



**ANKA**  
Yenilenebilir Enerji

*Innovative Solutions for Biogas & Landfill Gas*

[www.ankaenerji.com.tr](http://www.ankaenerji.com.tr)



Thanks to the **REGENERATIVE SILOXANE REMOVAL SYSTEM DEVELOPED BY ANKA,**

the untreated biogas which contains siloxane passes through the filter system and is fed to the gas engines **UP TO**

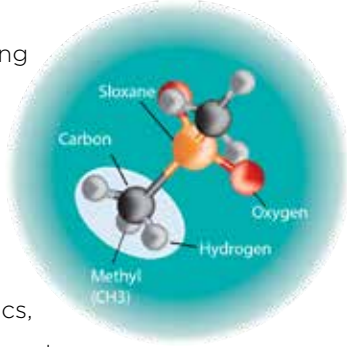
**99% PURIFIED FROM SILOXANE**

REMOVAL EFFICIENCY UP TO <b>%99</b>		SILOXANE CONCENTRATION AFTER REMOVAL <b>1 mg/m<sup>3</sup></b>
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## REGENERATIVE SILOXANE REMOVAL SYSTEMS

### What is Siloxane?

Siloxane is a compound found in biogas originating from domestic solid waste, food waste and wastewater treatment sludge. It is especially caused by wastes originating from cosmetics, food additives and detergents.



### Our Solution

As ANKA, we are proud to have managed to manufacture an industrially viable biogas siloxane removal system as a result of the R&D studies carried out with the support of the Ministry of Science, Industry and Technology.

Thanks to its modularity it can be easily scaled to any capacity with very low pressure loss which is very important for long-term energy savings.

The system consists of two filters containing the filter media used for siloxane removal.

These filters work in sequence. When a filter reaches its full adsorption capacity, the system automatically activates the other tank which is already regenerated and ready. Thus, the gas engines are continuously supplied with clean gas.

### Siloxane Removal System SPECIFICATIONS

- Ability to work with PLC fully automatically without requiring operator intervention
- Low maintenance cost
- Compliance with ATEX and CE directives
- Fail-safe system
- Low cost filter material
- Regenerable filter media
- Small footprint, compact design
- Communication hardware that can be integrated into SCADA systems (Optional)
- Remote monitoring and SMS sending feature (Optional)





## Non Filtered Engine Parts



SPARK PLUGS



CYLINDER HEADS



PISTON CROWNS



## Filtered Engine Parts

## BENEFITS OF SILOXANE REMOVAL SYSTEM

As a result of installing a Siloxane removal system in your plant, you get profits from many cost items. These are:

- Labor costs during siloxane-induced maintenance,
- Part replacement costs consisting of wear caused by siloxane,
- Production losses in engine stops (down time) during siloxane-induced maintenance,
- Power losses due to working at partial load as a result of the knock caused by silicone deposits

## SAVINGS TO BE MADE AS A RESULT OF SILOXANE REMOVAL

	BENEFITS
SPARK PLUG LIFE	EXTENDED 4X
LUBRICANT OIL LIFE	EXTENDED 35%
OIL FILTER LIFE	EXTENDED 2X
CYLINDER HEAD, PISTON, PISTON RING AND BEARING LIFE	EXTENDED 3X
ENERGY PRODUCTION	INCREASES 4%
ANNUAL LABOR COST SAVINGS*	7,350 MAN X HOURS

\*For a facility with a gas flow rate of 20.000 Nm<sup>3</sup>/h



2.Phase

1.Phase



## OUR PROJECTS

### **İstanbul/Seymen Landfill Gas to Electricity Power Plant** Siloxane Removal System

Istanbul / Silivri / Seymen Landfill Gas to Electricity Power Plant, is located in Seymen Sanitary Landfill area in Silivri district of Istanbul, where household waste belonging to the European Side of Istanbul is stored.

The capacity of the plant increased to 25 MW in October 2021, As of December 2021 it has increased to 37 MW, providing the equivalent of the electricity needs of approximately 190,000 households (760,000 people) annually, the emission of methane gas equivalent to the greenhouse effect of 1.45 million tons of carbon dioxide (CO<sub>2</sub>) equivalent to the carbon reduction of 37,000 trees, and the elimination of carbon emissions generated by 940,000 vehicles. When the plant reaches full capacity, it will be the largest single-point Landfill Gas to Electricity generation facility in the world with an installed capacity of 90 MW.

**Capacity:** 20.000 Nm<sup>3</sup>/h

**1.Phase:** 2020 / July

**2.Phase:** 2022 / February

**Engine Brand:** JENBACHER INNIO

**Customer:** İstanbul Enerji A.Ş.

8 x SGS-2500  
MODULES

26 x 1415 kW  
GAS ENGINES

# **“THE BIGGEST Regenerative Siloxane Removal System IN THE WORLD”**



**Sakarya**

### Sakarya LFG to Electricity Plant

— Siloxane Removal System

The Integrated Solid Waste Management Facility, built at an investment cost of \$70 million in Erenler district of Sakarya province, is located on an area of 20 hectares and has an installed capacity of 14 MW. Sakarya Integrated Solid Waste Management Facility converts approximately 700 tons of domestic solid waste per day to meet the electricity needs of 130-140 thousand people per year.

**Capacity:** 2.500 Nm<sup>3</sup>/h

**Year:** 2022 / April

**Engine Brand:** CAT

**Customer:** Sakarya Entegre Katı Atık  
Yönetimi A.Ş. (SEKAY)

1 x SGS-2500  
MODULES

3 x 1516 kW  
GAS ENGINES

**Çanakkale**

### Edirne

### SUEZ Çanakkale LFG to Electricity Plant

— Siloxane Removal System

Çanakkale LFG to Electricity Plant converts the LFG from the wastes into electrical energy. The Integrated Solid Waste Plant holds a production license of 3.6 MW. The plant consists of four main components: gas collection, gas preparation, energy production and electricity distribution and meets the electricity needs of 3000 households per year.

**Capacity:** 1.400 Nm<sup>3</sup>/h

**Year:** 2022 / April

**Engine Brand:** MWM

**Customer:** SUEZ Çanakkale RR  
Atık Hizmetleri A.Ş

1 x SGS-1400  
MODULES

2 x 1200 kW  
GAS ENGINES

### Edirne LFG to Electricity Plant

— Siloxane Removal System

The Integrated Solid Waste Management Facility, built at an investment cost of TL 65 million in kocayusuf village of Edirne, has an installed capacity of 3.2 MW. Approximately 250 tons of domestic solid waste are converted daily in the integrated Solid Waste Management Facility and 30,000 households' electricity needs are met annually.

**Capacity:** 1.400 Nm<sup>3</sup>/h

**Year:** 2020 / December

**Engine Brand:** MWM

**Customer:** Atlas İnşaat San. Tic. Ltd. Şti.

1 x SGS-1400  
MODULES

2 x 1200 kW  
GAS ENGINES



**Kastamonu**

**Aitos**



**Ravda**



**Cagayan De Oro**



## BIOGAS FLARES

Our company manufactures, installs and commissions industrial flares for the disposal of all kinds of combustible gases, biogas, various process gases and petrochemical gases.

According to the request of our customers, we provide manual operation open flares, closed flares or automatic operation open flares or closed flares.

### Landfill Gas Flare - Kastamonu

**Capacity:** 150 Nm<sup>3</sup>/h  
**Year:** 2021/September  
**Location:** Kastamonu/Turkey (EU Project)  
**Customer:** Gökşin İnşaat A.Ş.

### Landfill Gas Flare - Aitos

**Capacity:** 50 Nm<sup>3</sup>/h  
**Year:** 2020/ July  
**Location:** Aitos / Bulgaria  
**Customer:** ProStream Technik

### Landfill Gas Flare - Ravda

**Capacity:** 250 Nm<sup>3</sup>/h  
**Year:** 2020 / December  
**Location:** Ravda / Bulgaria  
**Customer:** ProStream Technik

### WWTP Biogas Flares - Cagayan De Oro

**Capacity:** 150 Nm<sup>3</sup>/h  
**Year:** 2021 / October  
**Location:** Cagayan De Oro / Misamis Oriental / Philippines  
**Customer:** MTI Watertech Inc.-Axelum Resources Corp.





## Hydrogen Sulphide (H<sub>2</sub>S) Removal Systems

The following methods are applied industrially for the removal of hydrogen sulfide: Iron Oxide Pellets, Activated Carbon, Water Scrubbing, NaOH Scrubbing, Biological Removal, Iron Sponge. Our company offers the most convenient and economical method according to the customer gas analysis and the field conditions of the customer and we commission the systems on turn-key basis.



## Booster Systems

We provide gas booster stations design, equipment supply and turnkey commissioning services for biogas and landfill plants. In addition, we revise the previously designed but not automated booster stations or booster stations which need to be upgraded to be the most convenient and economical for our customers.

## Automation Systems and Control Cabinets

We design and manufacture all kinds of gas engine control panels and booster stations panels used in the plants as well as the production and revisions of medium and low voltage electrical panels that are used in the landfill and biogas plants. In addition, we make the software and hardware revisions of all kinds of automation and electrical panels in our customers' facilities in a reliable and economical way.

## Biogas Plant Wells and Piping Equipment

We design all kinds of field projects of biogas and landfill gas fields providing that the optimum gas can be collected and provide all project equipments. In addition, we supervise and commission of all field piping, construction of wells and equipment and commission turn-key projects.



# ANKA YENİLENEBİLİR ENERJİ

ANKA was established to meet all kinds of needs including planning, maintenance, revision, engineering services, R&D projects development, technical and financial consultancy and supervisory services of plants and field projects for landfill gas and biogas to electricity facilities with the support of Ministry of Industry and Technology.

ANKA makes a difference in the sector with its own developed products by offering end-to-end solutions in the installation of landfill gas and biogas to electricity production facilities in large-scale.



**ANKA**  
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