

Cogatec

Technical Membranes for Biogas and Emission Control





Innovative biogas roof systems

Storage and cover solutions for manure tanks and biogas plants

Biogas plays a significant role in the energy transition, along with other renewable energy sources such as wind and solar power. The conversion of existing biogas plants to flexible production helps to ensure that electricity is generated on demand. In agriculture, emission-reducing solutions are also favoured. In some countries, it is already a legal requirement to cover slurry tanks to reduce emission levels. HUESKER's product portfolio supplies quality roof

and storage systems for agriculture and the biogas industry in the fields of biogas and slurry. Our high-quality and durable Cogatec products allow you to increase the efficiency of your biogas plant and also ensure that your slurry tanks are covered to reduce odours and emissions. Our experts are available to advise you on biogas roofs, tank covers and external storage systems. We develop the best possible solutions that meet your individual requirements.

Coverttec becomes ...

Cogatec

Technical membranes for biogas and emission control

Under the Cogatec brand, HUESKER develops products for gas storage and emission reduction of agricultural and industrial biogas plants. The product catalogue includes double membrane gasholders, emission control roofs, external gas storage tanks and flexible storage tanks. HUESKER products represent the best quality, years of experience and superb in-house engineering. The focus of every project is on individual, customer-oriented planning, site-specific structural analysis and fabrication. This ensures ideal container

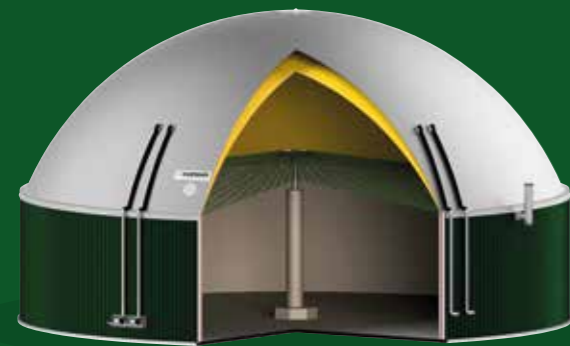
coverage, a high gas storage volume and efficiency as well as safe operation of the gas storage facilities. HUESKER organizes full or semi-assembly to ensure professional installation and implementation, thus minimizing downtime. HUESKER is focusing on the expansion of the biogas segment with the new Cogatec brand and a high-quality product range. The old Coverttec brand is replaced by Cogatec. High-quality components and innovative production processes paired with German Engineering stand for the Cogatec brand!

- Increasing the efficiency of biogas plants**
- High quality technical membranes**
- High frequency welding process**
- Biogas expert advice**
- Engineered in Germany**

Our Cogatec products

In this brochure you will discover the full range of different Cogatec products. Be inspired by our portfolio and immerse yourself in the world of Cogatec products.. As your partner in the field of biogas, we are happy to assist you with any questions that may arise and you can rely on our assistance.

Cogatec Double Membrane Gasholder

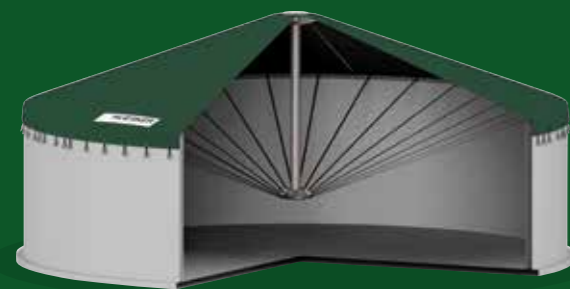


Double Membrane Gasholder
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Double Membrane Gasholder on foundation
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Cogatec Weatherproof Silo Cover



Self-supporting Weatherproof Silo Cover
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Weatherproof Silo Cover with central column
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Cogatec Silo Cover

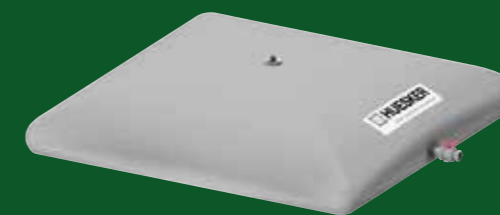


Silo Cover with gas-tight lung
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Silo Cover gas-tight
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Cogatec Storage Systems



Flexible Storage Container
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Cogatec Double Membrane Gasholder

Ideal storage capacity for your biogas plant

To optimize your biogas storage, our double membrane gas storage is the best solution. The roofing system was specially developed for biogas plants, agricultural operations, and sewage treatment and industrial plants and is composed of two separate high-frequency welded polyester membranes with PVC coating on both sides. Selecting the right ball geometry for your system allows for maximum gas storage volume. The advantages of the fabrics used include their low gas permeability, high UV stability and the special, dirt-repellent top layer. The outer

membrane of the double membrane gasholder can withstand forces such as weathering, so that the inner membrane can be operated almost without pressure. Our state of the art laser measurement system monitors the level.

In addition, our membranes are equipped with a keder in the clamping area, which serves to divert loads such as wind and snow into the anchoring clamping rail in a form-fit and force-fit manner. This ensures an increased service life.



**Optimized
Gas storage volume**



**Eligible thanks to
Integrated insulation**



**Special design for
flex operation**



**Engineered
by biogas experts**



**TRAS 120
conform**



**Energy efficient
operation**

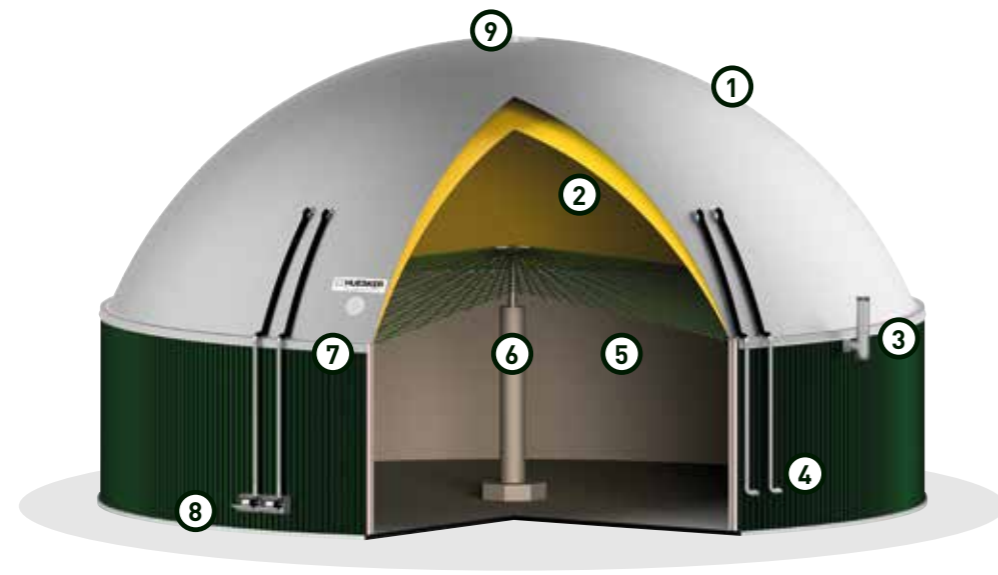
Technical information

- User-friendly thanks to the differential pressure sensor next to the support air fan and the gas monitoring connection on the exhaust air damper
- High tensile strength, adapted to your membrane roof, with low gas permeability and maximum protection from the elements.
- Project-related design and calculation of the support air system is carried out supporting the flex operation.
- Long service life due to use of high-quality components
- Any desired storage height and spherical shape can be implemented
- Additional integrated fire protection for closely spaced containers according to authority requirements
- Supply and exhaust air lines made of stainless steel pipes
- Substructure made of pre-tensionable belt system and overlying desulfurization net
- Optimized laser measurement system ensures more efficient use of gas storage volume
- Easy disassembly for maintenance
- Diameter up to 50 m possible
- High-tech PVC membranes

Cogatec Double Membrane Gasholder

Product variants

As a rooftop system for biogas storage, the Cogatec double membrane gasholder is mounted on a container. With the aid of stainless steel clamping strips, the high-frequency welded membrane roof is mounted on the container crown. In order to ensure the tightness of the double membrane gasholder in the area of the clamping rails, we use a separate fastening for the belt net on the inner wall of the tank.



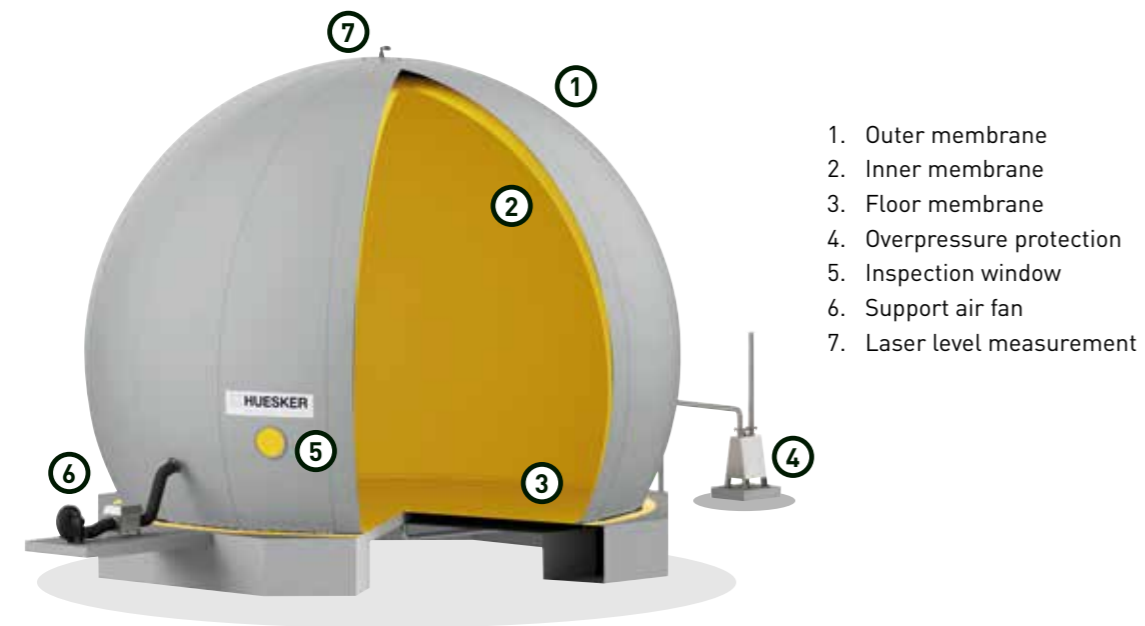
- | | | |
|-----------------------------------|---|--|
| 1. Outer membrane | 4. Exhaust air duct with exhaust air flap | 6. Centre column cantilever with crown |
| 2. Inner membrane | 5. Belt substructure incl. tension net | 7. Inspection window |
| 3. Over/under pressure protection | | 8. Support air fan |
| | | 9. Laser level measurement |



Cogatec Double Membrane Gasholder

Variant on foundation

Another variant is the Cogatec double membrane gasholder on a foundation, which is free-standing, e.g. as a 75% sphere. This consists of a total of three membranes. The free-standing double membrane gas storage tank is used, for example, for an additional storage volume for biogas plants, sewage treatment plant storage tanks or industrial storage tanks.



Laser measuring system



For the exact measurement of the level we use an optimized laser measuring system with lens heating. The heating of the lens prevents it from fogging up and leads to an increase in operational safety. The laser is parameterized to your gas storage tank during production at our factory. If a change is required in the course of an extension, this can be carried out directly via the control line from the operating building. The advantage here is that a change can be made during regular operation. The clamping ring shown acts as additional reinforcement for the pole disc, thus ensuring a robust design.

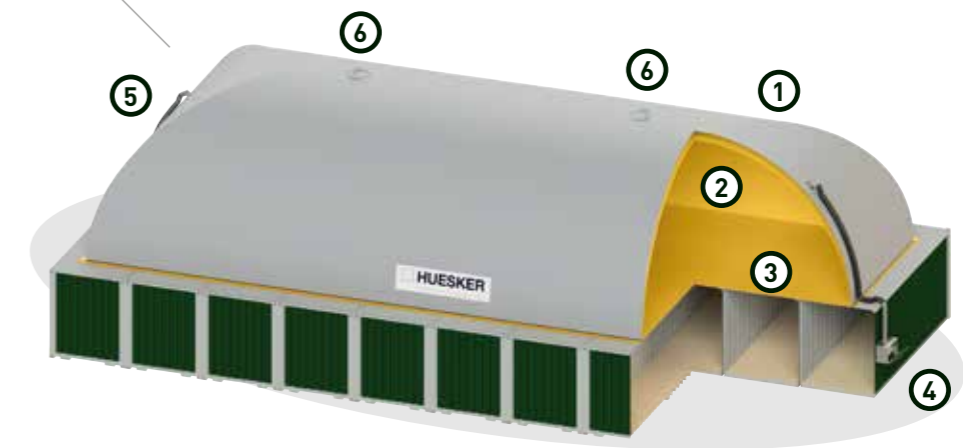


Cogatec Double Membrane Gasholder

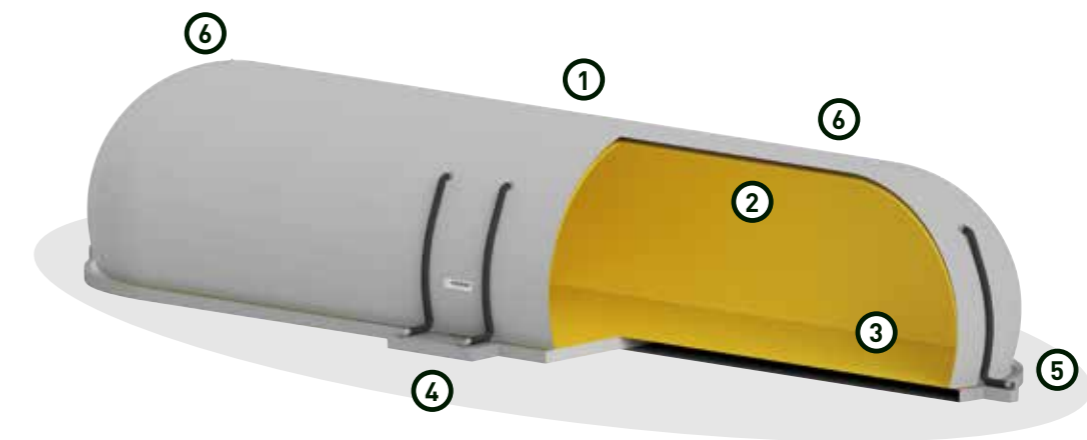
Special shapes

The rectangular accumulator and the hybrid 3/4 sphere are, among other possibilities, two special shapes, which we can offer you through our in-house engineering.

Rectangular storage tank



1. Outer membrane
2. Inner membrane
3. Floor membrane
4. Support air fan
5. Exhaust air duct
6. Laser level measurement



3/4 ball with cylinder segment

Cogatec Weatherproof Silo Cover

Container cover for the reduction of emissions

With our Cogatec emission protection roof with centre support or cantilevered centre support, water entry into the tank is minimized and the resulting emissions are reduced. Gas and ammonia emissions are reduced by over 95 % by the roof construction for slurry tanks made of steel or concrete, so that the strict requirements of emission control (BIm-SchV) are met. The weather protection roof and the belt system are supported by a stainless steel centre support. External bracing is ensured by the use

of high-strength tension belts and stainless steel ratchets. The round tube, enclosed in a hemstitch, is braced against the outer wall of the container.

Due to the combination of construction, high quality materials and static design, our emission control roofs ensure long life and high stability.



1. Weatherproof membrane
2. Self-supporting centre
3. Centre support crown
4. Belt construction
5. Tensioning with ratchets
6. Abrasion protection



Reduction of emissions

Biaxial pre-stressed membrane

Customized solutions

Durability

High storage volume

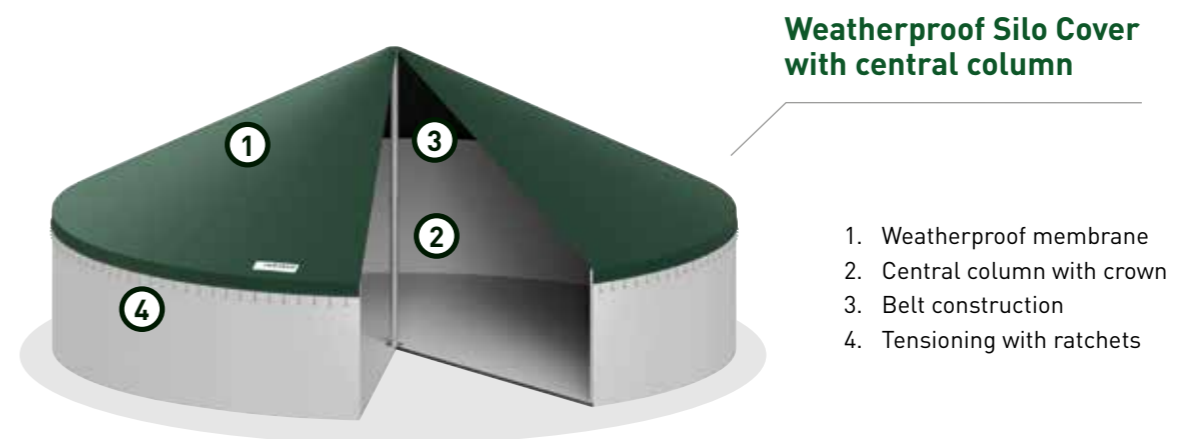
Assembly without cleaning and emptying

Technical information

- PVC-coated fabric, lacquered outside to reduce susceptibility to dirt
- No fluttering of the membrane due to biaxial pretensioning
- Tear resistant and UV stable fabric
- Tensioning with stainless steel ratchets and high-strength tensioning straps
- Stainless steel central column as standard
- No complete tank emptying necessary for assembly or maintenance
- Static design according to local snow and wind load

Product variants

Cogatec Weatherproof Silo Covers precisely seal your containers so that gases and emissions generated in agriculture are constantly reduced. Our roof system can be individually configured for a wide variety of locations - specific factors and dimensions are taken into account. Even the covering of large tanks with a diameter of up to 50 m is possible due to the stainless steel centre support installed as standard.



1. Weatherproof membrane
2. Central column with crown
3. Belt construction
4. Tensioning with ratchets

Cogatec Silo Roofs

Roof systems for a gas tight cover

Produced from high quality materials, our Cogatec silo roofs are the perfect cover for containers. Depending on the requirements of your project, you can choose between a stainless steel or hardwood centre support. The underside of the fabric used is reinforced with PVC-coated, high-strength webbing. Maintenance work is easy to perform through the integrated service opening. The bracing of the silo roofs is done with the help of a round tube and stainless steel ratchets. Here, the round tube is inserted

into a hollow seam. The Cogatec product range also includes a single-shell gas-tight silo roof and a roof with a gas-tight inner membrane. With both variants you have the choice between two clamping options. Either gas-tight clamping on the inside of the container wall or gas-tight clamping on the container crown. In the latter case, the opening of the roof is possible at any time, even when the tank is full.

Technical information

- PVC-coated fabric, fabric-reinforced, outside lacquered to reduce susceptibility to dirt
- High tensile strength, low gas permeability, high UV stability
- Standard for use up to an opening pressure of +4.5 mbar and a Negative pressure of -0.5 mbar
- Over- and underpressure protection, TÜV-tested
- Tensioning with stainless steel ratchets and high-strength webbing straps
- Incl. gas-tight service openings in various dimensions



Durability



Easy opening and closing



Energy efficient



Engineered for high snow loads

Silo Cover with gas-tight lung

For the storage of gases, we offer the silo cover with an integrated gas-tight inner membrane. This is composed of two membranes. On the one hand, it consists of a painted outer membrane to protect against weather conditions such as rain, snow or storms. This leads to the reduction of the susceptibility of the tarpaulin to dirt. And on the other, the roof contains a gas-tight inner membrane that serves to collect the gas produced - its gas-tight stainless steel connection is located on the central support. The inner membrane ensures that the roof system is clamped gas-tight to the inside of the container or onto the container crown. Corrosion can be effectively minimized thanks to the use of high-quality stainless steel components.

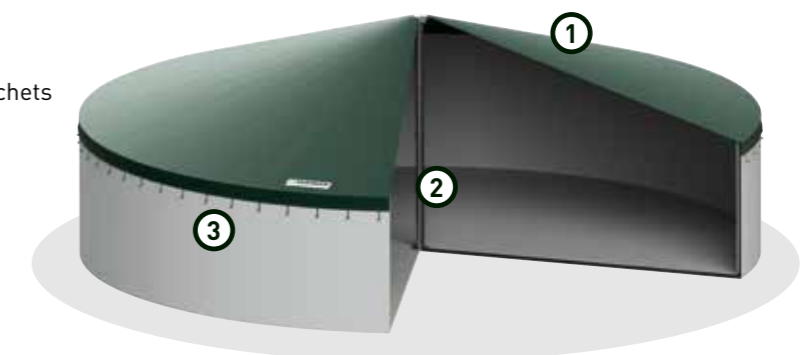


1. Outer membrane
2. Inner membrane
3. Centre column
4. Tensioning with ratchets

Silo Cover gas-tight

For covering the digester and secondary digester, the single-shell silo roof was designed as a gas-tight standard roof structure. Its main task is to significantly reduce emissions and store gases. On the inside of the cover there is a welded, extended PVC-coated polyester fabric, which ensures gas-tight clamping to the container wall and is attached to the container crown or to the container inner wall.

1. Outer membrane
2. Centre column
3. Tensioning with ratchets





Cogatec Gas Bag

External gas storage

Our Cogatec gas bag - an external gas storage with up to 10,000 m³ storage volume - is ideally suited to deal with fluctuations in biogas production and volume changes. You have the possibility to take gas at any desired time due to the standard unpressurized

operation. Depending on your project requirements, you can choose from different geometric shapes such as round, rectangular, cylindrical or a combination of these shapes. This also enables the consideration of volumes of more than 10,000 m³.

Cogatec Flexible Storage Container

Liquid storage for safe storage

For the storage and warehousing of almost any liquid, the stationary, high-quality flexible Cogatec storage tanks are ideally suited. The quickly assembled, flexible tanks are characterized by a capacity of up to 1,000 m³. The textile storage container can be used for manure storage. Made of a PVC-coated polyester fabric, the flexible storage containers have tremen-

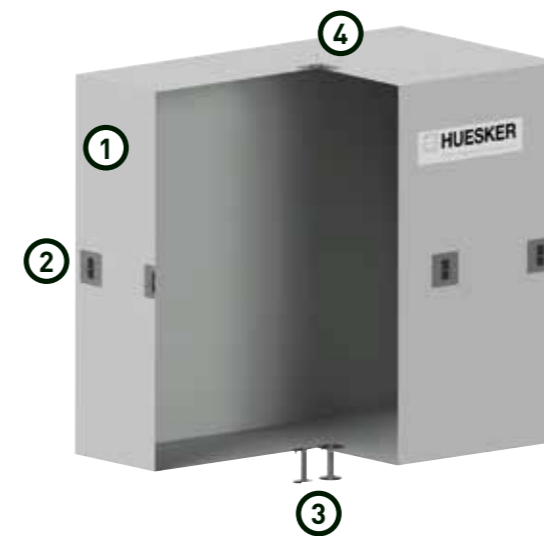
dous tear resistance and are used for storing homogeneous liquids. The choice of material results from a detailed analysis of the technical specifications of the fluid in question. Due to the quick and simple filling and emptying, the flexible Cogatec storage containers are an adaptable, economical product.

Areas of application of the flexible Cogatec Storage Container:

- Storage of agricultural liquid manure
- Drinking water storage tank
- Rainwater retention
- Service water tank
- Waste water tank
- Fire protection reservoir
- Extinguishing water retention
- Temporary storage
- Tanks for sewage sludge, landfill water, fermentation residues
- Tanks for storage of process liquids, hydrocarbons



1. Venting for escaping medium
2. Ports from 1.5" | 3" | 6" available
3. UV and temperature resistant Polyester fabric



1. Membrane
2. Fixing point
3. Flanges for gas pipeline
4. Fixing point for level measurement

Square Gas Bag

Our gas storage tank is single-shell and made of gas-tight, enormously durable high-frequency welded fabric tarpaulin. It has above-average dimensional stability and durability due to its optimized weld adhesion. In addition, we offer you the equipment of the gas bag by means of a level measurement. The storage bag is placed in a weatherproof location independent of the main container. We manufacture the suitable gas flanges for your pipelines to ensure the density of the gas bag.

Technical information

- High-tech flame retardant PVC fabric
- Available in volumes up to 10,000 m³; other dimensions on request
- High tensile strength
- Equipment with level measurement possible

Our references

Storage and cover solutions

2x Double Membrane Gasholder

Esche, Germany

Diameter: 25 m and 32 m
Usable gas volume:
approx. 3,521 m³ and approx. 7,509 m³



Self-supporting Weatherproof Silo Cover

Attenweiler, Germany

Diameter: 14 m
Snow load: max. 107 kg/m²
Container: in-situ concrete

Double Membrane Gasholder on foundation (special form)

Madrid, Spain

Usable gas volume: approx. 250 m³
Diameter: 6.50 m
Height: 10.60 m



HUESKER

The company behind Cogatec systems

As a producer of geosynthetics and technical textiles, HUESKER has stood for innovation and international engineering solutions for over 100 years. Our globally active company includes around 500 employees and ten subsidiaries as well as trade and distribution partners in more than 60 countries. We have been developing innovations in the field of agriculture for over 30 years. Since 2015, we have been

operating a 7,500 m² production hall at our site in Dülmen (NRW), where we manufacture a wide range of product solutions in the fields of biogas and slurry as well as stable ventilation. HUESKER is involved in a wide range of associations, e.g. the Compost & Biogas Association and the Biogas Association.

HUESKER: Your long-term partner. You can rely on us.

HUESKER has the right experts at hand in every region. We know that customer requirements are more diverse than ever - which is why we rely on individual on-site consulting with the client. Our experts communicate at eye level and calculate realistically - for more planning security.

160

Years
Competence

500

Employees
worldwide

60

Countries



Possibilities

HUESKER stands for ...

Engineering

Reliability

Progress

Individual solutions

Responsibility

Innovative thinking

Sustainability

Inventiveness



Service at HUESKER

In the biogas and manure sector, HUESKER offers a large product portfolio of roof and storage systems for agriculture as well as biogas and industrial plants. To help you find the right products for your requirements, our experts will work out the optimum solution for your individual needs. We are available

to advise you on the topics of biogas roofs, tank covers and external storage systems. Products such as weatherproof silo covers to cover manure tanks are promoted in the various states. Our HUESKER experts will be happy to advise you in detail so that you can take advantage of these benefits.



+ Engineering

Our experts bring many years of experience from many projects in the biogas market to your project and will be happy to advise you from the first planning step. This is how we ensure a smooth process. We are at your side at every step of the project – from design to assembly.

+ Production

We produce and commission your Cogatec solution in our production facilities, drawing on over 160 years of experience. We attach great importance to durability and reliability in our products so that you can fully concentrate on your daily work. The core of our service offering is the customized manufacture of your product. As a result, you get a product that exactly meets your requirements and wishes.

+ Installation

To ensure that everything works properly from the start, all products are installed by experienced assembly personnel. Full or semi-assembly to ensure professional installation and implementation, thus minimizing downtime..

We are certified!

You can rely on our quality. HUESKER ensures the highest quality in every production step by using state-of-the-art manufacturing methods and seamless quality control. The qualified monitoring of the current production takes place both in our own accredited laboratory and by means of external

monitoring by official material testing institutes.

In addition, HUESKER strives for sustainability across all value streams and makes careful use of energy and resources.

Our certifications are:

ISO 50001

ISO 14001

DIN EN ISO 9001:2015

EN ISO/IEC 17025:2005

DIN 18200-Foreign monitoring



Would you like to know more?

Sign up for our newsletter and stay up to date!

www.HUESKER.com



HUESKER Synthetic is certified to ISO 9001, ISO 14001 und ISO 50001.



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 **HUESKER**
Ideen. Ingenieure. Innovationen.