



ANKA

Innovative Solutions for Biogas & Landfill Gas

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

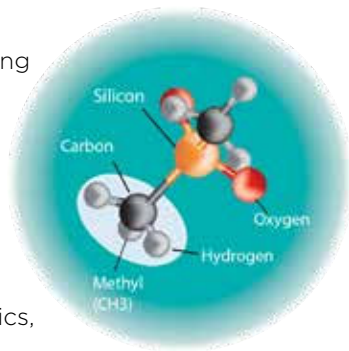
the untreated biogas which contains siloxane passes through the filter system and is fed to the gas engines **UP TO 99% PURIFIED FROM SILOXANE**

REMOVAL EFFICIENCY UP TO %99	SILOXANE CONCENTRATION AFTER REMOVAL 1 mg/m³
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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)



1.500 Hours of Non Filtered Engine Parts



SPARK PLUGS



CYLINDER HEADS



PISTON CROWNS



16.000 Hours of Filtered Engine Parts

BENEFITS FROM SILOXANE REMOVAL



MAINTENANCE

Overall maintenance costs

13.000 \$
/1MW/Year



PRODUCTION LOSS

Production loss during the head reconditioning and unexpected failures causing stoppage

21.500 \$
/1MW/Year



POWER LOSS

Power loss of the engine due to siloxane deposition resulting in knocking and wearing in gas engines

51.000 \$
/1MW/Year



SPARE PART

Spare parts replacement costs

56.500 \$
/1MW/Year

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 Nm³/h



Istanbul/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 (CO₂) 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 Nm³/h

1.Phase: 2020 / October

2.Phase: 2022 / February

Engine Brand: JENBACHER INNIO

Customer: İstanbul Enerji A.Ş.

8 x SGS-2500
MODULES

31 x 1415 kW
GAS ENGINES

“THE LARGEST Regenerative Siloxane Removal System IN THE WORLD”


Sekay LFG

Sekay 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.

Veolia 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.

Era Biogas to Electricity Plant

— Siloxane Removal System

The biogas to electricity plant, which is part of the Integrated Solid Waste Management Facility in Sakarya, uses a dry fermentation technique and requires a siloxane removal system due to the MSM content in its feedstock. It has an installed capacity of 6 MW and converts approximately 300 tons of domestic solid waste per day, providing enough electricity to meet the annual needs of 40,000 to 50,000 people


Veolia
Era Biogas

Capacity: 2.500 Nm³/h

Year: 2022 / March

Engine Brand: CAT

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

1 x **SGS-2500**
MODULES

3 x **1516 kW**
GAS ENGINES

Capacity: 1.400 Nm³/h

Year: 2022 / April

Engine Brand: MWM

Customer: Veolia Çanakkale RR Atık Hizmetleri A.Ş.

1 x **SGS-1400**
MODULES

2 x **1200 kW**
GAS ENGINES

Capacity: 2.500 Nm³/h

Year: 2022 / August

Engine Brand: CAT

Customer: Era Çevre Teknolojileri A.Ş.

1 x **SGS-2500**
MODULES

4 x **1516 kW**
GAS ENGINES



Her LFG to Electricity Plant

Siloxane Removal System

A Regenerative Siloxane Removal System with a capacity of 2,500 Nm³/h has been installed for the power generation facility from landfill gas with an installed capacity of 7 MW in the sanitary landfill located in Boğazköprü, Kayseri. In the project scope; engineering, manufacturing, assembly, automation, and commissioning works have been carried out.

Capacity: 2.500 Nm³/h

Year: 2023 / January

Engine Brand: MWM

Customer: Her Enerji Elektrik Üretim A.Ş.

1 x SGS-2500
MODULES

5 x 1516 kW
GAS ENGINES

Aktor - Greece WWTP

VOC + Siloxane Removal System

A Regenerative Siloxane Removal System with a capacity of 600 m³/h has been installed for the wastewater treatment plant of Ellaktor Group established on Psyttalia Island, located within the borders of Athens. In project scope; engineering, manufacturing, assembly, automation and commissioning works have been carried out.

Capacity: 600 Nm³/h

Year: 2023 / March

Customer: Ellaktor Group

1 x SGS-600
MODULES

3 x RTO
RTO


Atlas

Osmaniye

EGE

Ege LFG to Electricity Plant

Siloxane Removal System

After the household waste collected from the center and districts of Manisa, it is rehabilitated in the sanitary landfill. The LF gas formed is sent to the gas engine through pipes and converted into electrical energy. The integrated Solid Waste Management Facility has an installed capacity of 7 MW.

Capacity: 2.500 Nm³/h

Year: 2022 / June

Engine Brand: JENBACHER INNIO

Customer: Kartallar Ege Geri Dönüşüm Enerji Üretim A.Ş.

1 x SGS-2500
MODULES

4 x 1415 kW
GAS ENGINES

Osmaniye LFG to Electricity Plant

VOC + Siloxane Removal System

The LF gas formed after the household waste collected from the center and districts of Osmaniye is rehabilitated in the sanitary landfills is sent with the help of pipes to the gas engine and converted into electrical energy.

Capacity: 1.400 Nm³/h

Year: 2022 / May

Engine Brand: MWM

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

1 x SGS-1400
MODULES

2 x 1200 kW
GAS ENGINES

Atlas 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 Nm³/h

Year: 2020 / November

Engine Brand: MWM

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

1 x SGS-1400
MODULES

2 x 1200 kW
GAS ENGINES



ANKA GmbH

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.



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