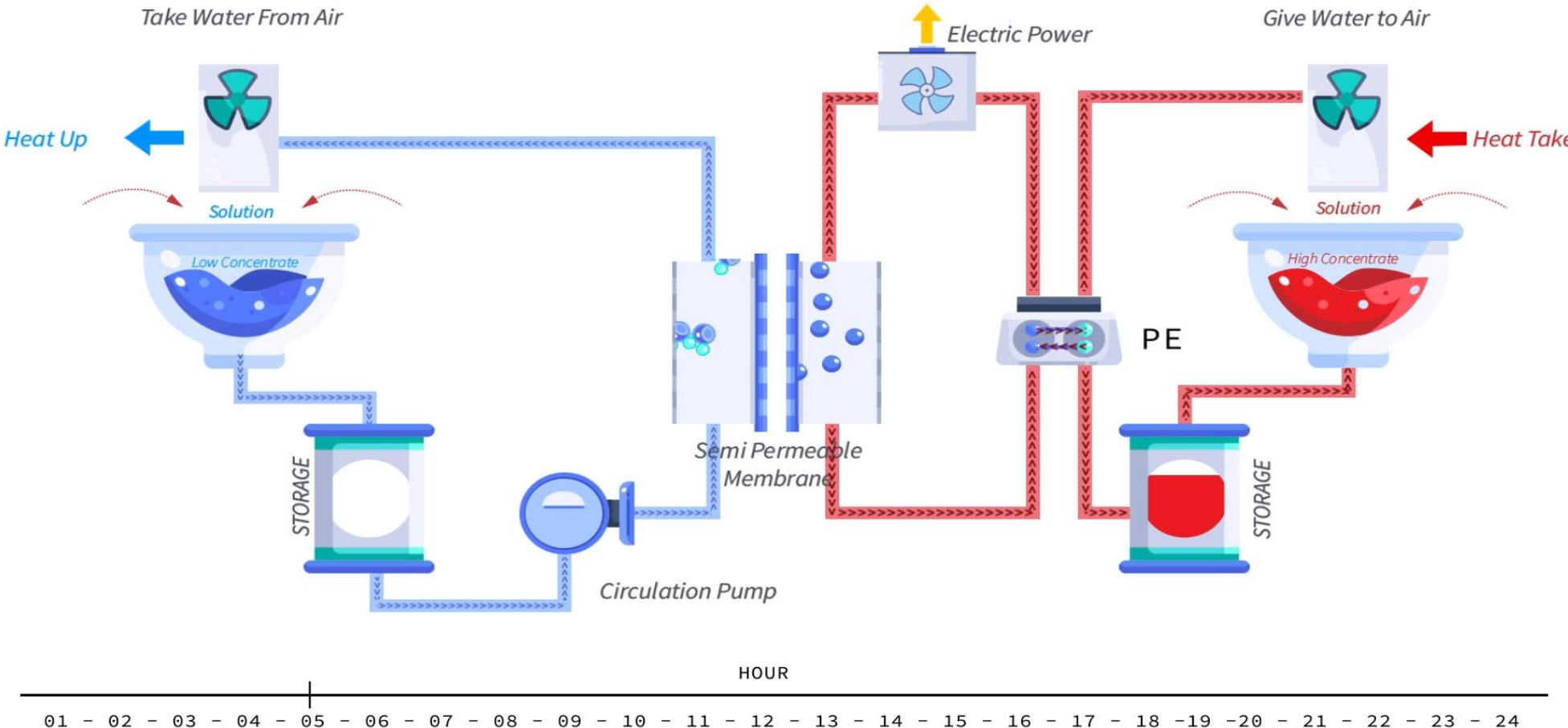


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Water evaporation extract heat from the air. If you reverse this cycle you can harvest heat from air.

# How It Works





## Anadolu Sigorta Genel Müdürlüğü Binası

### RePG Solar Energy Application

#### Technical Specifications:

- Installed Power; 2 kW
- Net Power; 1 kW
- Fluid; Oil
- Inlet Temperature; 85 °C
- Outlet Temperature; 50 °C



## ABS Alçı İstanbul

### RePG Solar Energy Application

#### Technical Specifications:

- Installed Power; 2 kW
- Net Power; 1 kW
- Fluid; Water
- Inlet Temperature; 85 °C
- Outlet Temperature; 50 °C

\* RePG Solar Energy Application converts the thermal energy taken from vacuum tube solar panels into electrical energy and also provides the heat required for heating the buildings.



**Borusan Mannesmann Gemlik Fabrikası  
RePG Compressor Application**

**Technical Specifications:**

- Installed Power; 6 kW
- Net Power; 4 kW
- Heating Fluid; Compressor Oil
- Inlet Temperature; 95 °C
- Outlet Temperature; 65 °C



**Alçı Fabrikası  
RePG Compressor Application**

**Technical Specifications:**

- Installed Power; 4 kW
- Net Power; 2 kW
- Heating Fluid; Compressor Oil
- Inlet Temperature; 90 °C
- Outlet Temperature; 60 °C

\*RePG Compressor Application converts the thermal energy of the hot oil in the oil circuit of the compressors into electrical energy. It provides additional savings by reducing the oil cooling load of the compressors.



### **Izmir Jeotermal** **RePG Geothermal Application**

#### **Technical Specifications:**

- Installed Power; 25 kW
- Net Power; 15 kW
- Heating Fluid; Geothermal Water
- Inlet Temperature; 104 °C
- Outlet Temperature; 85 °C



### **Umut Otel Jeotermal** **RePG Geothermal Application**

#### **Technical Specifications:**

- Installed Power; 75 kW
- Net Power; 50 kW
- Heating Fluid; Geothermal Water
- Inlet Temperature; 115 °C
- Outlet Temperature; 90 °C

\*RePG Geothermal Application converts the thermal energy in geothermal into electrical energy.



## Haliç Üniversitesi RePG Solar Energy Application

### Technical Specifications:

- Installed Power;	2 kW
- Net Power;	1 kW
- Heating Fluid;	Oil
- Inlet Temperature;	90 °C
- Outlet Temperature;	50 °C



## Anadolu Hotels RePG Natural Gas Boiler Application

### Technical Specifications:

- Installed Power;	10 kW
- Net Power;	6 kW
- Heating Fluid;	Water
- Inlet Temperature;	85 °C
- Outlet Temperature;	80 °C

\*RePG Natural Gas Boiler Application generates electrical energy with the heat it provides from the natural gas boiler used in centrally heated buildings, sites and hotels.



### RePG Chimney Application

#### Technical Specifications:

- Installed Power;	25 kW
- Net Power;	15 kW
- Heating Fluid;	Water
- Inlet Temperature;	100 °C
- Outlet Temperature;	80 °C

### Limestone Factory



\*RePG Chimney Application converts the thermal energy found in the waste heat of the factory chimneys into electrical energy.



## Geothermal Site

### RePG Chimney Application

#### Technical Specifications:

- Installed Power;	150 kW
- Net Power;	100 kW
- Heating Fluid;	Water
- Inlet Temperature;	120 °C
- Outlet Temperature;	90 °C

\*RePG Geothermal Application converts the thermal energy in geothermal into electrical energy.



**Akın Tekstil**  
**RePG Compressör Application**

**Technical Specifications:**

- Installed Power;	6 kW
- Net Power;	4 kW
- Heating Fluid;	Compressör Oil
- Inlet Temperature;	95 °C
- Outlet Temperature;	70 °C



**Pirelli Prometeon  
RePG Flash Steam Application**

**Technical Specifications:**

- Installed Power;	40 kW
- Net Power;	25 kW
- Heating Fluid;	Flash Steam
- Inlet Temperature;	102 °C
- Outlet Temperature;	90 °C

**Hayat Kimya**

## **RePG Process Water Application**

### **Technical Specifications:**

- Installed Power;	75 kW
- Net Power;	49 kW
- Heating Fluid;	Water
- Inlet Temperature;	95 °C
- Outlet Temperature;	80 °C

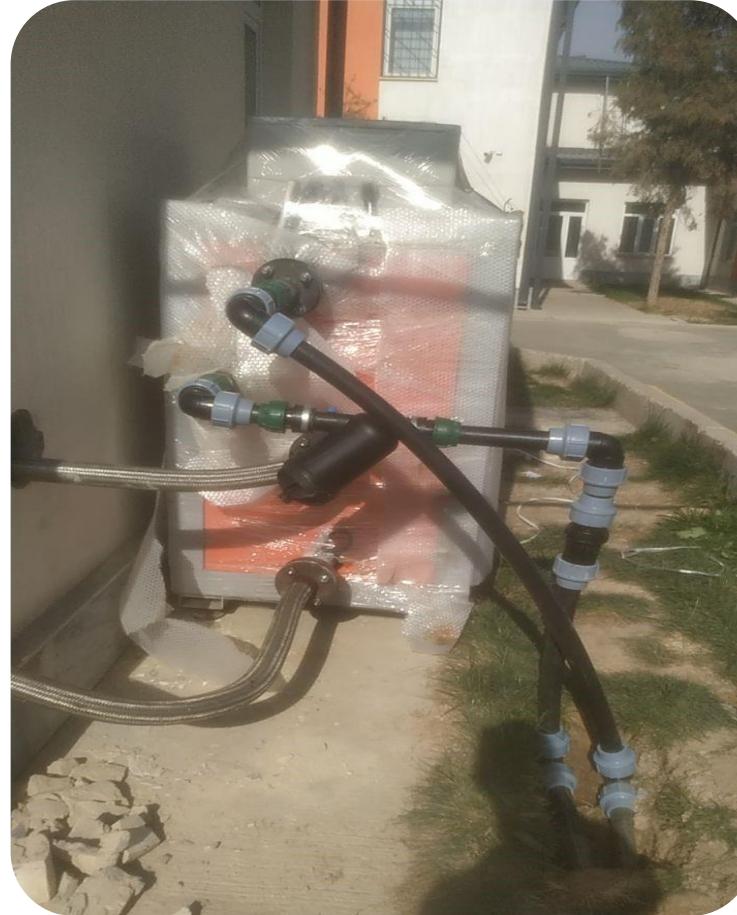


## First Export to Uzbekistan

### RePG Steam Application

#### Technical Specifications:

- Installed Power;	10 kW
- Net Power;	4.2 kW
- Heating Fluid;	Water
- Inlet Temperature;	90 °C
- Outlet Temperature;	70 °C

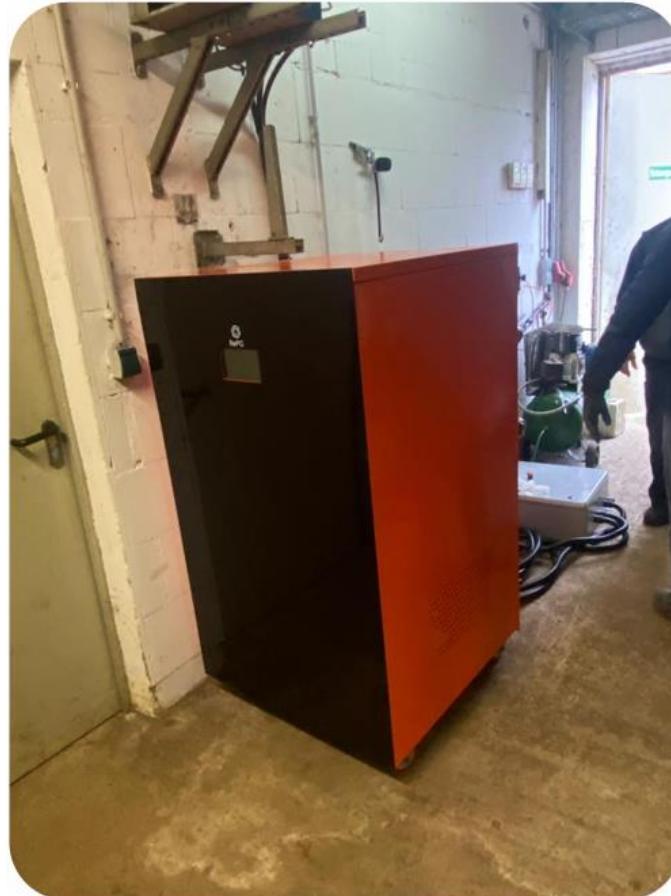


**Germany**

## **RePG Process Water Application**

### **Technical Specifications:**

- Installed Power;	10 kW
- Net Power;	4.2 kW
- Heating Fluid;	Water
- Inlet Temperature;	90 °C
- Outlet Temperature;	70 °C





**THANK YOU**