



Outstanding Products for Best Results

System Solutions for Biogas and Manure

 **HUESKER**
Ideen. Ingenieure. Innovationen.



High-performance systems and cost-effective solutions for the modern farm



HUESKER's synthetic fabrics are synonymous with supreme quality and durability. Over the past 35 years, the company has evolved into a supplier of full-range systems for the agricultural market. Our many years of experience and in-house manufacturing facilities enable us to provide a wide variety of top-performance products.

Covertec silo covers / weatherproof silo covers from the Biogas and Manure segment offer reliable protection against all weathers, with some models designed to prevent the escape of environmentally harmful gases. The Covertec double membrane roof was specially developed for biogas plants. The range is completed by the Gas Bag, service for biogas plants and flexible storage tanks for liquids.

The HUESKER product portfolio also offers you first-class solutions for animal-friendly husbandry of livestock and efficient farm management. With our Lubratec® products, you can increase the well-being of your animals by creating an optimal barn climate, promoting natural behaviour and reducing aerogenic infections. Lubratec will help you to bring animal welfare and efficient barn management together.

With Agritec® Silage Safe, HUESKER offers a unique system for tensioning of silage protection covers.





KEY DATA

- High-tech, fabric-reinforced PVC membranes with minimum weight of 900g per m², outer face coated brilliant to reduce susceptibility to soiling
- High tear resistance of 4,200 & 4,000 N per 5 cm, low gas permeability, high UV stability
- With integrated hemstitch to insert tensioning tube (not separately welded on)
- Tensioned by stainless-steel ratchets and high-tensile belts
- Belts closely for longer service life and enhanced durability (with structural calculations)
- Central column in hardwood or, if desired, stainless steel
- Incl. two access openings measuring 90 x 130 cm or as requested
- Standard roof pitch of 15-17°

Your benefits:

- Made exclusively from high-grade materials
- Diameters up to 50 m possible
- Suitable for all steel and concrete silos on the market
- Reduction of gas and ammonia emissions by over 95%
- Retention of nitrogen content of liquid manure
- Prevention of water infiltration, full storage capacity maintained
- No sagging of cover down to below top edge of silo due to smaller belt spacings
- Approved and verifiable type-specific structural calculations for monolithically poured concrete silos or verifiable site-specific structural calculation
- On request, with full installation, incl. provision of work platforms and cranes
- 10 year warranty
- Minimum expected service life of 20 years

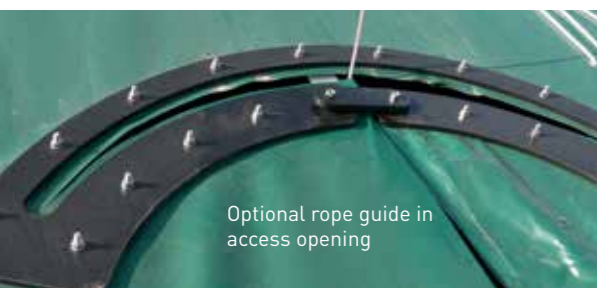
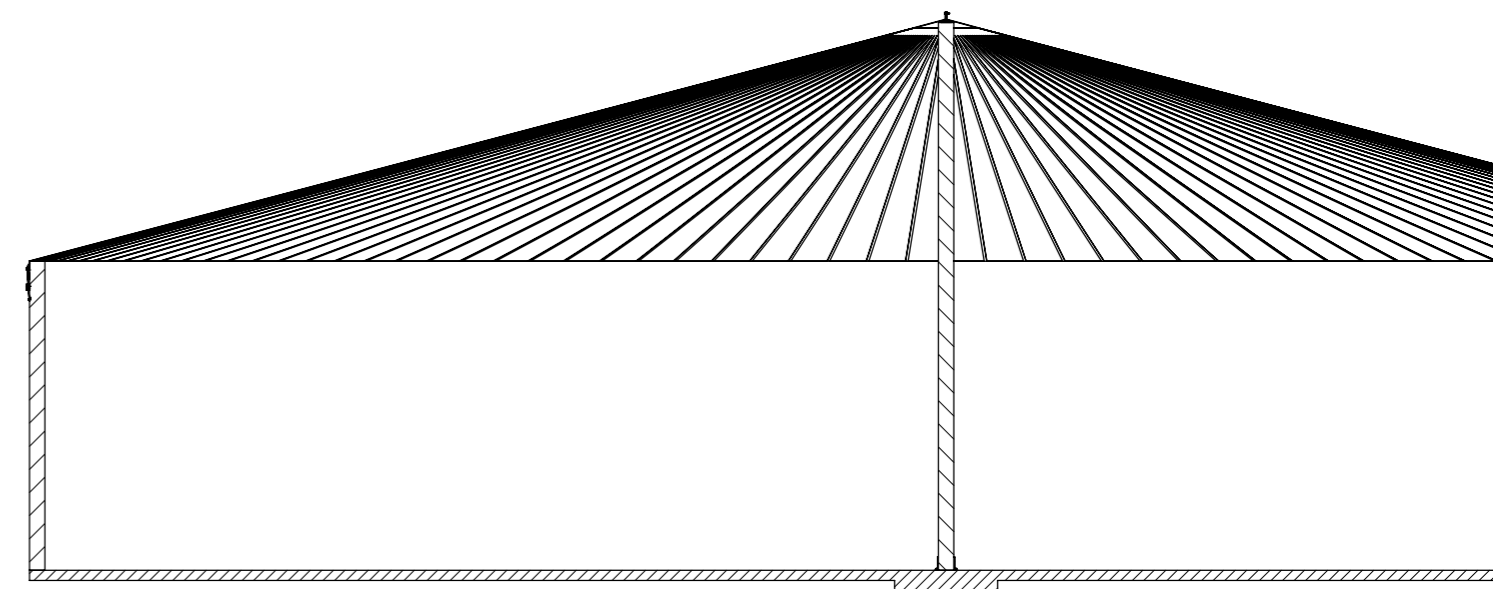
Covertec Weatherproof Silo Cover

Improved air quality through odour control



The Covertec weatherproof silo cover is a premium-quality product for liquid manure storage and biogas industry. In Germany, farmers and biogas plant operators are obliged by law to prevent and respectively reduce nuisance odours and other emissions.

Covertec weatherproof silo covers are available with diameters of up to 50 m and can be installed so as to provide odour-tight or gas-tight performance. The central column can be supplied in either hardwood or stainless steel. Ratchet/belt assemblies fixed to the outside of the silo wall allow tensioning via a round tube, which is threaded through a hemstitch in the cover.



Optional rope guide in access opening



Covertec Silo Cover Gas-Tight



KEY DATA

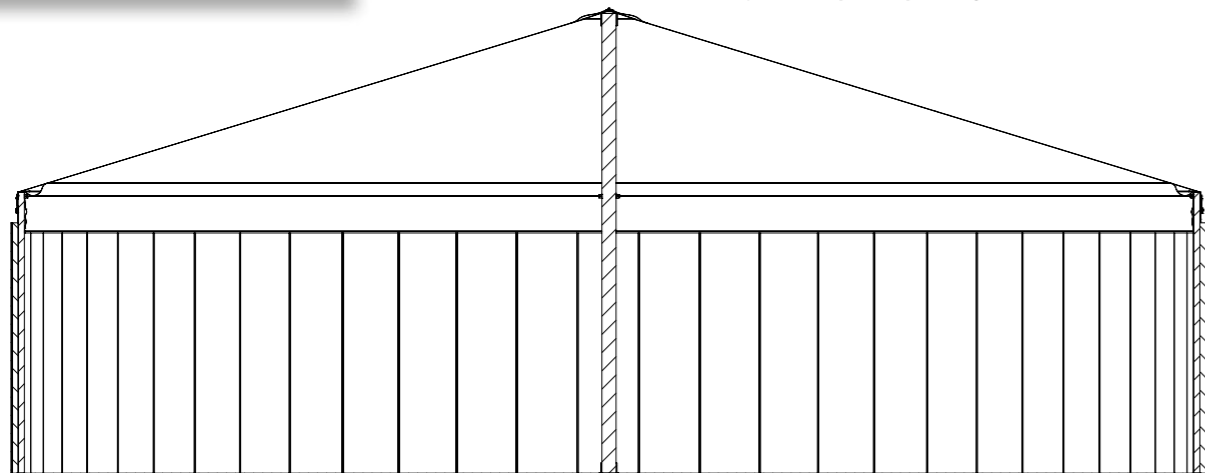
- High-tech, fabric-reinforced PVC membranes with minimum weight of 900g per m², outer face coated to reduce susceptibility to soiling
- High tear resistance of 4,200 & 4,000 N per 5 cm, low gas permeability, high UV stability
- Suitable for all steel and concrete silos on the market
- Used in conjunction with HUESKER's Flexxovalve 1000W+ pressure safety device to provide reliable, gas-tight cover; approved by TÜV (German Technical Inspection Association)
- Standard models allow use for up to +3.5 mbar positive pressure and -0.5 mbar negative pressure
- Central column in hardwood or, if desired, stainless steel
- Tensioned by stainless-steel ratchets and high-tensile belts
- Incl. gas-tight access openings available in various sizes
- Customized, site-specific structural calculation
- 4-year warranty (VOB)
- Expected service life of 15 years



This standard roof construction is a single-skin silo cover used with primary and secondary fermenters or final storage containers for the purpose of collecting and utilizing residual gas while minimizing odour emissions. The cover is clamped to the internal face of the silo to produce a gas-tight seal.

With the premium-grade model, the gas-tight seal is positioned on the top edge of the container, thus allowing the cover to be opened even when the silo is full:

HUESKER INNOVATION „utility model“ patent pending DE 20 2013 105 645 U1



Covertec Silo Cover with Gas-Tight Lung

KEY DATA

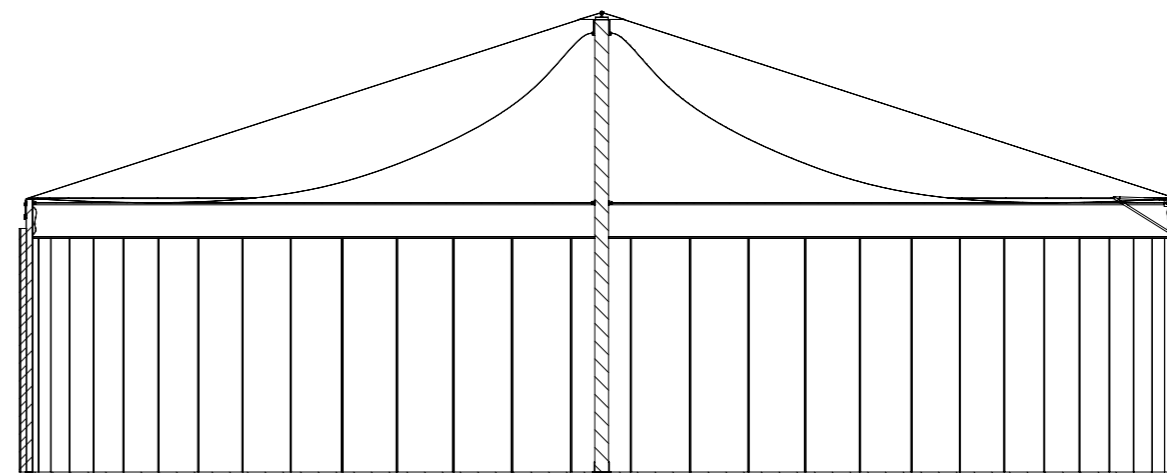
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- Central column in hardwood or, if desired, stainless steel
- Tensioned by stainless-steel ratchets and high-tensile belts
- Incl. gas-tight access openings available in various sizes
- Customized, site-specific structural calculation
- 4-year warranty (VOB)
- Expected service life of 15 years



The standard silo cover with gas-tight lung is a gas-tight model incorporating a sheet „lung“ for the storage of gas produced by any type of organic substrate. The cover is clamped to the internal face of the silo to produce a gas-tight seal.

With the premium-grade model, the gas-tight seal is positioned on the top edge of the container, thus allowing the cover to be removed even when the silo is full:

HUESKER INNOVATION „utility model“ patent pending DE 20 2013 105 656 U1





KEY DATA

- High-tech, fabric-reinforced PVC membranes with minimum weight of 900 g per m², outer face coated to reduce susceptibility to soiling
- High tear resistance of 4,200 & 4,000 N per 5 cm, low gas permeability, high UV stability
- Stainless-steel clamping strip connections
- Integral supporting air blower unit with stainless-steel weather cover and outlet valve in outer membrane
- Central column in hardwood or, if desired, stainless steel
- Substructure comprising specially developed, low-strain straps and desulphurization mesh
- Visual gas level indicator
- Condensation deflector
- Used in conjunction with HUESKER's Flexxovalve 1000W+ pressure safety device to provide reliable, gas-tight cover; approved by TÜV (German Technical Inspection Association)

Your benefits:

- Made exclusively from high-grade materials
- Low snow loads thanks to multi-dimensional geometry and biaxial strain correction
- Integral condensation deflector, rainwater deflector and edge cover to protect top edge of tank
- Operating pressure of +3.5 mbar, designed for short-term peaks up to +10 mbar
- Desulphurization mesh
- Pressure safety valve with 1,000 m³/h flow rate and integral condensate ring to reduce risk of freezing in winter
- Diameters up to 45 m possible
- Customized, site-specific structural calculation
- On request, with full installation incl. provision of work platforms and cranes
- 4-year warranty (VOB)
- Expected service life of 15 years

Covertec Double Membrane Roof

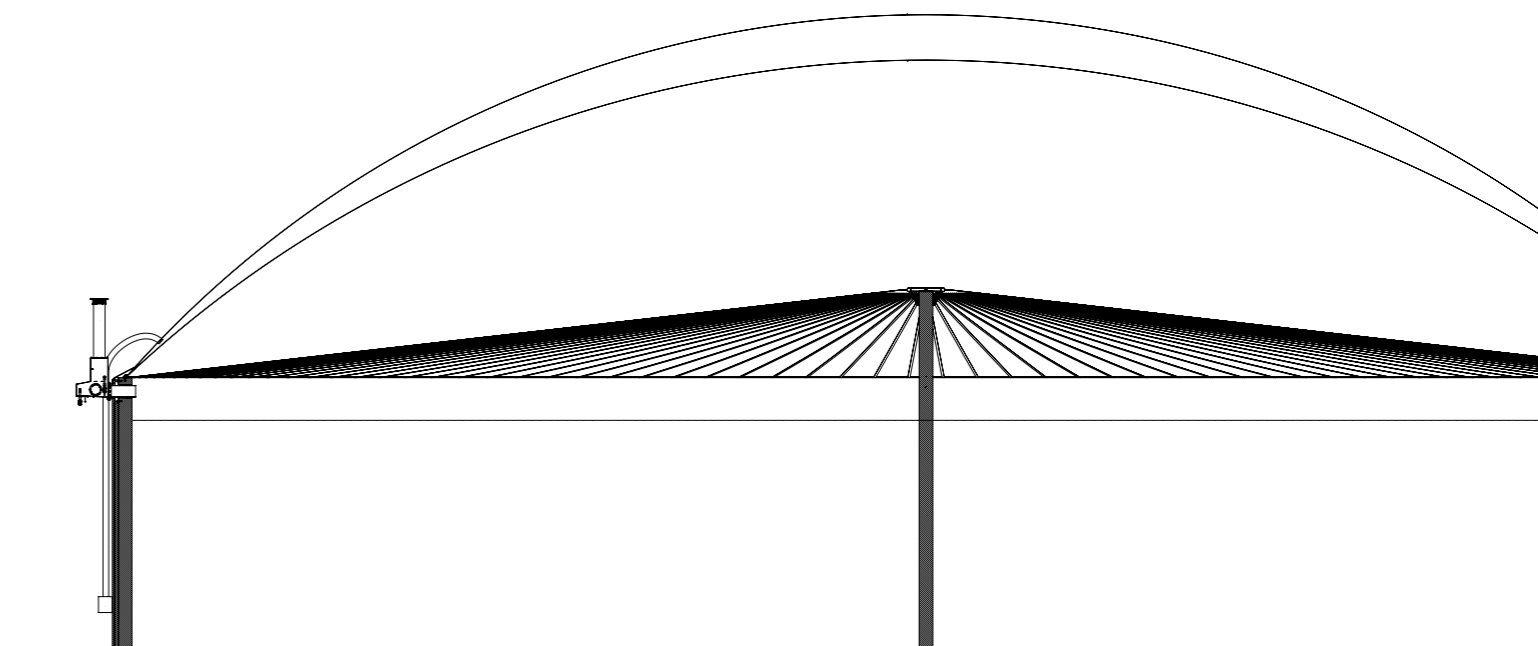
Maximum operational reliability for your biogas plant



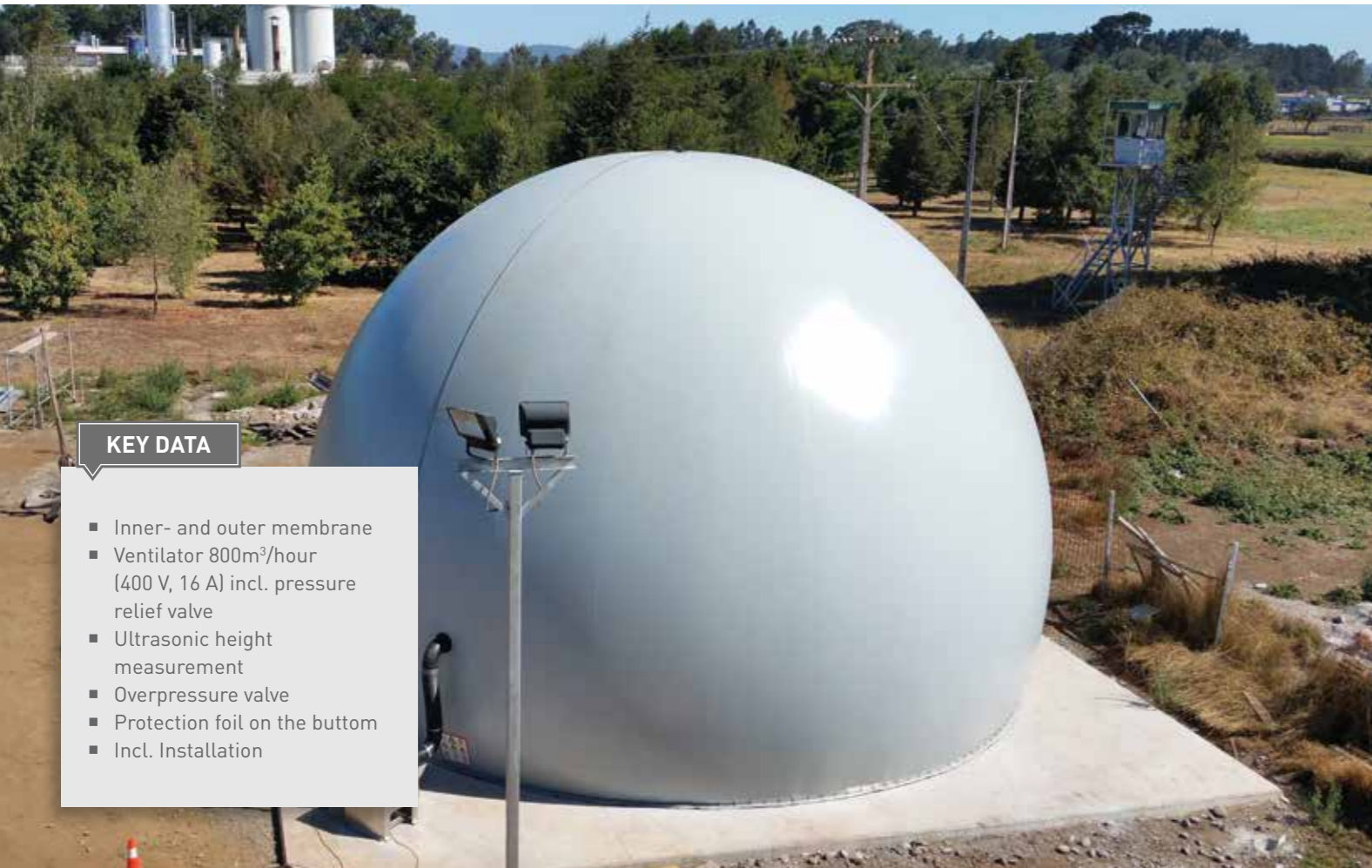
Delivery in accordance with the requirements of TRAS 120* possible on request.

The Covertec double membrane roof is the innovative cover system manufactured to HUESKER's supreme quality standards for biogas plants. The system comprises two separate membranes made from polyester woven fabric, PVC-coated on both sides, with a minimum weight of 900g per m² and a minimum tear resistance of 4,200 & 4,000 N per 5 cm.

The membranes offer low gas permeability in conjunction with extremely high UV stability and are finished with a special protective coating. The hemispherical shape serves to maximize storage capacity while protecting the cover against external weather conditions, e.g. wind, snow or soiling by leaves.



*Publication of a safety-related rule by the Commission for Plant Safety (TRAS 120 „Safety-related requirements for biogas plants“).



KEY DATA

- Inner- and outer membrane
- Ventilator 800m³/hour (400 V, 16 A) incl. pressure relief valve
- Ultrasonic height measurement
- Overpressure valve
- Protection foil on the bottom
- Incl. Installation



Covertec Flexible Storage Tank
Temporary or permanent storage solution



APPLICATIONS

Storage of:

- Drinking water
- Rainwater
- Sewage sludge
- Landfill leachate
- Digestate
- Waste water
- Process fluids
- Hydrocarbon
- Process water
- Liquid manure
- Firefighting water

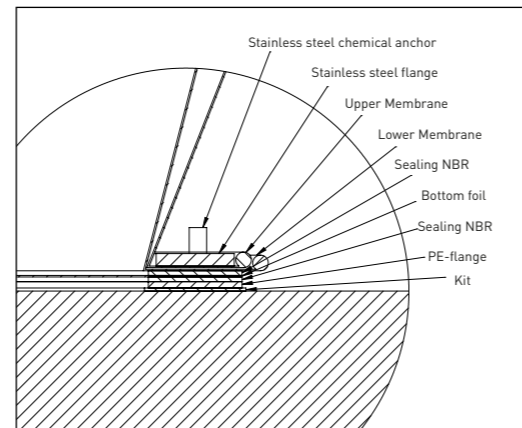
Others:

- As interim storage
- For humanitarian aid
- For cattle breeding

Covertec Gas Bag



The Covertec gas bag is designed for storing biogas. The bag consists of two separate biogas-resistant PVC sheets, each weighing 900 g/m² (inner and outer membrane). The two membranes are secured by means of a gastight connection to a curved stainless-steel strip on the concrete floor. A fan (300 or 800 m³/hour) maintains an optimum pressure level of approx. 2 mbar between the two membranes. The protective sheet on the concrete floor ensures that the bag remains gastight and prevents any friction with the inner membrane.



The high-grade, portable Covertec flexible storage tank can hold virtually any type of liquid and offers both a short-term and permanent solution to your storage problems. The containers are simply placed on the ground and require no extra lateral support.

The appropriate membrane type is determined with reference to the technical specification for the liquid. On the basis of structural design calculations performed using 3D CAD computer systems, our development staff will identify the best solution for your particular application.

The Covertec flexible storage tank is used in industry, agriculture, building construction and civil engineering by both public and private sector clients. Flexible tanks can be custom-made to specific sizes. They are covered by a four-year warranty in accordance with the German Construction Contract Procedures (VOB).





Service around biogas plants



Covertec Gas-Imaging Camera

HUESKER is equipped with cutting-edge technology for leak detection in biogas plants. In the highly experienced hands of our installers, the FLIR GF 320 gas-imaging camera guarantees the prompt and reliable identification of leaks. Minor repairs can be directly performed on site and the roof tensioning checked on request. Survey reports and counselling on possible repairs complete the service range. A check on the gas-tightness of your plant will enable you to achieve maximum returns.

Your benefits:

- State-of-the-art technology (FLIR GF 320 gas-imaging camera)
- Full explanation of results, with optional marking of leaks
- Optional survey report with counselling on possible repairs
- Checking and retensioning of covers on request
- Possibility of performing minor repairs directly on site (provided no gas in container)
- Gas-tightness test after repair

Covertec Concrete Rehabilitation

Concrete silos and silage bunker walls are prone to biochemical corrosion. Depending on the concrete quality, this may lead to porosity or even hairline cracks. Even protective coatings may become permeable over time. Effective protection can be provided for the inner wall surfaces by means of suitable rehabilitation measures.

The Covertec concrete rehabilitation system takes the form of retrofitted FPP-membranes that offer lasting concrete protection. Following installation of a drillable protective nonwoven, the 1.5 mm linings are welded together and held in place by clamping strips. Wall penetrations can be readily incorporated in the lining.

Your benefits:

- Time-tested FPP-membranes
- Long-lasting, flexible concrete protection with lining
- Incl. post-completion leakage test
- Suitable for open and sealed containers
- Suitable for use of agitators
- Resistant to liquid manure and digestate
- High UV resistance
- Allows larger areas of cracking to be covered (compared to coatings)

Before:



Afterwards:



References Biogas



FACTS

- Project in Koennern, implementation 2017, colour: grey RAL 7042
- 4 Covertec double membrane roofs, Ø outside: 30.99 m, height: 6.00 m, variable gas volume: approx. 1.985 m³
- 4 silo covers single-skin gas-tight, Ø outside: 25.68 m, height: 6.00 m



Double membrane roofs & silo covers single-skin gas tight on element tanks, Koennern in Germany

FACTS

- Project in Cappel/Dingel, implementation 2015/2016, colour: green RAL 6005
- 3 Covertec double membrane roofs, Ø outside: 22.78m; 26.64m; 30.99m, height: 6.00 m, Variable gas volume: approx. 1.176 m³; 1.540 m³; 1.985 m³



Double membrane roofs on element tank, Cappel in Germany

FACTS

- Project in Grefrath, implementation 2012, colour: grey RAL 7042
- Covertec double membrane roof, Ø outside: 26.60m, height: 6.00m, Variable gas volume: approx. 1.488 m³



Double membrane roof on concrete tank, Grefrath in Germany



References Weatherproof Silo Cover

FACTS

- Project in Uedem, implementation December 2014, colour: green RAL 6005
- Covertec weatherproof silo cover on element tank, Ø outside: 28.34 m, height: 5.80 m, 17° roof pitch



Weatherproof silo cover on element tank, Uedem in Germany

FACTS

- Project in Heek, implementation July 2018, colour: green RAL 6005
- Covertec weatherproof silo cover on steel tank, Ø outside: 17.88 m, height: 6.75 m, 20° roof pitch



Weatherproof silo cover on steel tank, Heek in Germany

FACTS

- Project in Weede, implementation July 2016, colour: grey RAL 7042
- Covertec weatherproof silo cover on concrete tank, Ø outside: 29.40 m, height: 6.00 m, 17° roof pitch



Weatherproof silo cover on concrete tank, Weede in Germany



FACTS

Covertec weatherproof silage cover, colour: grey RAL 7042

- On concrete tank, implementation August 2019

Ø outside: 12.40 m, height: 6.00 m, 17° roof pitch

Ø outside: 20.40 m, height: 5.50 m, 17° roof pitch

- On steel tank, implementation August 2015

Ø outside: 16.22 m, height: 5.85 m, 17° roof pitch

Project Haus Riswick: Covertec weatherproof silage cover on former biogas tanks



The agricultural research and education centre Haus Riswick near Kleve is a facility of the North Rhine-Westphalia Chamber of Agriculture. As the biogas plant at this location was no longer profitable, the former tanks (fermenter and secondary fermenter) were to be covered with emission protection roofs in the course of emission protection, reduction of precipitation water and thus higher storage volume.

Due to the many years of positive cooperation, the client also decided on a solution with a HUESKER product – the Covertec emission protection roof.

After the customer had disconnected his biogas plant from the grid, it was dismantled by specialised companies. All pipe penetrations and other attachments that were part of the biogas plant were removed accordingly. Finally, the tanks were covered with the Covertec weatherproof silage cover.

This type of cover reduces 90-95% of gas and ammonia emissions. Precipitation water (approx. 0.8 m³ per m²) no longer penetrates the tank. As a result, the customer achieves a higher storage volume and a reduction in application costs. The high quality and durability of the materials also ensure an optimal payback period.



High-frequency welding of membranes



Specimens for quality tests in laboratory



Production and customization



Exterior view of the office building in Duellen

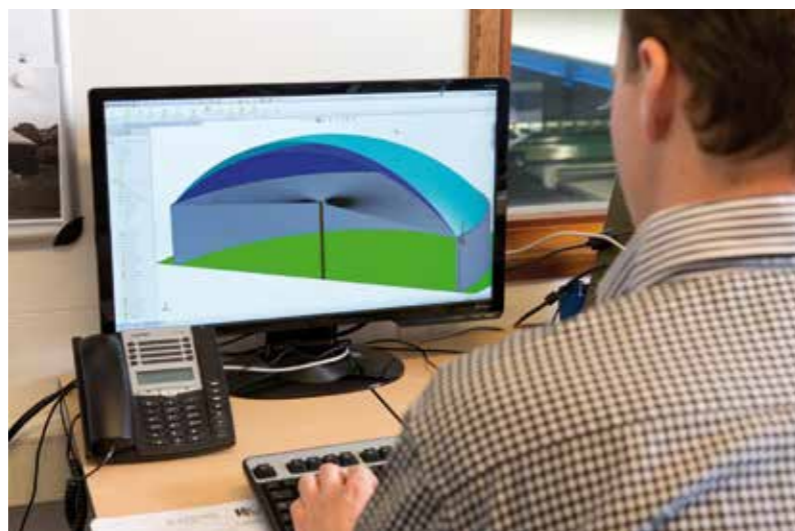


Development and Production

HUESKER Synthetic GmbH has developed, manufactured and marketed customized textile system solutions for the agricultural sector for over 35 years. The focus is on our customers and their requirements, which we endeavour to satisfy with flexibility and in-depth know-how. Our full expertise is dedicated to the service of our customers. The enormous diversity of customer demands is more than matched by the versatility of the HUESKER product portfolio and its wide-ranging applications.

Since April 2015, in response to the rising production capacity requirement, the HUESKER Group has directed its German business operations from a second location at Duellen, in addition to the Gescher headquarters.

A 7,500 m² production hall and a 950 m² office building form the centrepiece of the new site, which will allow the Industrial and Agriculture business units to meet the ever-growing market demands.





Lubrattec® and Agritec® are registered trademarks of HUESKER Synthetic GmbH.
HUESKER Synthetic is certified to ISO 9001 and ISO 50001.

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