

State of Green

Water

Towers

Experience Danish solutions live



Denmark has had its share of challenges with both water pollution and over-exploitation of our water resources. But decades ago, we decided to make a change. Today, innovative solutions ranging from the reduction of urban water loss to using wastewater as an energy resource are at hand at companies and utilities around the country. With State of Green Water Tours, Danish companies are offering to share their expertise and experience with the world. I encourage everybody to take advantage of the lessons learned here in Denmark.

Ida Auken
Minister of the Environment

Experience Danish solutions live

State of Green offers you the opportunity to experience state-of-the-art Danish water and climate adaptation solutions. A tour offers you a chance to take advantage of the lessons learned by leading Danish companies, utilities and institutions and find solutions to the water related challenges of your industry and society. You can combine business meetings with site visits and conferences and other events in the area of your interest.

Tours tailored to your needs

Serving businesses, politicians, civil servants and journalists, State of Green creates tours tailored to your needs. Through

our extensive network of contacts we arrange business meetings and site visits suited to your needs. In addition, we offer to handle all logistics related to your visit. Our services are free of charge, however, we expect visitors to handle all other costs related to the tour, including local transportation, accommodation, meals and interpretation, if needed.

Find inspiration for your visit here

On the following pages, we have gathered a few examples of innovative solutions open for visits. To see a complete list, please visit www.stateofgreen.com/WaterTours.



Drinking Water and Water Supply

Water supply in Denmark is highly decentralized with large and small waterworks situated all over the country. The water supplied is based on groundwater that is clean, safe and drinkable. Danish companies have also created water purification solutions for small communities worldwide without access to clean water.



SOLAR POWERED WATERWORKS

Astrup Waterworks is partly powered by a 50 kWp solar power plant and produces high quality potable water from locally placed boreholes. A high content of iron in the groundwater is removed biologically.

COMPANY INVOLVED
Esbjerg Forsyning



WELL FIELD MANAGEMENT

Well field management, including design of extraction wells, monitoring wells and surveillance wells, assessment of geological settings and potential vulnerability of groundwater resources.

COMPANY INVOLVED
Mariagerfjord Vand A/S



PRODUCTION OF MODULAR WATER PURIFIERS

Demonstration and production of non-chemical, simple water treatment and storage equipment for use in field camps, hospitals, schools, hotels and production sites.

COMPANY INVOLVED
Pure H2O A/S

Non-Revenue Water

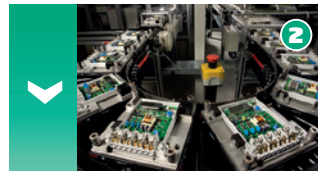
Water losses in the Danish distribution system are remarkably low by international standards: Less than 7% of the water produced is wasted through leaks, theft or metering inaccuracies. In some countries, water losses are close to 50% which represents huge potential for water savings.



THE WORLD'S LOWEST NRW RATES

Through a systematic leakage detection programme using District Meter Zoning (DMZ) and pressure management, the utility serving Denmark's third largest city has achieved an NRW rate of just 5,1%.

COMPANY INVOLVED
VCS Denmark



SMART METERING TO REDUCE WATER LOSS

Production of intelligent water and energy meters for high accuracy smart metering.

COMPANY INVOLVED
Kamstrup A/S



NO-DIG RENEWAL OF PIPE SYSTEMS

Demonstration of No-Dig renewal of underground pipe systems. Aarsleff CIPP Lining and Segmental Lining ensure a minimum of disturbance to surroundings during renewal projects.

COMPANY INVOLVED
Aarsleff Pipe Technologies



ONLINE MODELING TOOL FOR UTILITY COMPANY

Online modeling tool Aquis gives Hørsholm Vand not only a planning tool, but also an operational tool providing excellent overview of water quality, leakage management and customer service etc.

COMPANY INVOLVED
NIRAS A/S

Industrial Water

Companies and industry are increasingly facing the challenge of local water shortages and decreasing water quality. By implementing solutions that ensure high levels of water efficiency and quality before others, companies can turn these areas into a competitive advantage.



EFFICIENT WATER TREATMENT AT HOSPITAL

Water treatment plant designed and supplied by EUROWATER at Odense University Hospital. Thanks to this solution, the hospital has gained considerable savings due to reduced water and energy consumption.

COMPANY INVOLVED
EUROWATER



TREATMENT AND REUSE OF PROCESS WATER

Envotherm technology means treatment of process water. At AAO-Steel who specialises in pressing, deep-drawing, coil cutting etc., 95% of the water is reused without further treatment. ROI < 2 years.

COMPANY INVOLVED
Envotherm A/S



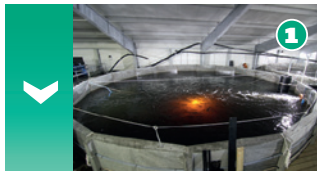
INDUSTRIAL WATER SYMBIOSIS

One of Europe's largest test and demonstration sites for industrial water and a pioneering example of enterprises buying and selling waste products from industrial production in a closed cycle.

COMPANY INVOLVED
Kalundborg Symbiosis

Aquaculture

Increasing populations need fish as an important food source but the global wild fish catch has long ago passed the self-sustaining threshold. Today, 50% of all fish for human food is produced through aquaculture. To meet future demands, farmed fish is a solution and Denmark leads the global aquaculture sector.



WATER EFFICIENT SALMON BREEDING

First commercial land-based salmon farm based on intensive recirculation technology (RAS) with annual production capacity of 1000 tonnes of 4-5 kg salmon.

COMPANY INVOLVED
Billund Aquaculture



LOW ENERGY PROPELLER PUMPS

Production of low energy propeller pumps in steel and corrosion-free HDPE for aquaculture worldwide and Europe's most advanced test station for large pumps.

COMPANY INVOLVED
Lykkegaard A/S



ENVIRONMENTALLY FRIENDLY FISH FARM

Through the use of recirculation technology (RAS) the fish farm Hallunbæk Dambrug is able to produce trout with a low environmental impact and a small consumption of new water.

COMPANY INVOLVED
AKVA Group Denmark



MONITORING AND CONTROLS FOR FISH FARM

Revolutionary project at Danish Salmon, where the entire growth of the salmon takes place on land with the use of OxyGuard measuring, monitoring and control equipment for fish farms.

COMPANY INVOLVED
OxyGuard International A/S

Wastewater

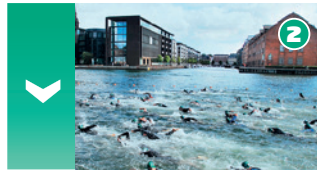
A dramatic reduction of water pollution in Denmark has been achieved through a modernisation of the wastewater treatment system, including introduction of new advanced technology and larger, more effective treatment plants. In addition, sludge from wastewater treatment plants is being utilised to produce energy.



RESOURCE RECOVERY FOR THE FUTURE

Billund Biorefinery is a full scale demonstration plant showing advanced wastewater and biowaste treatment including recovery of energy and nutrients. On top it produces a high effluent quality.

COMPANY INVOLVED
Billund Vand



A HARBOUR CLEAN ENOUGH TO SWIM IN

The water quality in Copenhagen Harbour has been improved significantly. Large basins, sewer control systems and filtration are some of the solutions and technologies which have reduced combined sewer overflow.

COMPANY INVOLVED
Krøger A/S



WASTEWATER TREATMENT AT BOARDING SCHOOL

80 pupil boarding school using one of BioKube's biological wastewater treatment systems. The systems are suitable for small cities, resorts, mining and oil camps and the treated water is safe to be reused.

COMPANY INVOLVED
BioKube A/S



TREATMENT OF INDUSTRIAL WASTEWATER

Treatment of large amounts of industrial wastewater. A sludge hydrolysis plant ensures more biogas from the sludge and a sludge which can be used as agricultural fertiliser.

COMPANY INVOLVED
Fredericia Wastewater and Energy

Water and Energy Efficiency

The global energy demand is expected to rise by 60% by 2050. For the water sector as well as other sectors, reducing energy consumption therefore becomes an increasingly important factor. In addition, utilising sludge to produce energy is a great way to maximise the value of wastewater.



THE WORLD'S MOST ENERGY EFFICIENT PUMPS

Experience the production lines of some of the world's most energy efficient pumps and learn how Grundfos works with sustainability and social responsibility.

COMPANY INVOLVED
Grundfos



ENERGY EFFICIENT SLUDGE INCINERATION

Sewage sludge from two wastewater treatment plants is disposed in an energy efficient "fluid bed" incinerator. A condensing unit extracts the last heat from the flue gas right before it is emitted into the atmosphere.

COMPANY INVOLVED
Lynettefællesskabet



ENERGY EFFICIENT OPERATION AT UTILITY

Aquis software will improve the operation at the utility company VCS significantly. Considerable savings in water loss and pump energy as well as reduction in CO₂ emission and new leaks are expected.

COMPANY INVOLVED
Schneider Electric

Climate Adaptation

Climate change poses new challenges for cities around the world but it also offers new opportunities. Danish companies have specialised in developing new, innovative and sustainable solutions, capable of preventing flooding and building damage while at the same time contributing to new recreational areas and efficient urban infrastructure.



PERMEABLE PAVING AS CLIMATE ADAPTATION

A 430 m² parking lot functions as a test and demo site for permeable pavement. Its permeable surface combined with a flowerbed and underlying fascine prevent overflow and allow all rainwater to be handled on site.

COMPANY INVOLVED
VCS Denmark



DIGTERHAVEN - THE FIVE GARDENS

Recreational climate adaptation project where five gardens store and delay rainwater while also functioning as a recreational area for residents, schools and institutions in the area.

COMPANY INVOLVED
Grontmij A/S



SKATE PARK AS FLOOD MITIGATION

Implemented stormwater solutions in Roskilde with multiple purposes - most of the streets, canals and storage facilities serve as recreational facilities for skaters, ball games, jogging etc.

COMPANY INVOLVED
COWI



NATURE RESTORATION AND CLIMATE ADAPTATION

Five stormwater reservoirs and a stream restoration project ensure better retention of nutrients and reduced phosphorus loading of nearby lake. This creates better conditions for animals, fish and plants.

COMPANY INVOLVED
Aarhus Water

Ballast Water Treatment

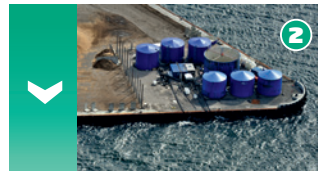
Shipping transfers approximately 3 to 5 billion tonnes of ballast water each year, posing a major risk of ecological and economic damage due to nonindigenous marine species. New technology can help manage ballast water and minimise the risk of harmful species.



BALLAST WATER TREATMENT COMPONENTS

Components or a complete set-up of DESMI Ocean Guard Ballast Water Treatment System installed in a 40" container, which was used for the required shipboard testing in relation to the IMO type approval of the system.

COMPANY INVOLVED
DESMI Ocean Guard



BALLAST WATER TEST FACILITIES

7 large tanks and equipment applied for tests of ballast water management systems aiming to reduce the spreading of invasive species.

COMPANY INVOLVED
DHI



IN-TANK BALLAST WATER TREATMENT SYSTEM

Demonstration of how ballast water is treated by the use of Bawat's pasteurisation and deoxygenation technology in a 1:10 model of a typical ballast tank.

COMPANY INVOLVED
Bawat

How to request a tour

If you are interested in going on a tour, please go to www.stateofgreen.com/WaterTours and fill out a visit plan request form. Here you can select the profiles and solutions you are interested in visiting by adding them to your visit plan. Following your selection, simply submit the form and State of Green will get back to you within a few business days.

We look forward to welcoming you on a State of Green Water Tour.

About State of Green

State of Green is the organisation behind State of Green Water Tours. State of Green is a public-private partnership founded by the Danish Government, the Confederation of Danish Industry, the Danish Energy Association, the Danish Agriculture & Food Council and the Danish Wind Industry Association. H.R.H. Crown Prince Frederik of Denmark is patron of State of Green.

