JIMCO®
UV-C & OZONE
Technology

DANISH
ENVIRONMENTAL
TECHNOLOGY
SINCE 1992

#chemicalfreeworld

HS PURIFIER

HYDROGEN SULFIDE REDUCTION

– without chemical dosing

Cleaner air.
Fewer complaints.



DOCUMENTED PERFORMANCE
IN LIFT STATIONS

SOLUTIONS
FOR A CLEANER
FUTURE

WHAT IS HS PURIFIER?

EFFECTIVE REDUCTION OF HYDROGEN SULFIDE IN PUMPING STATIONS

HS Purifier is designed to reduce hydrogen sulfide (H_2S) and other odorous gases from wastewater in lift stations, gravity sewers and outdoor cabinets.

Hydrogen sulfide can cause odor problems, corrosion of concrete and other installations, and damage to electronic equipment. The problem often occurs in wastewater systems where the wastewater remains under low-oxygen conditions for extended periods. HS Purifier uses JIMCO's photolytic oxidation technology to treat the air in the lift station.

The system is installed at the lift station and operates automatically to reduce concentrations of hydrogen sulfide and other odorous compounds in the air.

The result is fewer odor problems, better protection of installations and electronic equipment, and a significantly reduced need for chemical dosing. JIMCO has worked with UV-C and ozone technology since 1992 and received the EU Environmental Award for Cleaner Technology in 2000 for the development of photolytic oxidation technology for air purification.



Pumping station located close to residential properties, where odor problems and hydrogen sulfide can be a challenge.

HYDROGEN SULFIDE FORMS NATURALLY IN WASTEWATER SYSTEMS

AS A RESULT OF BIOLOGICAL PROCESSES.

Wastewater contains, among other things:

- Organic matter
- Dissolved oxygen (O_2)
- Nitrate (NO_3^-)
- Sulfate (SO_4^{2-})

Bacteria in the wastewater use these substances as energy sources.

From oxygen to hydrogen sulfide

At the beginning of the sewer system, oxygen is normally present in the wastewater.

Aerobic zone

Bacteria first consume the dissolved oxygen.
Once the oxygen is depleted, conditions in the sewer change.

Anoxic zone

Bacteria then begin to use nitrate as an energy source.
Once both oxygen and nitrate are depleted, the wastewater enters the anaerobic zone.

Anaerobic zone

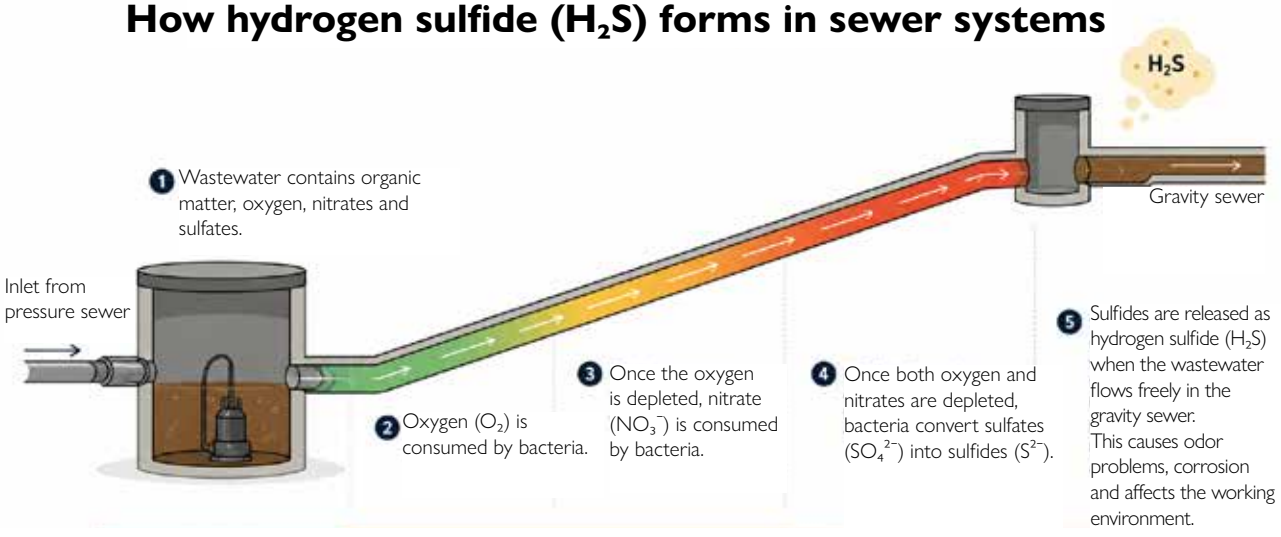
Sulfate-reducing bacteria begin to convert sulfate into sulfide.
When the wastewater subsequently reaches gravity sewers and lift stations, hydrogen sulfide (H_2S) is released into the gas phase.

The result

The consequences may include:

- Strong odor problems
- Corrosion of installations
- Damage to electronic equipment
- Occupational health and safety challenges
- Complaints from nearby residents

How hydrogen sulfide (H_2S) forms in sewer systems



WHY IS H_2S BECOMING AN INCREASING PROBLEM?

Several factors in modern wastewater systems contribute to increased hydrogen sulfide (H_2S) formation. Longer retention times and lower oxygen levels in the sewer network increase the risk of H_2S formation.

1 Centralisation of wastewater treatment plants



Fewer wastewater treatment plants



Longer pressure pipes and fewer lift stations



Longer pressure pipe and fewer lift stations



More hydrogen sulfide

2 Reduced water consumption



Water-saving fixtures



Lower flow rates



Longer retention time and lower oxygen levels



More hydrogen sulfide

3 Separate sewer systems



Less rainwater in the sewer system



Less dilution of the wastewater



Higher concentration of organic matter



More hydrogen sulfide

CONSEQUENCES



Odor problems and complaints from nearby residents



Corrosion of concrete and installations



Damage to electronic equipment



Poor working environment



Increased operating and maintenance costs

WHAT CAUSES ODOR IN PUMPING STATIONS?

Wastewater contains a range of sulfur compounds that can cause strong odors even at very low concentrations.

COMPOUND	CHARACTERISTIC ODOR
Hydrogen sulfide (H_2S)	Rotten eggs
Ethyl mercaptan	Rotten cabbage
Methyl mercaptan	Rotten cabbage
Dimethyl sulfide	Rotten vegetables
Benzyl mercaptan	Unpleasant rotten odor

H_2S IS OFTEN THE MAIN CHALLENGE

Hydrogen sulfide (H_2S) is known for its characteristic rotten egg odor and can be detected by humans at very low concentrations.

In addition to odor problems, H_2S can contribute to:

- **Corrosion of concrete and installations**
- **Damage to electronic equipment**
- **Occupational health and safety challenges**
- **Complaints from nearby residents**





HS Purifier installed in the above-ground cabinet. Ozone generated by the UV-C system is conveyed into the well through a PVC pipe.

WHY IS HYDROGEN SULFIDE A CHALLENGE?

Hydrogen sulfide (H_2S) is more than just a source of odor problems.

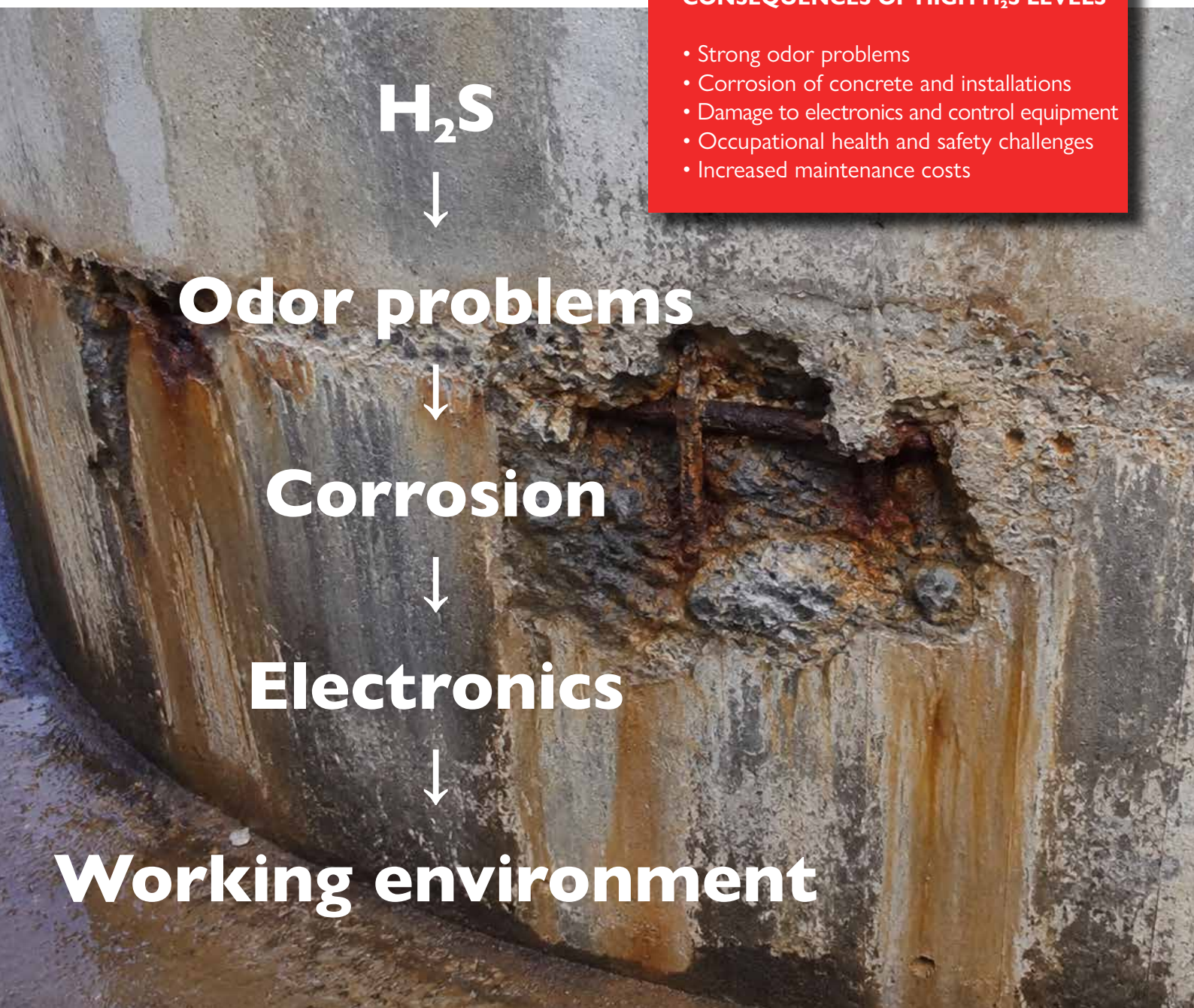
As H_2S concentrations increase, they can affect installations, the working environment and the daily operation of lift stations and wastewater facilities.

In addition to the well-known odor problems, hydrogen sulfide can contribute to corrosion of concrete and technical installations and damage sensitive electronic equipment.

High concentrations can also create occupational health and safety challenges for employees working with the operation and maintenance of the facilities.

CONSEQUENCES OF HIGH H_2S LEVELS

- Strong odor problems
- Corrosion of concrete and installations
- Damage to electronics and control equipment
- Occupational health and safety challenges
- Increased maintenance costs

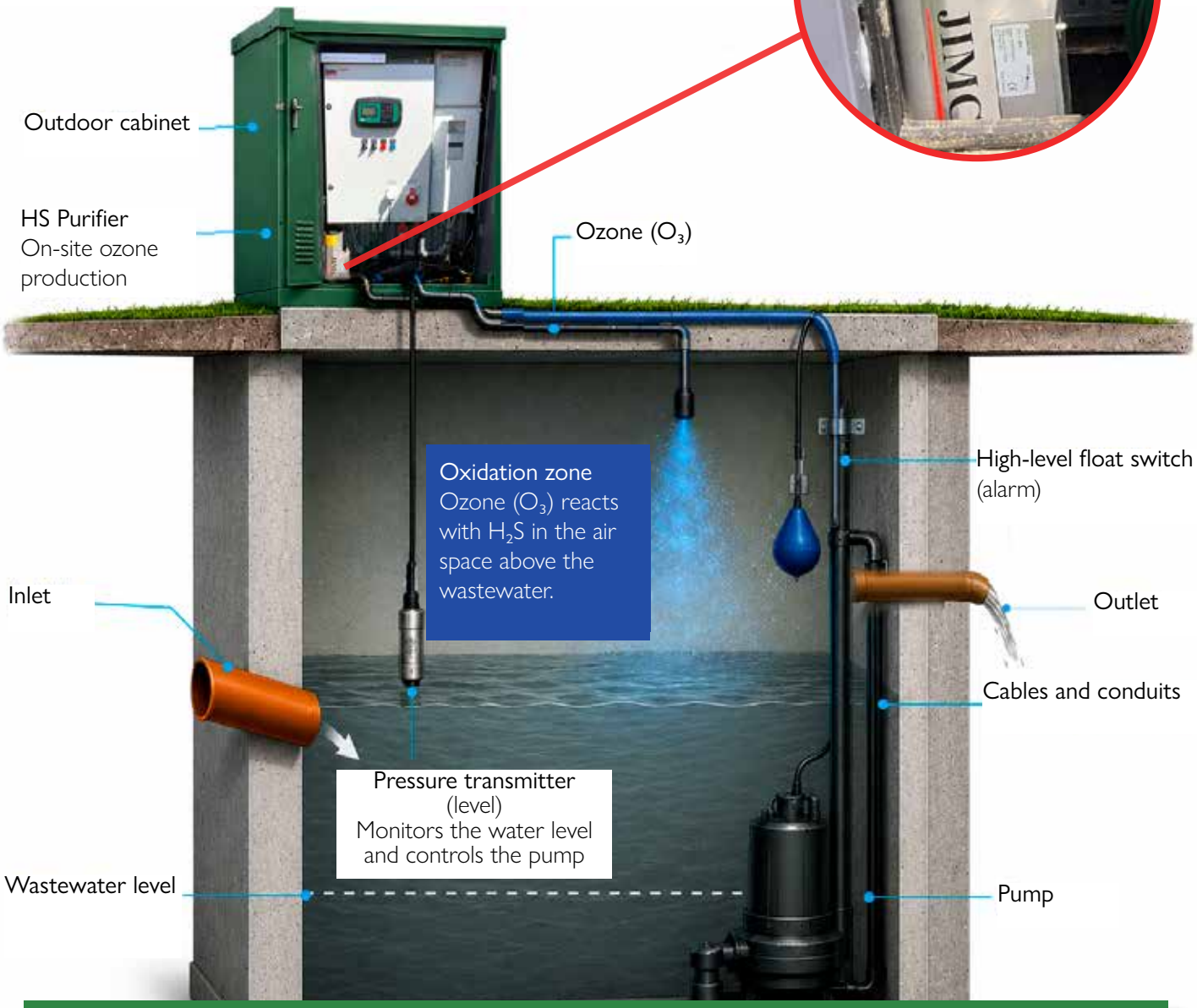


HOW HS PURIFIER WORKS

HS Purifier utilizes JIMCO's photolytic oxidation technology to reduce hydrogen sulfide (H_2S) in lift stations and gravity sewers

Specially developed UV-C lamps generate ozone from oxygen in the surrounding air without producing by-products such as NOx. The ozone-containing air is conveyed into the pumping station, where the ozone reacts with hydrogen sulfide and contributes to the oxidation of the gas.





BENEFITS OF OZONE-BASED TREATMENT

- √ No chemical dosing
- √ Ozone generated from oxygen in the surrounding air
- √ Automatic operation
- √ Low maintenance requirements
- √ Can be combined with activated carbon
- √ Suitable for existing pumping stations

WHAT DO OUR CUSTOMERS SAY?

LOLLAND FORSYNING

DKK 90,000–100,000 annually on chemicals

After only two months of operation, chemical dosing could be stopped, and the hydrogen sulfide level stabilised at 5–8 ppm.

After three months, chemical dosing was still switched off, and complaints from nearby residents had ceased.

Brian Offe Rasmussen
Lolland Forsyning A/S

RINGKØBING-SKJERN FORSYNING

Significant reduction in hydrogen sulfide levels

After approximately 45 days of operation, measurements showed a significant reduction in hydrogen sulfide levels compared with the previous year.

Since the installation, we have not received any complaints from nearby residents.

Cecilie Bak
Ringkøbing-Skjern Forsyning A/S

VESTFORSYNING

Average reduced from 60–80 ppm to 5–8 ppm

Before installation, we typically measured average hydrogen sulfide levels of 60–80 ppm, with peaks of up to 350–400 ppm.

After installation, the average fell to 5–8 ppm, and the level has remained stable since.

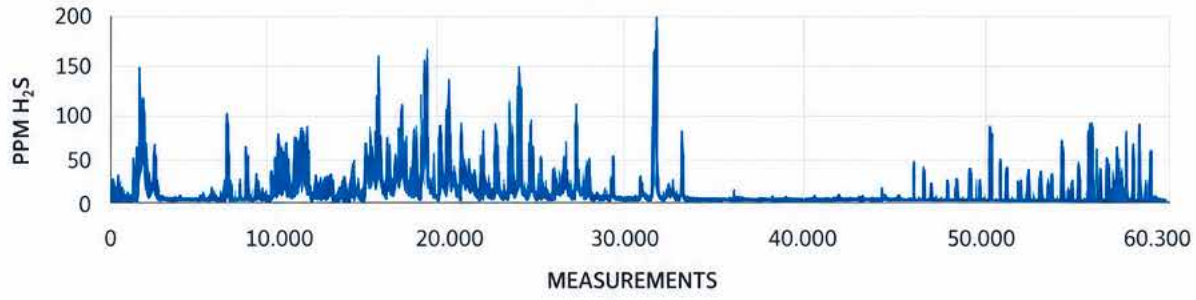
Claus Trabjerg
Vestforsyning A/S

Danish utilities choose HS Purifier for documented results, fewer odor complaints and an improved working environment.

RINGKØBING-SKJERN FORSYNING

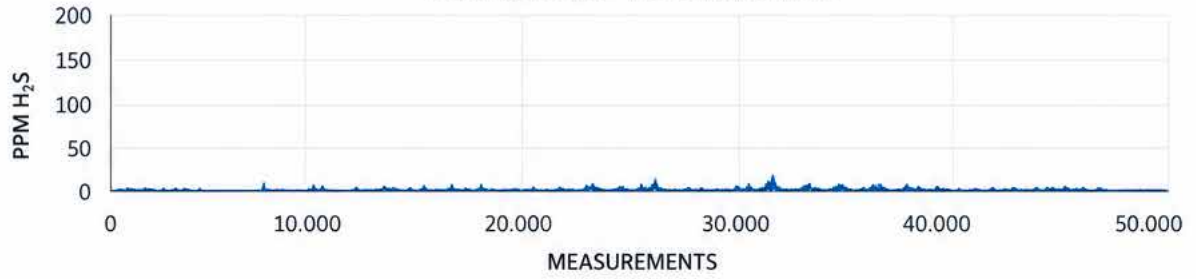
BEFORE INSTALLATION

HYDROGEN SULFIDE MEASUREMENTS
WITHOUT HS PURIFIER
SEPTEMBER 29, 2018 – NOVEMBER 12, 2018



AFTER INSTALLATION

HYDROGEN SULFIDE MEASUREMENTS
WITH HS PURIFIER
OCTOBER 10, 2019 – NOVEMBER 11, 2019



MEASUREMENT POINT	WITHOUT HS PURIFIER	WITH HS PURIFIER
Above 5 ppm H_2S	41.6 %	1.14 %
Above 10 ppm H_2S	28.4 %	0.05 %
Above 20 ppm H_2S	16.4 %	0 %

85%

REDUCTION IN AVERAGE H_2S LEVEL

WITHOUT HS PURIFIER
Average of the
100 highest measurements

296.5 ppm

WITH HS PURIFIER
Average of the
100 highest measurements

9.6 ppm

97%

Measurements are based on continuous H_2S data logging before and after installation of HS Purifier.

FROM CHEMICAL DOSING TO HS PURIFIER

01
THE CHALLENGE

- Annual chemical costs: **15.000 USD**
- Odor complaints from nearby residents
- High hydrogen sulfide levels

02
THE SOLUTION

- Three HS Purifier units were installed at the pumping station and retention basin.

03
THE RESULT

- Chemical dosing stopped
- H_2S stabilised at **5–8 ppm**
- No odor complaints

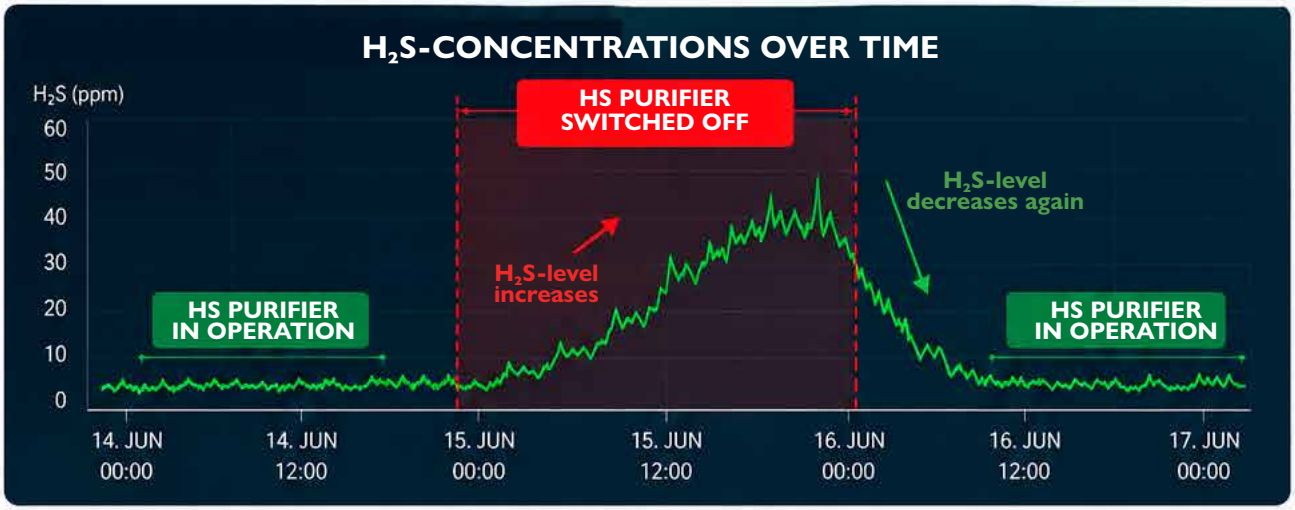




SAVINGS ON CHEMICALS
DKK 90,000–100,000
per year

CHEMICAL DOSING STOPPED

HYDROGEN SULFIDE LEVEL STABILISED AT
5–8 ppm
Low level



Measurements are based on continuous H_2S data logging before and after installation of HS Purifier.

KEY FIGURES FROM DANISH INSTALLATIONS



85 %

REDUCTION IN AVERAGE H_2S LEVEL

Average level reduced from 11.1 ppm to 1.6 ppm.



97 %

REDUCTION IN THE HIGHEST MEASUREMENTS

Average reduction of the 100 highest measurements, from 296.5 ppm to 9.6 ppm.



DKK 90,000–100,000

ANNUAL SAVINGS ON CHEMICAL DOSING

Typical savings on chemicals and handling per pumping station.



5-8 PPM

TYPICAL STABILISED H_2S LEVEL

Typical level after installation and stable operation.



0 %

MEASUREMENTS ABOVE 20 PPM

Share of measurements above 20 ppm in the documented Ringkøbing-Skjern case.



Based on documented measurements and operational experience from Danish utilities.

WHY CHOOSE HS PURIFIER?



NO CHEMICAL DOSING

HS Purifier reduces hydrogen sulfide without the need for chemical dosing.



LOW ENERGY CONSUMPTION

The system has low energy consumption and low operating costs. Approx. 105 USD



FEWER ODOR COMPLAINTS

Reducing odor problems can contribute to fewer complaints from nearby residents.



PROTECTS ELECTRONICS

Lower H_2S levels can reduce the risk of corrosion of electronics and installations.



DOCUMENTED PERFORMANCE

Performance can be documented through measurements and data logging.

HS PURIFIER HIGH:

TYPICAL APPLICATION

HS Purifier High is designed for heavily loaded pumping stations and wells with high hydrogen sulfide levels and significant peak loads.

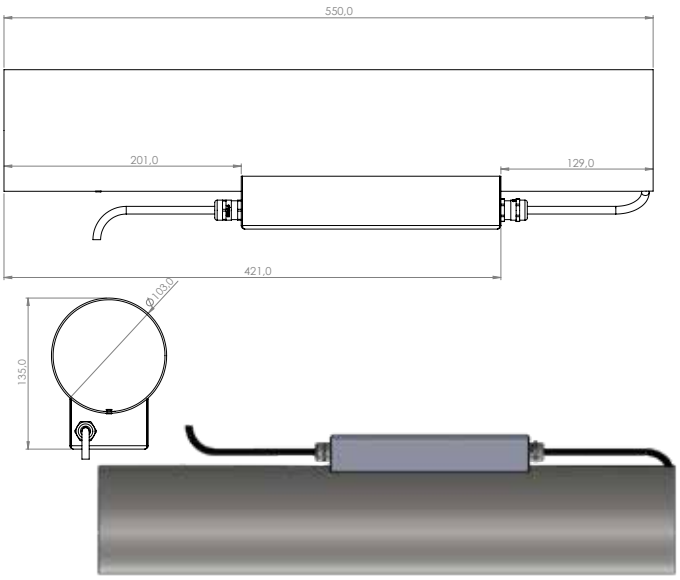
Suitable for:

- Heavily loaded pumping stations
- High and continuous H_2S load
- Systems with high operational reliability requirements
- Alternative to extensive chemical dosing

Contact JIMCO for correct sizing and quotation.



TECHNICAL DATA



HSPURIFIER HIGH

HS UV-C lamps: 2 × 40 W
Lamp operating hours: 8,760 hours
Power supply: 110 V / 230 V
Power consumption: 85 W
Material: AISI 316 stainless steel

Dimensions:
H: 550 mm Ø: 103 mm
H: 21.65" Ø: 4"

Weight: 3.90 kg – 8.6 lbs

PROTECTION COVER
FOR HS PURIFIER



We now offer a Protection Cover for HS Purifier.

The solution is designed for installations where space is limited in existing outdoor cabinets and where robust and reliable protection of the unit is required.

ROBUST PROTECTION
Protects HS Purifier in demanding environments

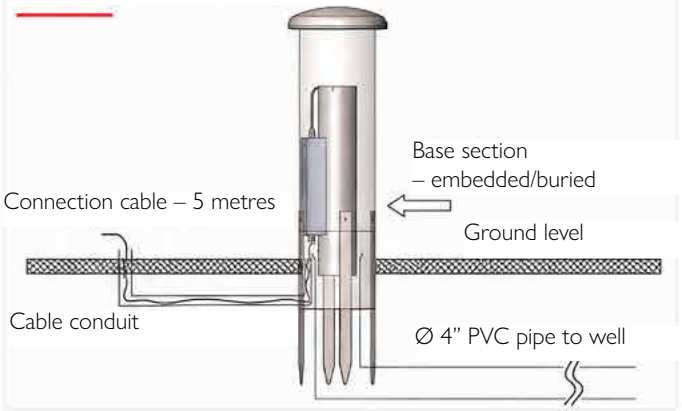
IDEAL FOR EXISTING OUTDOOR CABINETS
For installations with limited space

EASY INSTALLATION
Practical and reliable solution

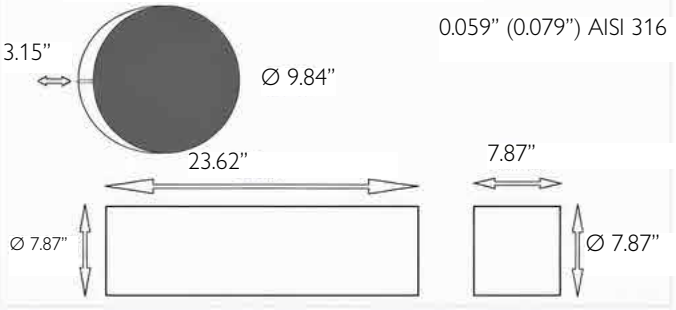
STAINLESS STEEL
Made from AISI 316 stainless steel



TECHNICAL DRAWINGS



Top cover with welded end plate



FAQ

What is hydrogen sulfide?
Hydrogen sulfide (H_2S) is a gas that forms naturally in wastewater systems under low-oxygen conditions. It is known for its characteristic rotten egg odor and can cause odor problems, corrosion and damage to technical installations.

Why does H_2S form?
H_2S forms when bacteria break down organic matter under oxygen-free conditions.
Long retention times in the sewer network, low flow rates and high concentrations of organic matter can increase the formation of hydrogen sulfide.

How does HS Purifier work?
HS Purifier uses JIMCO's photolytic oxidation technology.
UV-C lamps generate ozone from oxygen in the surrounding air.
The ozone is conveyed into the lift station, where it reacts with hydrogen sulfide and contributes to the oxidation of the gas.

Does HS Purifier use chemicals?
No. HS Purifier operates without chemical dosing.
The system uses UV-C light and ozone generated from oxygen in the surrounding air.

Can HS Purifier be combined with activated carbon?
Yes. Several installations combine HS Purifier with activated carbon to achieve further reduction of odorous compounds and extend the lifetime of the activated carbon.

How much power does HS Purifier use?
85 W. HS Purifier is designed for low energy consumption and low operating costs.

How is the right model selected?
The choice depends on factors such as H_2S levels, pumping station size, air volume and the desired results. JIMCO can assist with assessment and selection of the optimal solution.

How often does HS Purifier require servicing?
HS Purifier is designed for operation with limited maintenance.
Service requirements depend on the installation but primarily consist of periodic inspection and replacement of the UV-C lamps once a year.

Can HS Purifier be installed in existing pumping stations?
Yes. HS Purifier can be installed in both new and existing lift stations and outdoor cabinets

What problems can HS Purifier help address?
HS Purifier is used to reduce hydrogen sulfide (H_2S), odor problems and the operational challenges associated with high H_2S levels, including corrosion and damage to installations and electronic equipment.

JIMCO®

UV-C & OZONE
Technology

DANISH
ENVIRONMENTAL
TECHNOLOGY
SINCE 1992

HS PURIFIER

DOCUMENTED H_2S REDUCTION

85 %
average
reduction

97 %
reduction
of peaks

NEED A LARGER SOLUTION?

For larger air volumes and more heavily loaded installations, JIMCO also offers customised solutions.

Contact JIMCO for correct sizing and selection of the right solution.

CLEANER AIR
SAFER OPERATION
LONGER SERVICE LIFE

JIMCO A/S

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