

JIMCO[®]

UVC & OZONE
Technology



HS PURIFIER

HYDROGEN SULFIDE REDUCTION
- WITHOUT CHEMICALS

ENVIRONMENTALLY FRIENDLY TECHNOLOGY

For more than 25 years the Danish company JIMCO A/S has developed and manufactured some of the world's most unique environmentally friendly purification technologies. JIMCO A/S' environmentally friendly technology takes basic in photolytical oxidation, and this technology can be used to purify both air and water without the use of chemicals.

JIMCO has won the EU's environmental award for cleaner technologies and works to spread out the knowledge about environmentally friendly technologies, so the use of chemicals can be reduced.

HS Purifier use photolytical oxidation to purify the air from hydrogen sulfide (H₂S). When the H₂S level reduces significant, then you protect the electronic from the cabinet by the pump well. If the pump well is located close to a neighbor, then you also avoid neighbor complaints, because the smell is reduced significant.

HS Purifier installs in a pipe in the cabinet as ends in the pump well and is connected to 230V power supply. Oxygen from the atmospheric air converts by means of JIMCO's special UV-C lamps to ozone as it is blown down in the pump well by a ventilator. The ozone reacts with the hydrogen sulfide and the following chemical reaction occurs:



This means that the hydrogen sulfide oxidases and converts to other sulfur connections. The new connections are not dangerous or malodorous



FACTS OF HYDROGEN SULFIDE

Hydrogen sulfide is an inorganic chemical compound with the formula H_2S . Hydrogen sulfide is very poisonous, corrosive, and flammable and a mixture of H_2S and air can be explosive.

With a content of hydrogen sulfide in the air on less than 0,01-0,02 ppm can the sense of smell start to reveal hydrogen sulfide, by a content on 1 ppm experiences a weak, but unmistakable smell, and by 3-5 ppm feels a strong smell of hydrogen sulfide. By 20-30 ppm do you feel at clear and unpleasant smell, and by 30-150 ppm then can the smell be experienced as sweetish. Finally, will the sense of smell disappear if the content of hydrogen sulfide in the air excess 150-300 ppm. Because of that it is not possible to decide if a location is dangerous because of hydrogen sulfide.

The hygienic limit value for hydrogen sulfide is 10 ppm. By 10-50 ppm occurs a light eye irritation, and by 50-100 more serious eye damages and difficulty breathing after 1 hour in the contaminated air. By 100-200 ppm occurs cough and eye trouble, as after 10-20 minutes is accompanied by dizziness, and with exposure for the gas in more hours can the death occur. By 500-1000 ppm occurs fast unconsciousness, pulmonary edema and death. The acute toxicity of hydrogen sulfide is due to local attacks on tissues, primarily eyes and lungs, and an inhibition of blood's ability to transport oxygen.

Hydrogen sulfide is also a flammable gas which, when mixed with air, is explosive at concentrations between 4 and 46% by volume.



HSPURIFIER

ADVANTAGES WITH HSPURIFIER

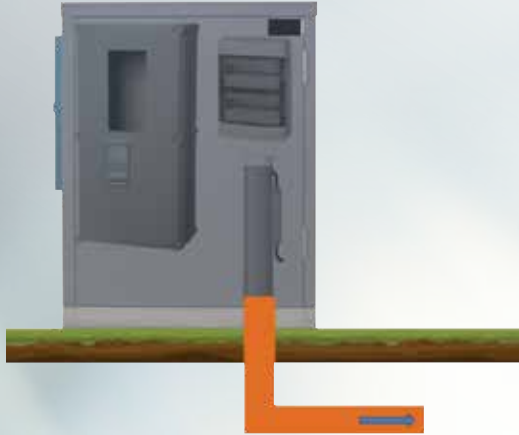
- ✓ REDUCES HYDROGEN SULFIDE EFFECTIVE
- ✓ STERILIZES THE AIR
- ✓ REDUCES SMELLS TO THE SURROUNDINGS
- ✓ AVOID NEIGHBOR COMPLAINS
- ✓ ENVIRONMENTALLY FRIENDLY PURIFICATION
- ✓ NO USE OF CHEMICALS
- ✓ NEEDS JUST 230 VOLTAGE POWER SUPPLY TO WORK
- ✓ LOW OPERATION- AND MAINTENANCE COSTS
- ✓ EASY TO INSTALL
- ✓ EXTENDS THE LIFE OF ACTIVATED CARBON



INSTALLATION

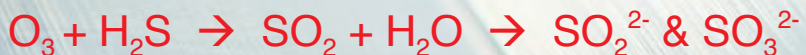
The HS Purifier is connected to a 230V power supply and is mounted vertical in an Ø110 PVC tube with the ventilator on top.

The Ø110 tube ends in the pump well and the ozone will go through the tube into the pump pit.



PURIFICATION PROCESS

Oxygen in the atmospheric air is converted into ozone by using JIM-CO's special HS lamp. The ozone is blown to into the pump pit by a ventilator mounted on the HS Purifier. The ozone will react with hydrogen sulfide and the following chemical reaction occurs in pump well:




This means that the hydrogen sulfide is oxidized into a sulfur compound and is therefore no longer dangerous or malodorous.

**NO
CHEMICALS**

**ECO
FRIENDLY**





“At Svendborg wastewater we carried out a test with JIMCO’s HS Purifier and showed that it effectively reduces H₂S.”

*Thomas Egel - Technician
Svendborg Wasterwater*

“We use JIMCO’s HS Purifier in several of our pump wells to reduce odor to the surroundings and to neutralize hydrogen sulfide. We have been working with JIMCO for more than 10 years.”

*Bjarni Hansen - Operations Manager
Langelands Forsyning*

”We brought 5 HS-Purifiers from JIMCO. We mounted 4 and had good results with the 3 of them. The last one did not show immediate results, but after 14 days of operating there was a noticeable difference in the well. We are very satisfied with the JIMCO HS-Purifiers”

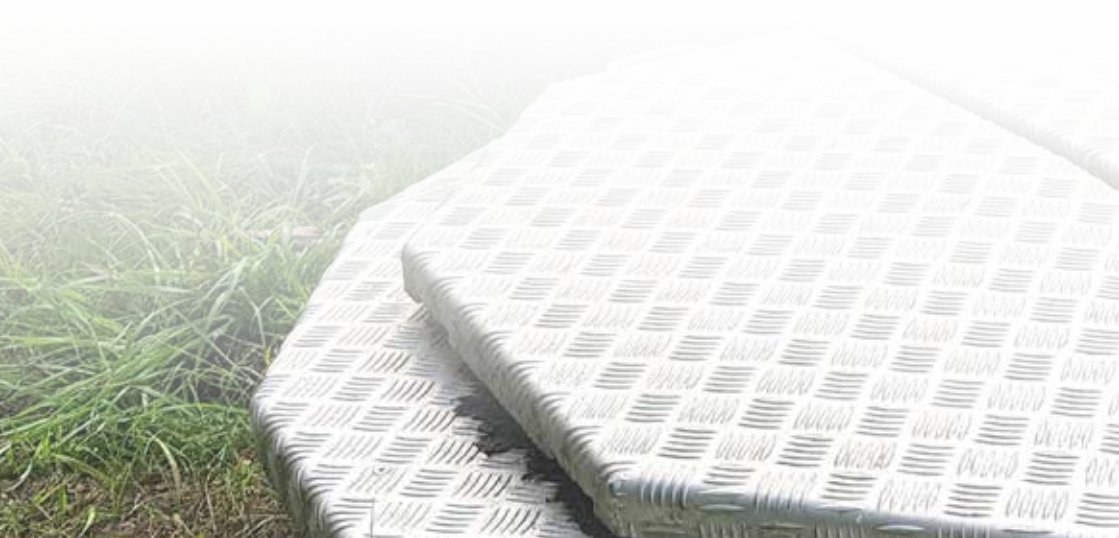
*Alex Olsen - Teamleader
Sorø Forsyning A/S*

We brought a HS-Purifier Medium from JIMCO and installed it in a pumping well with high hydrogen sulfide levels. We installed the HS-Purifier from JIMCO in early October 2019 in a pumping well equipped with loggers.

After approximately 45 days of operation, we compared the result with the measurements from the same period in 2018 and demonstrated a high hydrogen sulfide reduction.

Since then we have not received any neighbor complaints, but we are still following the development closely.

*Cecilie Bak - Engineer
Ringkøbing-Skjern Forsyning A/S*



"In the beginning of september 2019, we installed 3 of JIMCO's HS-Purifiers in connection with a well where neighbors had complained a lot about of smells. Previously, we spend around 90-100.000 DKK annually on chemistry to combat hydrogen sulfide.

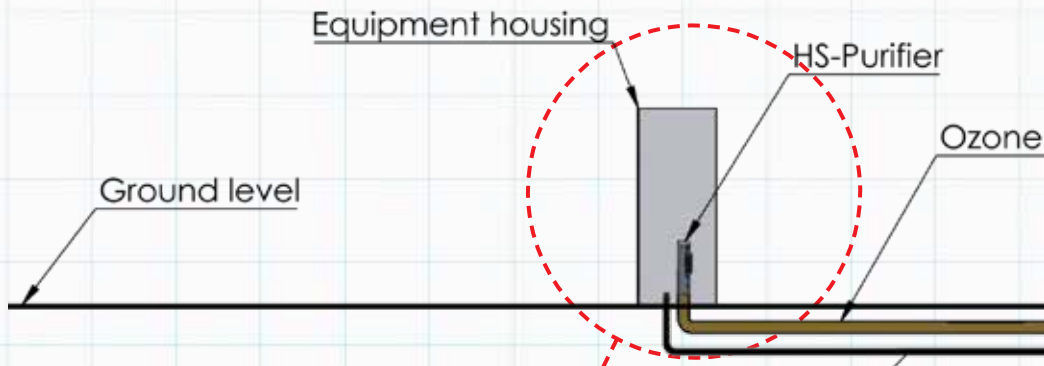
We mounted a HS-Purifier in the well in front of the well with challenges, and we mounted one in the reservoir for the well with challenges, and then we mounted the most powerful HS-Purifier in the well with challenges.

After only two months of operating, we do not have to dose chemistry anymore and the average hydrogen sulfide level is acceptable, between 5-8 ppm.

After 3 months of operating the chemistry is still off, and we get no neighbor complaints. I think it is impressive what we have achieved with the JIMCO equipment"

*Brian Offe Rasmussen - Craftsman
Lolland Forsyning A/S*



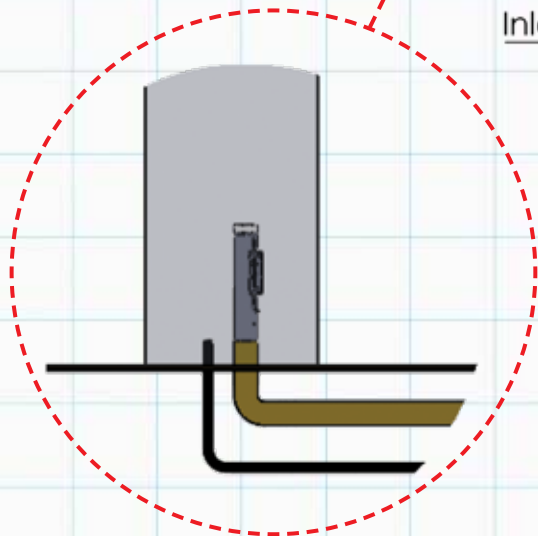


Pipe for electrical wiring to pump

Zone for oxidation of H₂S

Inlet sewage

Level of sewage



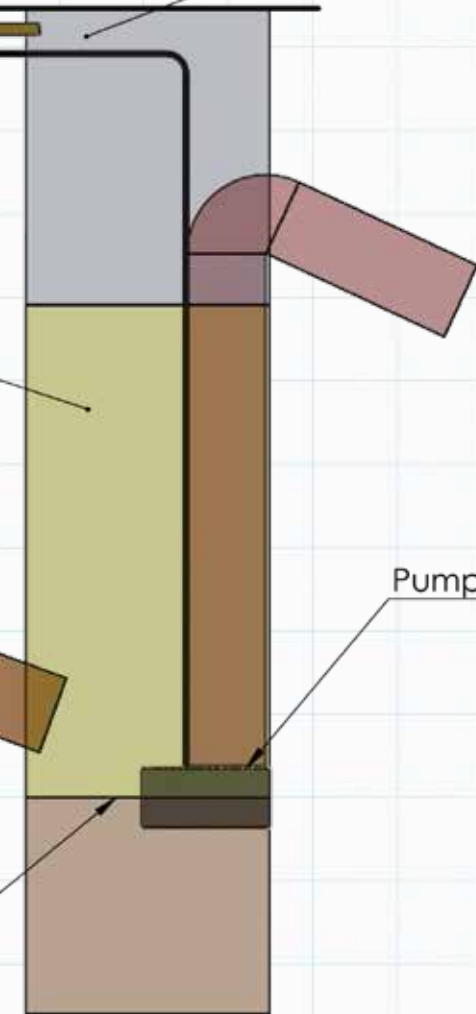
OVERVIEW OF INSTALLATION IN WASTE WATER WELL

pipe inlet

Ozone

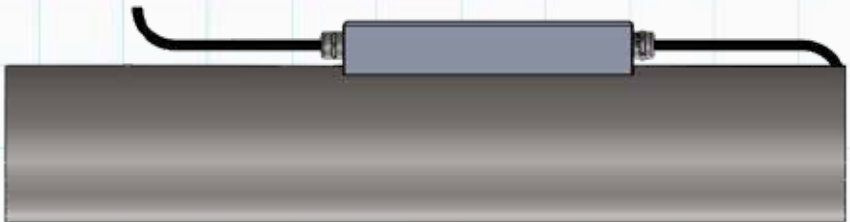
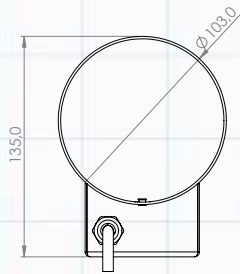
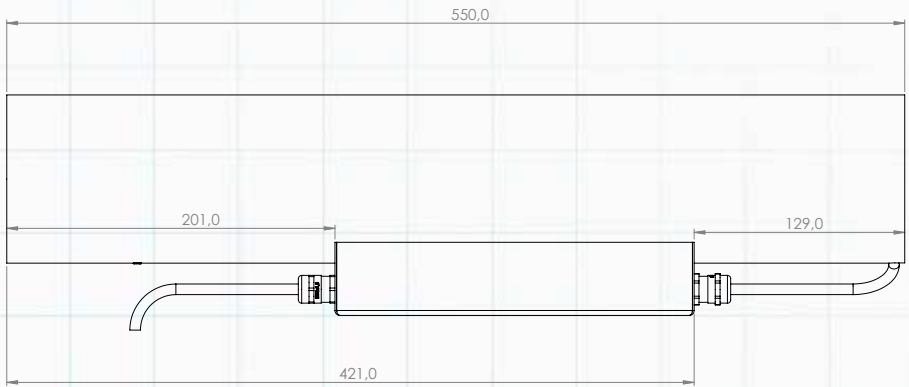
Outlet sewage

Pump



HS PURIFIER

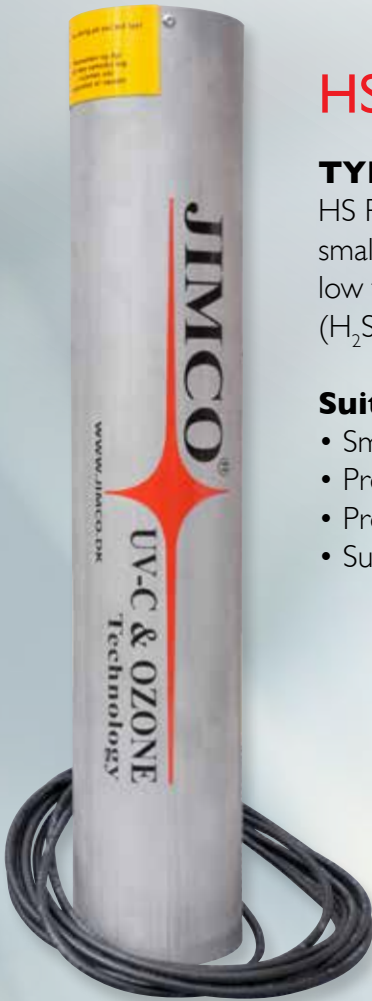
DATASHEET



HSPURIFIER LOW

HS UV-C lamp: 1x16 W
Operating hours (lamp): 8000
Voltage: 230 V
Power consumption: 21 W

Finish: Stainless steel AISI 304
Dimensions:
H: 550 mm \varnothing : 103 mm
Weight: 2,62 kg



HS PURIFIER LOW:

TYPICAL APPLICATION

HS Purifier Low is used in smaller pump stations and wells with low to moderate levels of hydrogen sulfide (H_2S).

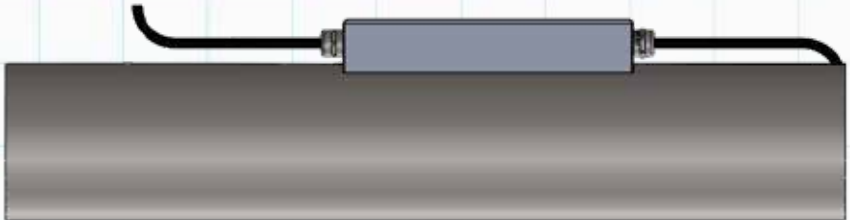
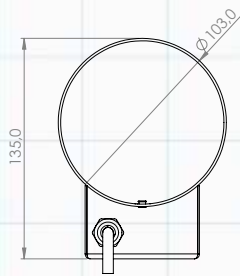
Suitable for:

- Smaller wastewater wells
- Prevention of odour nuisance
- Protection of electronics in terrain cabinets
- Supplementary solution to activated carbon

Contact JIMCO for correct dimensioning and a quotation.



DATASHEET



HSPURIFIER MEDIUM

HS UV-C lamp: 1x40W
Operating hours (lamp): 8000
Voltage: 230 V
Power consumption: 45 W

Finish: Stainless steel AISI 304
Dimensions:
H: 550 mm \varnothing : 103 mm
Weight: 3,60 kg



HS PURIFIER MEDIUM:

TYPICAL APPLICATION

HS Purifier Medium is used in pump stations with elevated and fluctuating hydrogen sulfide levels, where stable operation is essential.

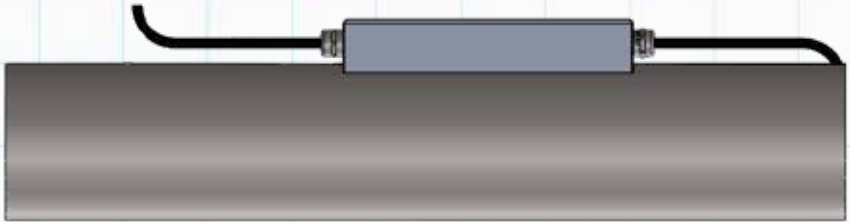
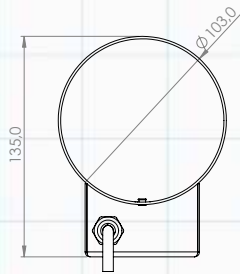
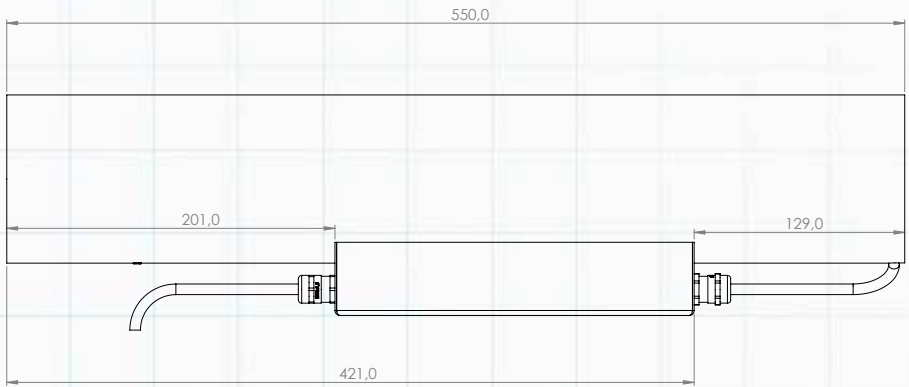
Suitable for:

- Pump stations with recurring odour issues
- Installations with documented ppm fluctuations
- Reduction or phase-out of chemical dosing
- Facilities requiring proven performance

Contact JIMCO for correct dimensioning and a quotation.



DATASHEET



HSPURIFIER HIGH

HS UV-C lamp: 2x40 W
Operating hours (lamp): 8000
Voltage: 230 V
Power consumption: 85 W

Finish: Stainless steel AISI 304
Dimensions:
H: 550 mm \varnothing : 103 mm
Weight: 3,90 kg



HS PURIFIER HIGH:

TYPICAL APPLICATION

HS Purifier High is used in heavily loaded pump stations and wells with high hydrogen sulfide levels and significant peak loads.

Suitable for:

- Heavily loaded pump stations
- High and continuous H₂S exposure
- Facilities with high requirements for operational reliability
- Alternative to extensive chemical treatment

Contact JIMCO for correct dimensioning and a quotation.



REDUCTION WITH HSPURIFIER

The reduction of hydrogen sulfide in % depends on the bacteria level in the putt, but an estimated reduction in % based on feedback shows following:

800 ppm ca. 50% Reduction 100-150 ppm . ca. 80% Reduction
300 ppm ca. 67% Reduction 60 ppm ca. 90% Reduction

JIMCO has also launched HS Purifier Medium and HS Purifier High which accordingly is 2.5 times and 5 times more powerful than HS Purifier Low

“We installed HS Purifier in the first main pump station from a newly sewed cottage area in February 2019. The temperature in the well was around 8-12 degrees. We do not use hydrogen sulfide upstream, there are no irrelevant water and the string is separated from rainwater.

In the pumping station have we for a long time had a sulfur hydrogen logger placed. Before we mounted the JIMCO's HS purifier, the logger showed tips of 2-300 ppm and an average 60-80 ppm. Occasionally, the tips could reach 350-400 ppm.

Two weeks after mounting of the JIMCO's HS Purifier, we received a measurement that showed 2 peaks of 103 ppm and an average of 11 ppm.

The duration of the measurement was four days. The subsequent measurement results also with a duration of four days showed the following:

- Peaks of 73 ppm and an average of 7 ppm.
- Peaks of 68 ppm and an average of 7 ppm.
- Max peak of 45 ppm and average of 8 ppm.

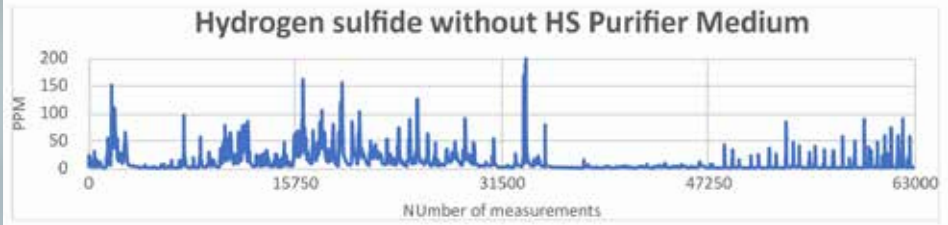
After 3 months we are at about 30 ppm in tips and some at 40 ppm with an average fluctuating between 5-8 ppm.”

Claus Trabjerg - Smed · Vestforsyning A/S in Holstebro

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REDUCTION WITH HS PURIFIER

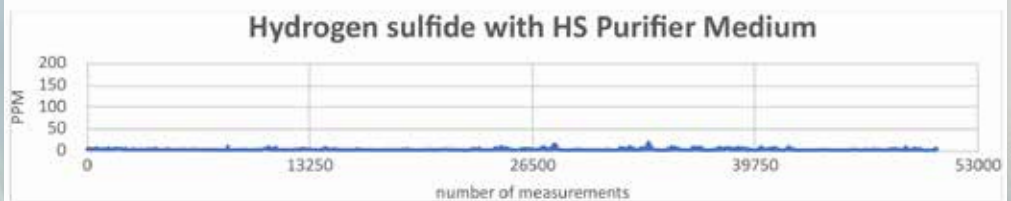
29.09.2018 - 12.11.2018



Hydrogen sulfide levels with use of HS Purifier Medium shows 1,14 % of the measurements is above 5 ppm against 41,6 % without use of HS Purifier Medium.

Hydrogen sulfide levels with use of HS Purifier Medium shows 0,05 % of the measurements is above 10 ppm against 28,4 % without use of HS Purifier Medium.

07.10.2019 - 11.11.2019



Hydrogen sulfide levels with use of HS Purifier Medium shows 0 % of the measurements is above 20 ppm against 16,4 % without use of HS Purifier Medium.

THE FOLLOWING HAVE ALSO ORDERED AND USE

HS PURIFIER

- Assens Forsyning A/S
- Arwos
- Blue Kolding
- Bornholms Energi og Forsyning A/S
- Brønderslev Forsyning A/S
- DIN Forsyning
- Energi Viborg A/S
- FFV Energi & Miljø A/S
- Guldborgsund Forsyning A/S
- Hedensted Spildevand A/S
- Helsingør Forsyning A/S
- Herning Vand A/S
- Hillerød Forsyning A/S
- Hjørring Vand A/S
- Kalundborg Forsyning A/S
- Kerteminde Forsyning A/S
- KLAR Forsyning A/S
- Langeland Forsyning A/S
- Lolland Forsyning
- Morsø Forsyning A/S
- NK Forsyning A/S
- Nyborg Forsyning og Service A/S
- Odsherred Forsyning
- Provas A/S (Haderslev)
- Ringkøbing Skjern Forsyning A/S
- Ringsted Forsyning A/S
- Samsø Spildevand A/S
- SK Forsyning A/S
- Sorø Forsyning A/S
- Svendborg Vand & Affald
- Thisted Vand
- Vandcenter Syd A/S
- Vejle Spildevand
- VestForsyning A/S
- Vesthimmerlands Vand A/S
- Vordingborg Forsyning A/S
- Aarhus Vand A/S



HS Purifier combined with activated carbon

JIMCO's HS Purifier can be combined with an activated carbon filter installed in a cabinet.

One cabinet can be installed below ground, while the other can be placed above ground.

The use of activated carbon in the wastewater industry is well known, but it is often challenged by the fact that the carbon does not always perform efficiently or has a limited service life. In cases of specific pollution, it may be necessary to select a specially impregnated carbon type.

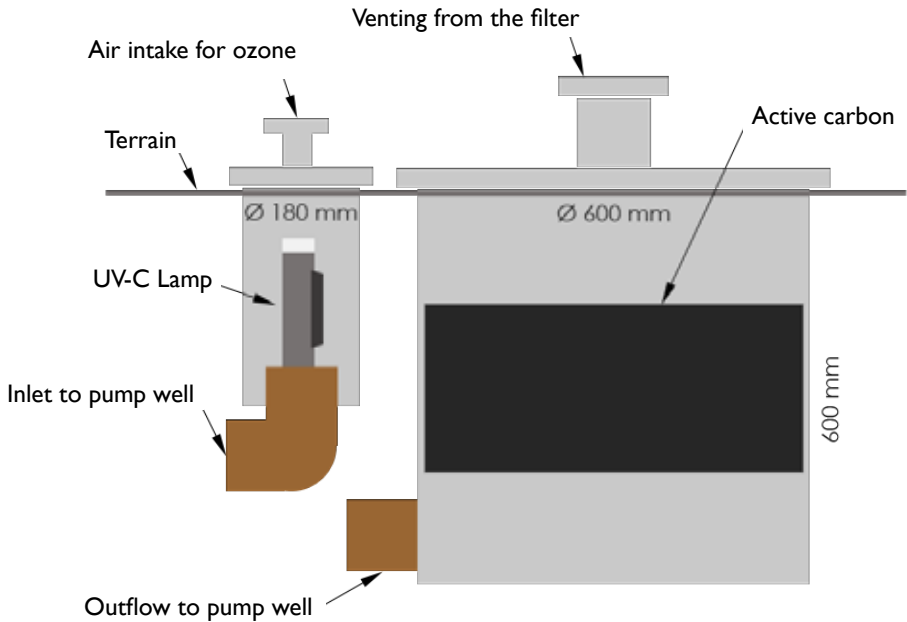
This also applies to the treatment of hydrogen sulfide in wastewater. With the correct carbon type for hydrogen sulfide, up to 50% of the carbon's weight can be absorbed. With an unsuitable carbon type, absorption may be limited to only 5–10%.

General feedback indicates that peak values are significantly reduced and that the average hydrogen sulfide level decreases substantially over time.



HYDROGEN SULFIDE FILTERS

HYDROGEN SULFIDE FILTERS UNDER TERRAIN



FUNCTION AND DESIGN

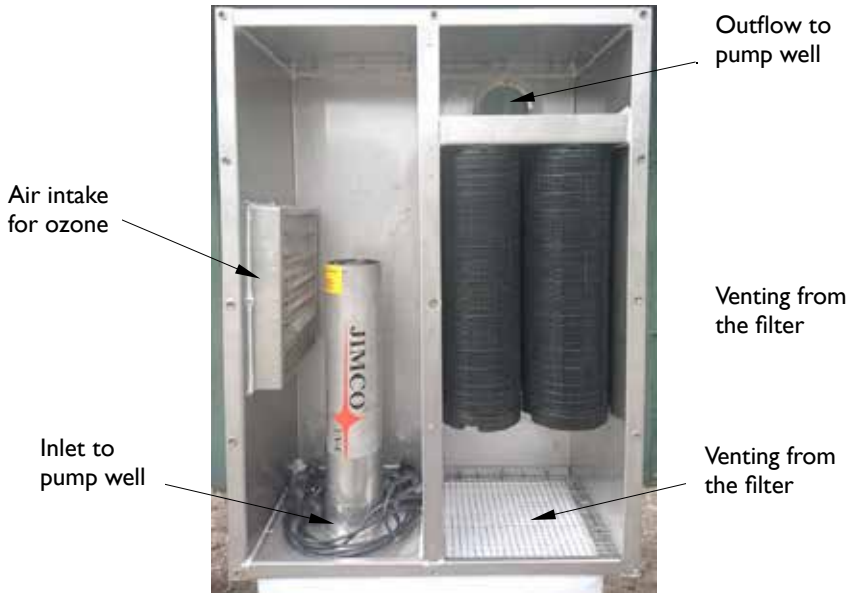
In the hydrogen sulfide filter installed below ground, the HS Purifier is positioned so that the UV-C-generated ozone is directed directly into the pump well via the HS Purifier's fan.

The ozone reacts with the hydrogen sulfide in the well, after which the air leaves the pump well and is conveyed to the filter housing. Here, the air passes through activated carbon, which is installed as granulate in the filter.

The activated carbon absorbs and binds the remaining hydrogen sulfide compounds, ensuring effective reduction of odour and emissions to the surroundings.

HYDROGEN SULFIDE FILTERS

HYDROGEN SULFIDE FILTERS OVER TERRAIN



OPERATION AND SERVICEABILITY

In the above-ground hydrogen sulfide filter, the HS Purifier is installed in the filter housing, supplying UV-C-generated ozone to the pump well via a fan.

After reacting with hydrogen sulfide, the air is returned to the filter housing and passes through activated carbon cartridges, which bind the remaining hydrogen sulfide compounds and reduce odour and emissions.

The above-ground solution provides easy access for service and replacement of carbon cartridges and is ideal where operation and maintenance accessibility are prioritised.

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**UV-C & OZONE
Technology**

For further information
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