

Biogas-  
anläggningar

# H<sub>2</sub>S and odor removal at biogas plants

It's time to replace tradition with  
innovation

MELLIFIQ

# GREEN BUSINESSES SHOULD USE GREEN TECHNOLOGIES

*One of the challenges of biogas plants is the strict requirement of H<sub>2</sub>S removal after the anaerobic digestion stage, before upgrading.*

*Another constant source of concern is the odors emitted from the biogas plant. Today, both can be solved effectively, and green.*

We have developed a catalyst specifically for H<sub>2</sub>S removal: the Rubicat™. Even without oxygen, H<sub>2</sub>S is removed, leaving no traces before the upgrading stage. As the working mechanism is catalytic, the Rubicat has a much longer lifespan compared to traditional

technologies, such as activated carbons. The Nodora CAT can yield a 40-95% reduction in operating costs.

In addition, one can handle the odor problems inside the plant by producing ozone very cost-effectively on-site. The ozone is lead into the existing ventilation to reduce odorants to then pass through a Nodora ADS as final polishing stage, before discharge.

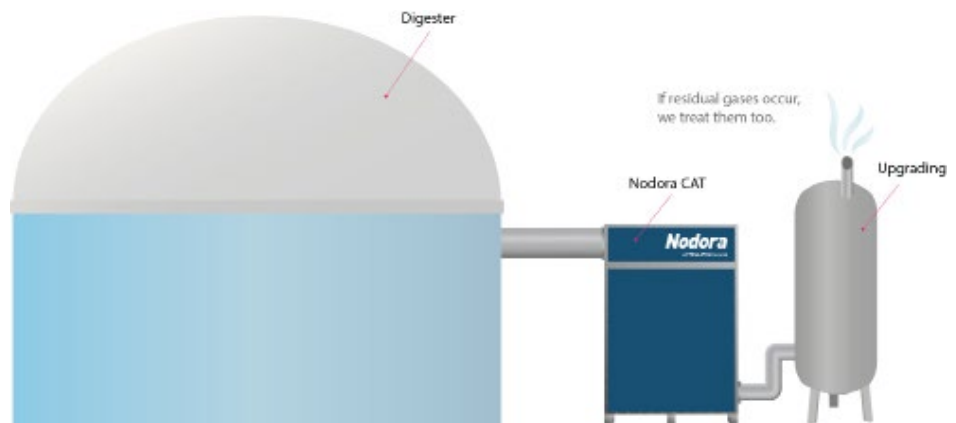
Ambitious biogas producers have an additional option: to treat the biomass with ozone, which in some applications can double the amount of biogas yield.

Regardless of application, the treatment will be efficient, green and easy to manage.

## OUR ODOR TREATMENT SOLUTIONS AT BIOGAS PLANTS

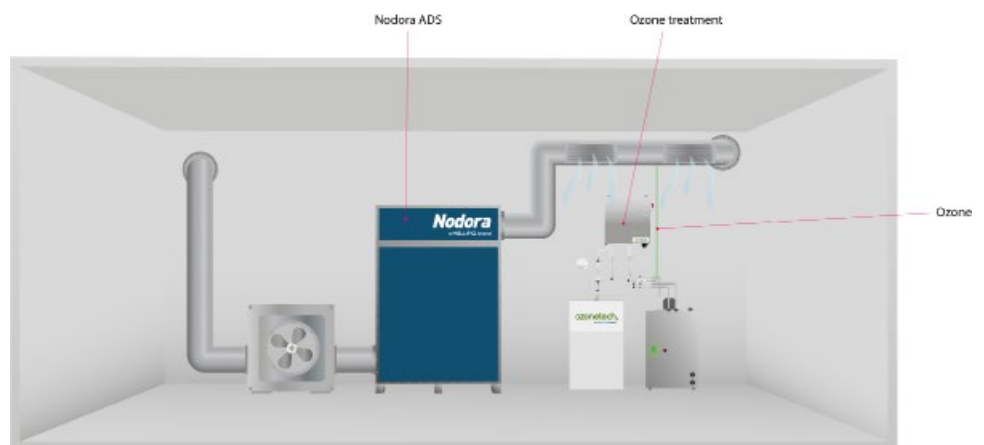
### H<sub>2</sub>S removal before upgrading

*With our solution you don't need several technologies to handle the H<sub>2</sub>S. No activated carbon, no ozone or other treatment methods. Our in-house developed Nodora CAT equipped with the Rubicat is sufficient. The Nodora system is designed to constantly make use of all active material, highly increasing H<sub>2</sub>S removal efficiency and the filter material lifetime.*



### Inhouse odor removal

*The odors from inhouse sources are removed through the ventilation and the collected odors can then be treated using RENA Pro and Nodora ADS before the air is discharged into the environment.*



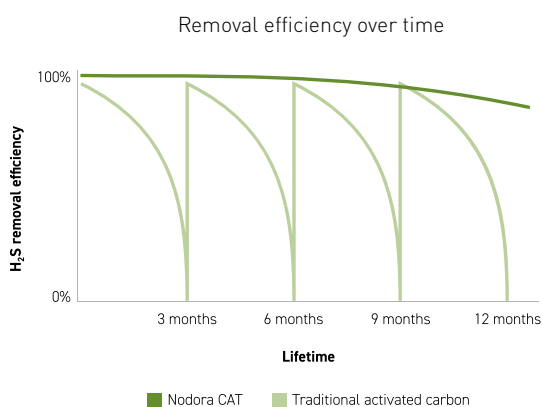
The existing ventilation is the treatment chamber

# NO RECONSTRUCTION NEEDED. MINIMAL OPERATING COST.

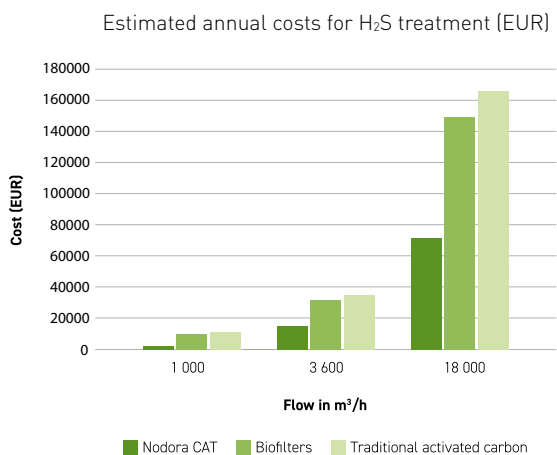
Our most important advice is to carefully analyze the air. The analyses and pilot tests we perform at our facilities focus on flows and concentrations, preparing the design of the optimal treating method.

Nodora is installed in industries with strong regulatory requirements for odor reduction.

All Nodora systems are tailored to the current load to achieve maximum possible H<sub>2</sub>S and odor reduction. One of many benefits when combining ozone treatment and Nodora is that the active material is active at least five times longer than a solution without prior ozone treatment.



A standard solution using activated carbon treatment is both costly and ineffective compared to our Nodora CAT. The high performance of Nodora CAT is due to the advanced active material used, the material mix and the overall design making use of all filter material equally. The experiments were conducted in Stockholm, with the collaboration of KTH Royal Institute of Technology. Real biogas conditions were tested with a H<sub>2</sub>S concentration of 1000 ppm.



Using Nodora CAT will cut costs in half compared to traditional activated carbon. When replacing a traditional activated carbon system, the return of investment will be less than two years.

## RENA PRO OZONE SYSTEM

**Treatment method:** ozonation

**Odor reduction:** up to 98%

**Removal ability:** hydrogen sulfide, mercaptans and volatile organic compounds

**Operating cost:** minimal: inexpensive consumables and electricity consumption of the ozone system

**Handling:** minimal, on/off or automatic

**Monitoring:** remote 24/7 with service agreement RENA premium

**Raw material:** ambient air to produce oxygen

**Ozone distribution:** 8 mm tubes

**Footprint:** 80x60 cm

## NODORA CAT

**Treatment method:** catalysis

**H<sub>2</sub>S reduction:** up to 100%

**Removal ability:** hydrogen sulfide

**Operating cost:** minimal compared to activated carbons due to much longer lifetime

**Handling:** none, no electricity or heat required

**Monitoring:** N/A

**Active material:** Rubicat

**Footprint:** 1160x760 mm

## NODORA ADS

**Treatment method:** selective adsorption

**Odor reduction:** up to 100%

**Removal ability:** mercaptans, volatile organic compounds and amines

**Operating cost:** minimal compared to activated carbons due to much longer lifetime

**Handling:** none, no electricity or heat required

**Monitoring:** N/A

**Active material:** tailored for each application

**Footprint:** 1160x760 mm

## ADDITIONAL SERVICES

**Service agreement:** adapted to the customer's need and requirements and can include full annual maintenance service

**Air analysis:** performed at Ozonotech premises

**Tailored process design:** performed at Ozonotech premises

**Manufacturing:** at our facilities in Sweden

# Om Mellifiq

Mellifiq är en flerfaldigt prisbelönad företagsgrupp inom miljöteknik som sedan början av nittiotalet utvecklats till en världsledande system- och lösningsleverantör med flera banbrytande applikationer för industri-, kommun- och fastighetskunder. Vi levererar avancerad teknik för att hantera de mest sofistikerade luft-, vatten- och energiproblemen.

Mellifiq erbjuder ett komplett utbud av teknologier och lösningar för luft- och vattenrening inom många branscher som bearbetningsindustrin, energisektorn, mat och dryck, läkemedel, avloppsrening och kommersiella fastigheter.

Mellifiq erbjuder starka och välkända varumärken som Ozonotech, Nodora Water Maid, Saniray och Axolot samt ingenjörstjänster i världsklass och en högklassig meritlista med över 40 år av innovation. Vi hjälper våra kunder få de mest effektiva och hållbara lösningarna samtidigt som vi skapar maximalt värde för deras företag.

Mellifiq har affärsenheter över hela Europa med huvudkontor i Stockholm där forskning och utveckling, produktion, QA och certifiering sker. Vår unika teknik och vår omfattande expertis har gjort oss till Center of Excellence för världens mest komplexa projekt och en global aktör med installationer på alla sex kontinenter.

Varje dag litar miljoner människor på våra lösningar för ventilation, desinfektion, sanitet och luktkontroll. Vi är fast beslutna att höja ribban både för innebörden av begreppet rent och industristandarden för teknik, tekniska tjänster och allmän entreprenad.

För ytterligare information, besök vår webbplats på [www.mellifiq.com](http://www.mellifiq.com)

