

ECONOMY



ENVIRONMENT



CSR

- Lower operating costs
- Less energy consumption
- Less emission
- Inhibition indication
- Minimal maintenance
- Electronic process monitoring

# OXxOFF ONLINE METER PROCESS



## FACTS ABOUT THE STJERNHOLM

# OXxOFF

Experience from a number of manual measurements in process tanks at various treatment plants indicates that guaranteeing optimal aeration in tanks is particularly difficult.

Quite simply, there often are a number of open questions for which only continuous measurements can give exact answers:

- Should the diffusers be replaced because the oxygen transfer rate has gradually become worse?
- Is there too much aeration, or can the oxygen transfer efficiency, thus energy consumption, be improved?
- Is the high ammonium concentration or low oxygen concentration due to high loading or surface-active agents?
- Does an unchanged pressure from the compressor indicate good efficiency?
- Does agitation ensure oxygen in the entire aeration zone?

Stjernholm OXxOFF continuously collects all data relevant as parameters so that control of compressors, valves and biological processes can be adjusted and optimised.

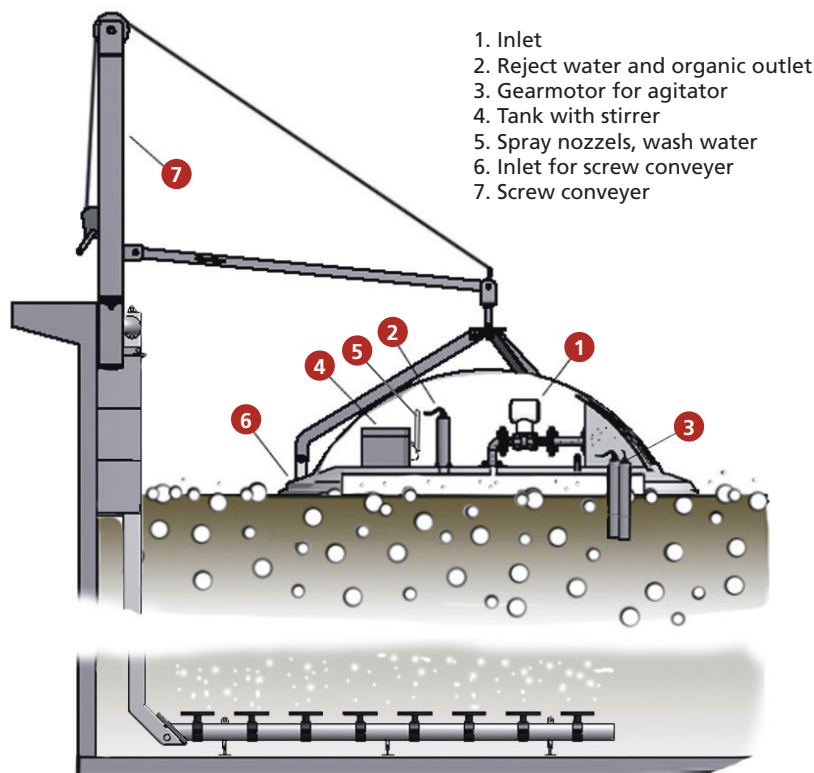
### TECHNICAL DATA

Material	Glass fibre/stainless
Weight	80 kg
Height	800 mm
Diameter	1700 mm
Crane	Stainless
Power supply	230 V
Control	PLC

Stjernholm OXxOFF is produced at our own workshop. Electronic components are supplied from a recognised supplier, and it is all incorporated into a house embedded in glass fibre. The OXxOFF is built to float on the surface, but for the purpose of service and inspection, the unit can be suspended from a special bracket mounted on the tank wall.

Thus, the OXxOFF can be raised and lowered from the tank, turned 360 degrees and locked in an optional position.

### HOW THE STJERNHOLM OXxOFF WORKS:

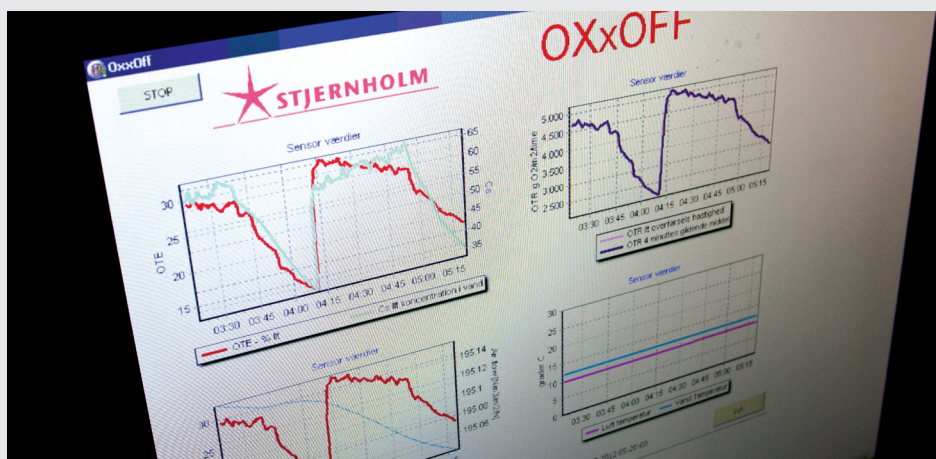


1. Inlet
2. Reject water and organic outlet
3. Gearmotor for agitator
4. Tank with stirrer
5. Spray nozzels, wash water
6. Inlet for screw conveyer
7. Screw conveyer

Stjernholm OXxOFF delivers a proven reduction of up to 25 % of the energy consumption for bottom aeration without any reduction of the effect

Stjernholm OXxOFF is a sensor that is directly connected to the SCADA system. The data delivered can be used to control aerators and blowers. Realtime data and historic data over the following values can be read on the SRO of the facility:

- Oxygen transfer efficiency (OTE)
- Standard oxygen transfer efficiency (SOTE) adjusted for the oxygen content in the aqueous phase
- Oxygen transfer rate (OTR) in kg O<sub>2</sub>/hour
- Airflow Nm<sup>3</sup>/hour
- Oxygen concentration in air and aqueous



The historic data of the facility are collected on the memory card and can be used for Optimal control of aeration. Savings of up to 25 % of the energy consumption for bottom Aeration are easily obtained.

THE OXXOFF IS A TOOL WITH SENSORS USED TO OPTIMISE AERATION AND TO REDUCE ENERGY CONSUMPTION IN PROCESS TANKS. CONTINUOUS DATA DELIVERED DIRECTLY TO THE FACILITY SRO.



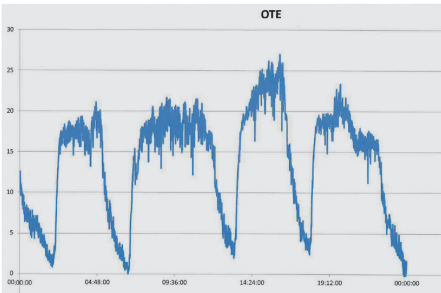
In 4 tanks, a total energy consumption reduction of 20 % has been established; this corresponds to 194,000 kWh - savings of 3.7 tonnes/CO<sub>2</sub>.



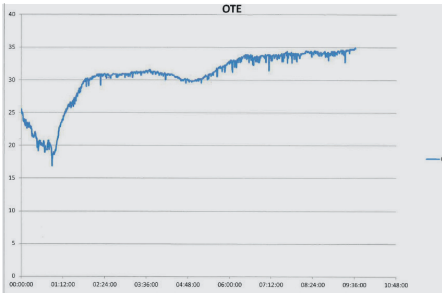
The bracket makes it possible to raise and lower the unit, turn it 360 degrees and lock it in any position. This makes inspection and service easier.



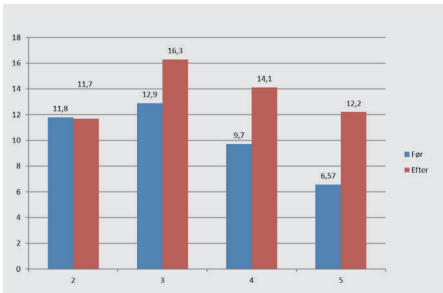
The OXxOFF has been developed with a unique programme that makes it possible to get immediate values for the oxygen transfer efficiency, (OTE), standard oxygen transfer efficiency (SOTE), oxygen transfer rate (OTR) and airflow.



The image shows a measurement from the OXxOFF of the OTE (Oxygen Transfer Efficiency), before bottom and aeration blowers are connected with measurements from the OXxOFF. Major fluctuations in the OTE may be seen.



The image shows a measurement after the bottom aeration blowers have been controlled following measurements from the OXx-OFF. A significantly more stable and higher OTE can be seen which resulted in energy conservation for aeration of 20-25 %.



The table shows the effect of a diffuser cleaning with four different blower settings. Fine bubble diffusers may need cleaning between 9 months and 2 years.



Stjernholm A/S would like to actively contribute to the fulfilment of the KPIs for purification plants and we promise our customers sustainable solutions that offer measurable value within three key areas:



## ECONOMY



## ENVIRONMENT



## CSR

### TO OUR OXXOFF ONLINE METER, THIS MEANS:

#### ECONOMY

- **Less oxygen supply**  
Proven reduction of up to 25 % of the bottom aeration without any reduction of the effect.
- **Cheaper operations**  
Fewer operating hours, less wear and tear, longer service life of components, fewer service hours.
- **Lower energy consumption**  
Continuous data from the OXxOFF ensures that no more oxygen than necessary is supplied so that the energy consumption is kept at a minimum.
- **Brief payback time**  
Savings of 15-30 %. Most installations will have a reasonable payback time, with a return of investment (RIO) of

4-6 years

#### ENVIRONMENT

- **No excessive aeration**  
Excessive aeration increases the risk of emission of nitrous oxide which affects the climate 310 times more than CO<sub>2</sub>.
- **24-hour monitoring**  
The automatic 24-hour monitoring of the OXxOFF ensures that reduced efficiency is discovered right away, thus avoiding an increased environmental impact.
- **Less emission**  
Aeration fans are huge energy consumers, and energy optimisation will result in significant energy conservation, meaning less CO<sub>2</sub> emissions.

#### CSR

- **Limited service**  
Comparing operation parameters based on data collection makes it possible to assess when servicing makes the most sense.
- **Nearly maintenance-free**  
No need for maintenance except for the cleaning of sensors. Easy to do with a comfortable working posture.
- **More satisfaction**  
Continuous measuring of several operating parameters provides better insight into the process and better possibilities for optimising process control.

### DIALOGUE

Stjernholm A/S develops, produces and markets better technical solutions with a high level of sustainability. Under the headline "Cooperation with Value" we focus on areas where we can make a difference within the areas of **economy, environment and CSR**.

We base our cooperation with our customers and suppliers on **MUTUAL RESPECT, AND OPEN AND STRAIGHTFORWARD DIALOGUES**.

That is why we want to invest time in a direct dialogue about your task before drawing up an enquiry or a tender, and before placing the order:

DIALOGUE

TENDER

PROPOSAL

DIALOGUE

EVALUATION

ORDER

In this way, we ensure that the final solution is selected based on sustainable and long-term operational optimisation – to the delight of the consumers.



Our products go with the flow towards the UN Sustainable Development Goals.

See details at [www.stjernholm.dk](http://www.stjernholm.dk)