

# Case History

**Customer - Talisman**

**Location - Nigg Oil Terminal**

**Treated - Produced water (H<sub>2</sub>S and Oil in Water)**

**Trial Period - 4 Days**

## Background & Client Scope

The Talisman operated Nigg oil terminal receives oil, produced water and other associated productions fluids from the Beatrice field in the North Sea. After oil separation the remaining produced water is treated before being released the environment.

Greenthreads' AquaPurge® system was used in a produced water treatment trial at the Nigg oil terminal. The aim of the trial was to firstly evaluate the effectiveness of the AquaPurge® system in reducing the levels of H<sub>2</sub>S in the produced water. Secondly if any other reduction in pollutants was noted this would be an advantage. If successful this would ultimately benefit the operation of the terminal in terms of safety, the environment and cost.

Water coming from the sites' dehydrator was showing large concentrations of dissolved H<sub>2</sub>S; reported levels were an average of 15ppm. In order to remove H<sub>2</sub>S The operator was using vast quantities of chemical scavengers every day. One of the key benefits of the AquaPurge® system is its ability to handle H<sub>2</sub>S. If this process could reduce the concentration of H<sub>2</sub>S without the use of huge volumes of chemicals it would be much preferred.

## Results—Hydrogen Sulphide

During the 4 day trial 30 water samples were taken at both the inlet and outlet of the AquaPurge® system. The trial involved a single pass of the test fluid through the system.

The samples taken were analysed using spectrophotometry to calculate the concentrations of both Hydrogen Sulphide (H<sub>2</sub>S) and Oil In Water (OIW).

The first graph to the right shows the difference in H<sub>2</sub>S concentration between the inlet and outlet samples over the 4 day trial.

It is clearly visible from the graph that the AquaPurge® system worked exceptionally well for removal of H<sub>2</sub>S in the water supplied from the dehydrator. This successful testing proved the AquaPurge® system could remove the need for using vast quantities of chemical scavengers to treat H<sub>2</sub>S.

The maximum percentage reduction with a single pass through the AquaPurge® unit was an impressive 97%. All testing took place using only a single pass AquaPurge® process, by utilising Greenthreads Reverse Recirculation technology the treatment can be improved further if required.

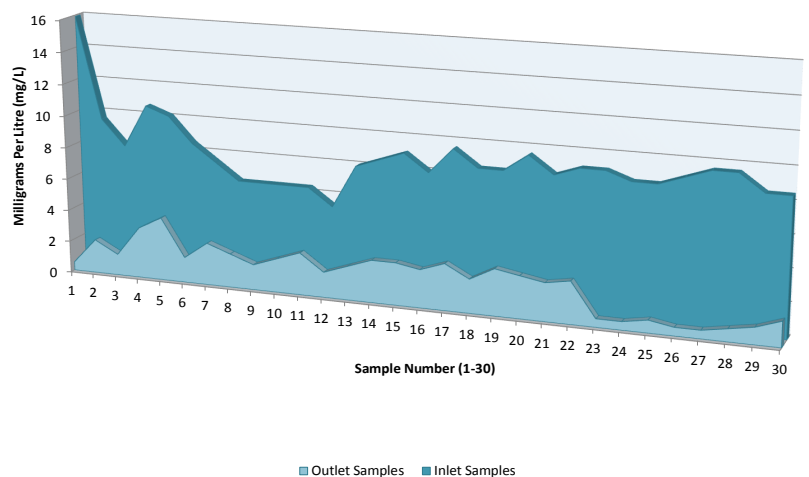
## Other Results—Oil In Water

The second graph to the right shows the difference in OIW concentrations of each set of samples from the inlet and outlet of the system. The graph clearly shows a reduction in OIW concentration at every sample point. Although this unit was not intended to treat OIW, the AquaPurge® unit actually brought the average percentage concentration of OIW to below legislative discharge limits.

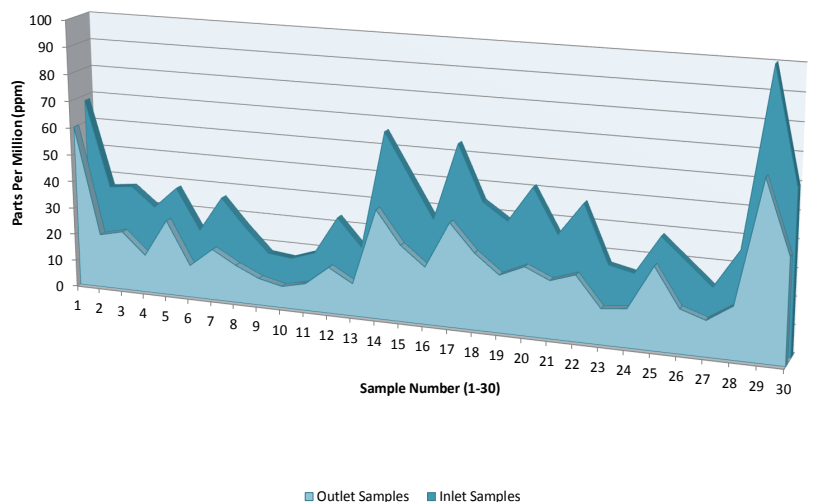
The AquaPurge® system is based on an Advanced Oxidation Process (AOP). This Oxidation process treats almost all organic pollutants, oxidising them to H<sub>2</sub>O and CO<sub>2</sub>.



**H<sub>2</sub>S Measurements - Inlet & Outlet**



**Oil In Water Measurements - Inlet & Outlet**



# AquaPurge®

**Greenthread water management solutions enable operators to exceed the increasingly challenging legislative limits ensuring compliance to global environmental standards and demands.**

**Greenthreads' patented AquaPurge® System** is based on an Advanced Oxidation Process. AOP is essentially a natural process using Ozone (created from dry air) and UV to break down hydrocarbons and other organic substances to their component parts of carbon dioxide and water. The process breaks molecular bonds reducing complex molecules to simpler ones; resulting in zero waste stream.

## **AquaPurge® will treat**

- 🔹 Hydrocarbons in water
- 🔹 Organic fluids miscible in water such as methanol
- 🔹 BTEX and other toxic compounds
- 🔹 Hydrogen Sulphide and associated bacteria
- 🔹 Hydrocarbon concentration in wet sands
- 🔹 Hydrocarbons in fluids contaminated with solids



## **AquaPurge® units**

- 🔹 AP15000-S-FA-II
- 🔹 AP5000-S-SA-III
- 🔹 AP1500-S-SA-II

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