#chemicalfreeworld

JIMCO®

UV-C & OZONE
Technology

HSPURIFIER

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 230 V 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:

$$O_3 + H_2S \rightarrow SO_2 + H_2O \rightarrow SO_2^{2-} \,\&\, SO_3^{2-}$$

This means that the hydrogen sulfide oxidases and convents 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 H2S. Hydrogen sulfide is very poisonous, corrosive, and flammable and a mixture of H2S 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

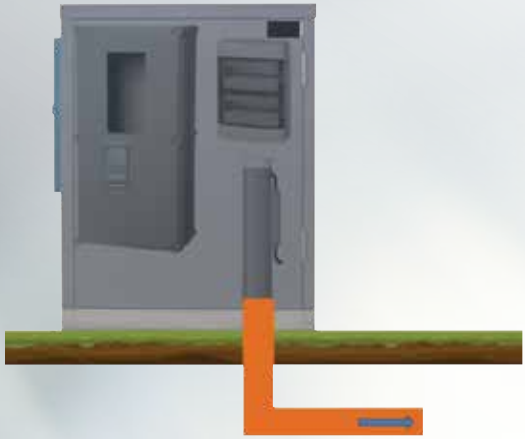
ADVANTAGES WITH

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:

$$O_3 + H_2S \rightarrow SO_2 + H_2O \rightarrow SO_2^{2-} \,\&\, SO_3^{2-}$$

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

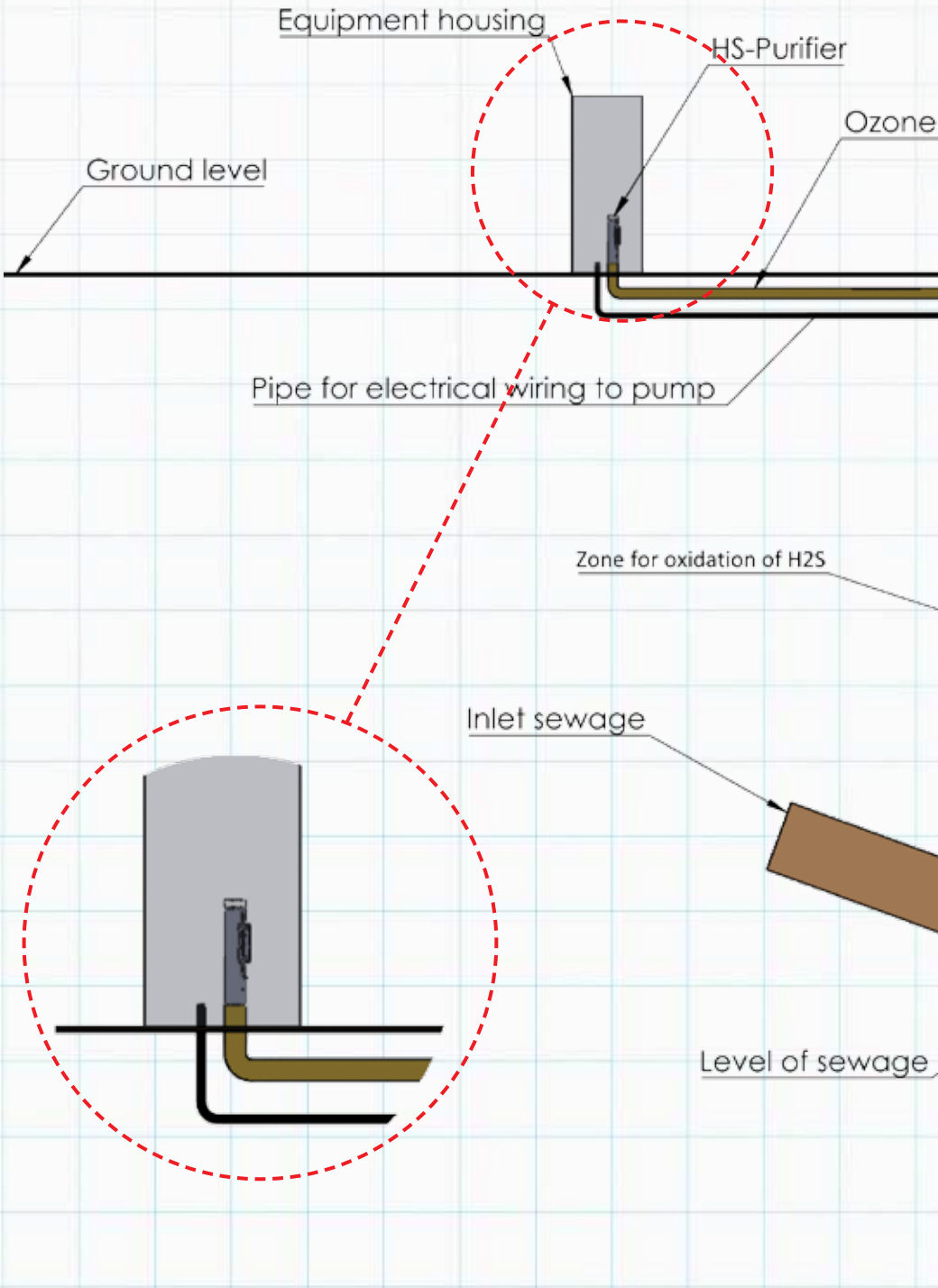

NO
CHEMICALS
Environmentally
Friendly
Purification

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

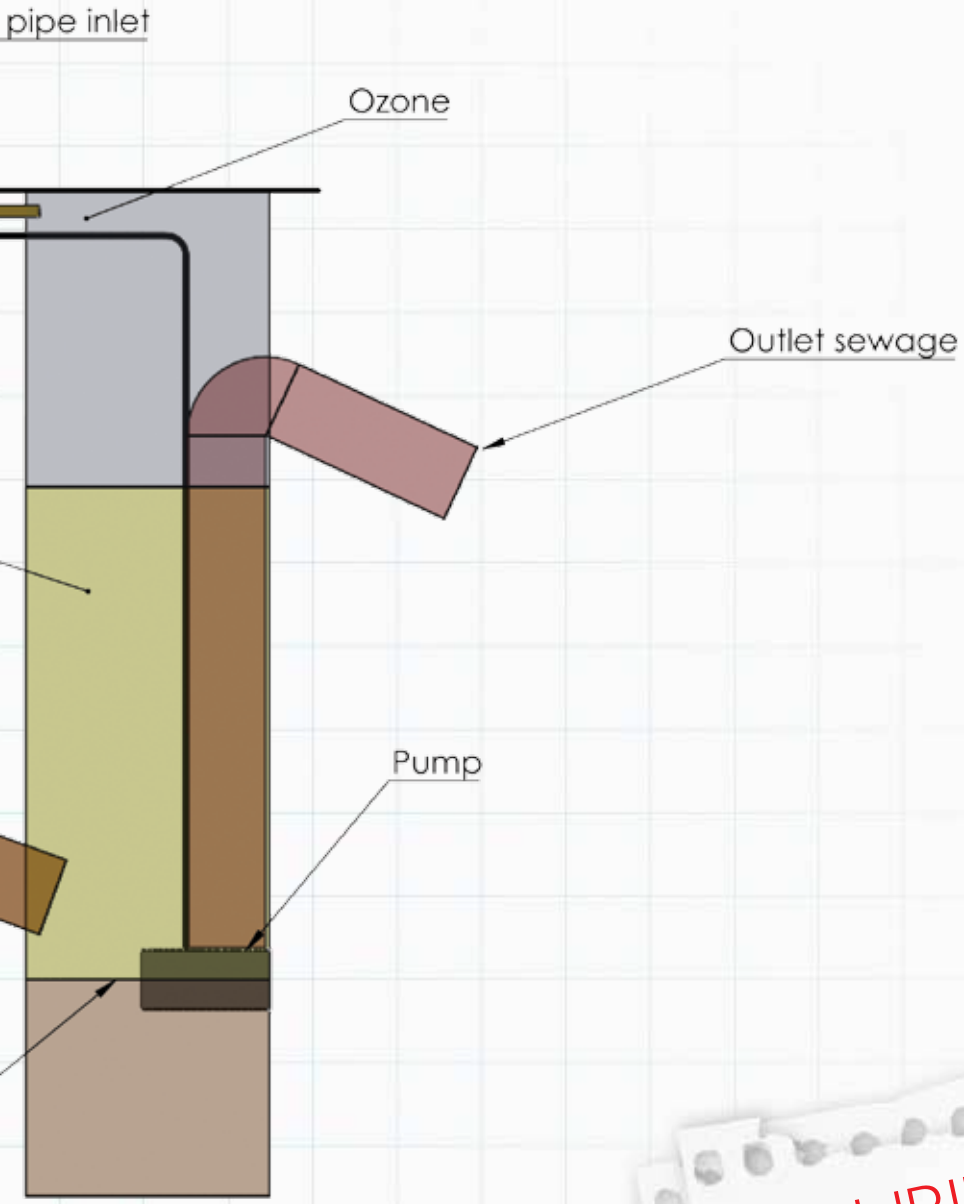
Technician Thomas Egel
Svendborg Wasterwater

”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.”

Operations Manager Bjarni Hansen
Langelands Forsyning


Equipment housing
HS-Purifier
Ozone
Ground level
Pipe for electrical wiring to pump
Zone for oxidation of H2S
Inlet sewage
Level of sewage

OVERVIEW OF INSTALLATION IN WASTE WATER WELL



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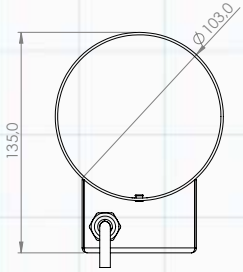
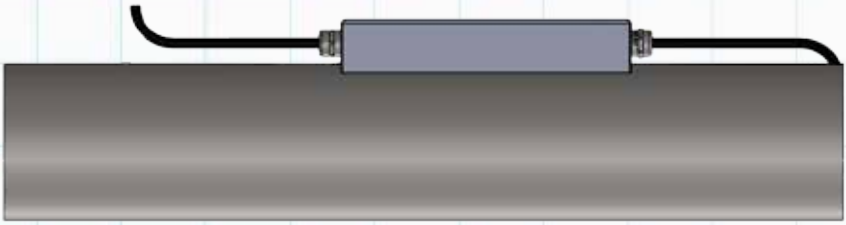
DATASHEET





HSPURIFIER

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 Ø: 103 mm
Weight: 3,32 kg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REDUCTION WITH HS PURIFIER

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

"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
Vestforsyning A/S i Holstebro

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The use of activated carbon in the wastewater industry is generally known but challenged by the fact that the active carbon does not always work efficiently or last long.

In the case of special pollution, it can be relevant to choose a special impregnated carbon type. This is also the case for purification of hydrogen sulfide in wastewater. With the right type of carbon for hydrogen sulfide, can up to 50% of the weight of the carbon be absorbed. With an unsuitable carbon type, the carbon may only occupy 5-10%.

JIMCO's HS Purifier can be combined with an active carbon filter in the cabinet. One cabinet can be dug underground and the other can be placed over ground.

PRICES:

Hydrogen sulfide filters under terrain:
DKK. 18.000,-

Hydrogen sulfide filters over terrain:
DKK. 10.000,-

All prices are exclusive VAT, EXW Rudkøbing, exclusive HS Purifier, exclusive mounting, and inclusive active carbon to the hydrogen sulfide.

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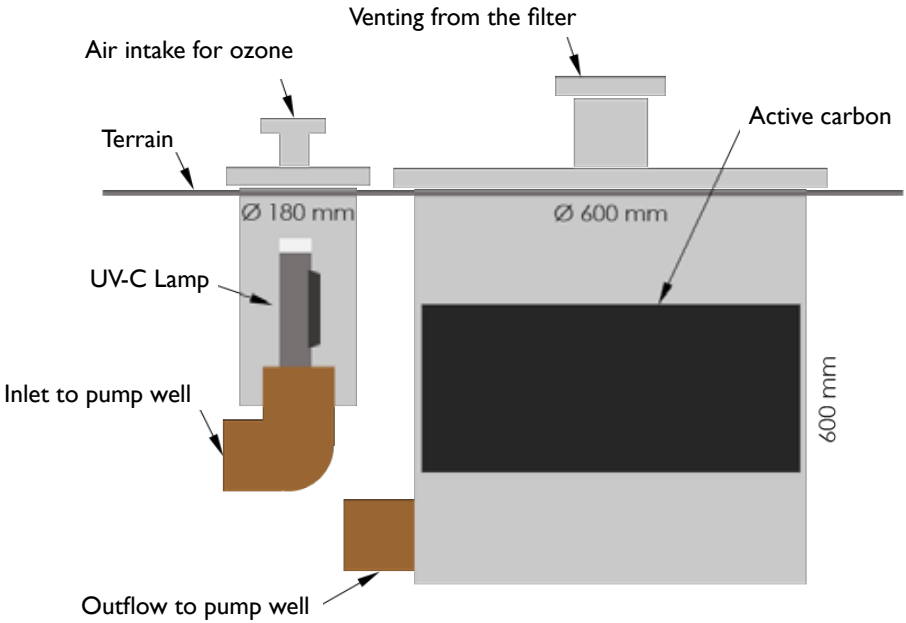
ENVIRONMENTALLY FRIENDLY HYDROGEN SULFIDE FILTERS

HYDROGEN SULFIDE FILTERS UNDER TERRAIN



In the hydrogen sulfide filter under ground, the HS Purifier is placed so the UV-C produced ozone gets access to the pump well and is supplied to the well using the HS Purifier's ventilator.

The ozone reacts with the hydrogen sulfide, and the air leaves the well. Then the air passes through the active carbon, which is placed in the filter house as granules. The carbon absorbs and binds the remaining hydrogen sulfide and ensures an optimal solution for reducing odor and pollution to the surroundings.

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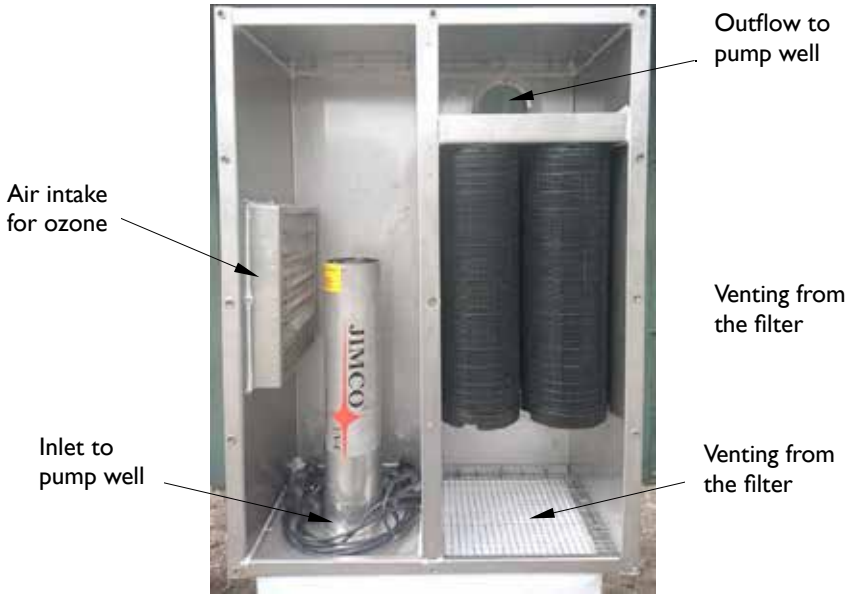
ENVIRONMENTALLY FRIENDLY HYDROGEN SULFIDE FILTERS

HYDROGEN SULFIDE FILTERS OVER TERRAIN



In the hydrogen sulfide filter over ground, the HS Purifier is placed so the UV-C produced ozone gets access to the pump well and is supplied to the well using the HS Purifier's ventilator.

The ozone reacts with the hydrogen sulfide, and the air leaves the well. Then the air passes through the active carbon, in the carbon cartridges in the filter house. The carbon absorbs and binds the remaining hydrogen sulfide and ensures an optimal solution for reducing odor and pollution to the surroundings.

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