

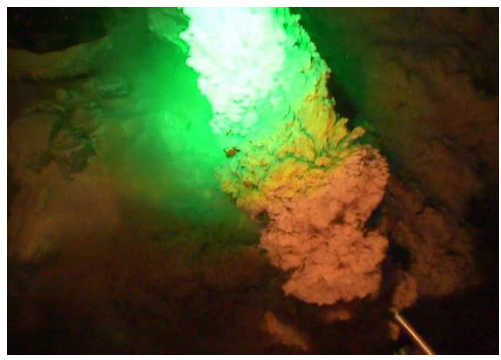
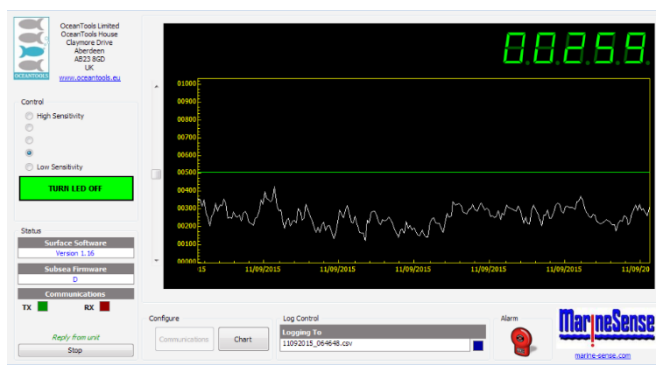
OceanTools OceanSENSE

Cement Returns Detection System

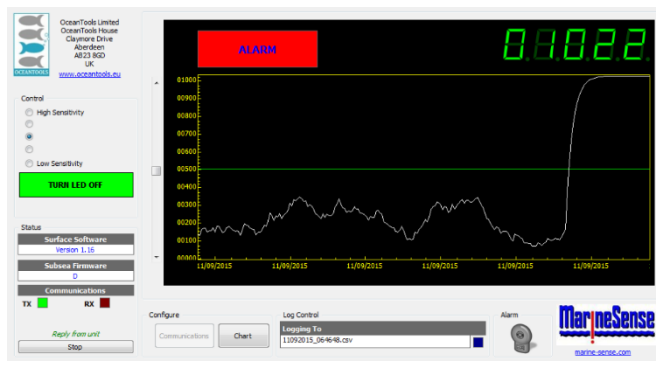
The *field proven* **OceanSENSE** cement returns detection system can potentially save up to **\$400,000** per top-hole cementing job.



No cement



Cement detected



Overview

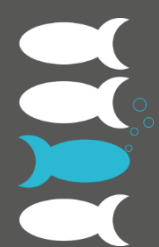
Dye may be added to a seawater spacer, pre-flush or actual cement. As the dye-impregnated fluid flows out of the casing the **OceanSENSE** unit immediately detects it and announces the presence both visually and audibly.

OceanSENSE is field-proven to work with a wide range of dyes, including:

- **OceanTools C-Dye**
- Rhodamine RX9022 and B275
- Fluoresceins
- Champion Cleardye and Fluorodye

OceanSENSE has a detection capability of 4ppb (parts per billion) at a dilution ratio of 0.02%/200ppm in water, when deployed with **OceanTools C-Dye**. **OceanSENSE** can detect dyes other than those listed above. Please contact us and we can advise the detectability of other dyes.





Dramatic Potential Cost Savings

OceanSENSE has the ability to potentially save **\$Hundreds of Thousands** per top-hole drilled by saving hours of rig time and dramatically reducing the number of barrels of cement required during cementing operations.

This is achieved by detecting the arrival of dye in the spacer, pre-flush or actual cement the moment it arrives at the surface. Pumping may then be suspended thus saving hours of rig time.

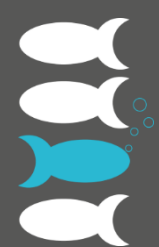
On subsequent wells, only the required amount of cement plus a safety factor needs pumping. In addition to savings relating to rig time and cement cost, OceanSENSE also delivers *substantial secondary benefits*:

- There is less environmental impact
- The cost of removing cement at decommissioning is greatly reduced
- OceanSENSE can also be used to detect leaks from any subsea infrastructure

To estimate how much you could save, use our online tool at <http://cement.oceantools.co.uk>

Unit costs used in this calculation		
\$	<input type="text" value="800"/>	000/day (\$33,333/hr) drilling rig and exploration program cost
\$	<input type="text" value="250"/>	/barrel cement materials cost
Cementing costs per top-hole	Typical operation	OceanSENSE assisted
Percentage of required cement over-pumped	<input type="text" value="250%"/>	<input type="text" value="120%"/>
Hours taken to pump cement	<input type="text" value="3.00"/>	1.44
Cost of rig time during pumping @ \$33,333/hr	\$100,000	\$48,000
Barrels of cement required	<input type="text" value="2000"/>	960
Cost of cement @ \$250/barrel	\$500,000	\$240,000
Total cementing cost per top-hole	\$600,000	\$288,000
Potential savings across multiple top-holes	× <input type="text" value="3"/>	top-holes
Potential hours of rig time saved		4.68
Potential saving in rig time costs @ \$33,333/hr		\$156,000
Potential barrels of cement saved		3120
Potential saving in cement costs @ \$250/barrel		\$780,000
Total theoretical saving across all top-holes (excluding cost of OceanSENSE)		\$936,000
Excludes rental cost of OceanSENSE, typically around \$500/day while operational		

See an animation of **OceanSENSE** online at www.youtube.com/user/OceanToolsLtd

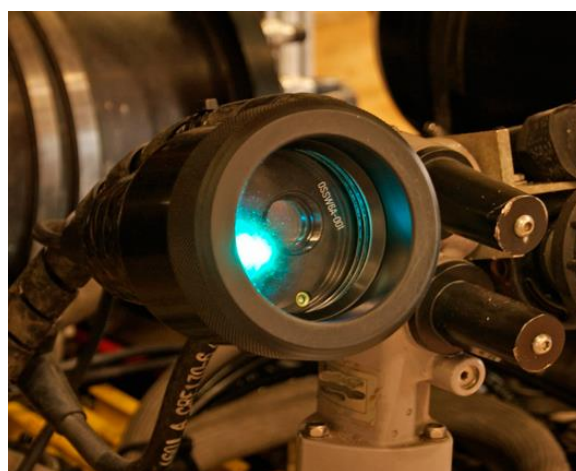


Key Features

- Potentially saves several hours of rig time per cement run
- Deployed via virtually any ROV
- Audible notification of cement detected
- Simple to operate system
- Many times more sensitive than pH meters



ROV Mounted OceanSENSE unit



ROV Mounted OceanSENSE unit in use

OceanSENSE-RM ROV Mounted System	
Length (incl connector)	220mm
Maximum diameter	105mm
Weight in air	1.9kg
Weight in water	1.0kg
Standard depth rating	3000m (with 6000m option)
Data communications	RS232/RS485
Input voltage	18-32VDC
Operating current	550mA @ 24VDC

Product datasheets, GA drawings, case studies and other supporting documents are available to download from data.oceantools.co.uk

All specifications are subject to change without notice. E&OE.

Version 15 (03.04.2017)