

OceanTools

D5 DyeTector®

Mini subsea leak and dye detection system

The **D5 DyeTector** is an advanced ultra-compact subsea leak and dye detection system developed by **OceanTools** for installation on AUV systems or smaller observation class ROVs.



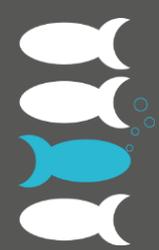
Overview

The ultra-compact AUV or ROV mounted **D5 DyeTector** may be used to detect leaks from subsea infrastructure such as manifolds, wellheads or pipelines if a suitable dye has been added to the infrastructure fluids, or during casing cementing operations to detect cement returns.

High intensity LED light is focused through lenses and filters to create a concentrated beam that is tuned to a specific wavelength to cause maximum molecular agitation and fluorescence of the dye. A sophisticated optical multiplier employs light amplification technology to detect fluorescence from the agitated dye molecules. Advanced detection electronics convert the measurements to digital data.

The powerful **DyeTector** technology is capable of detecting single photons of light. It can detect down to single digit parts per billion of dye dissolved in water and is approximately one hundred times more sensitive than the human eye. This makes it ideal for detecting the very smallest of leaks or traces of dye dosed cement. Detection can be carried out at a safe working distance, with advanced ambient light suppression technology allowing operation in high levels of background light.

The **D5 DyeTector** has an anodised aluminium housing and sapphire glass window with a standard depth rating of 1000 metres. It has been specifically designed for installation on AUV systems, with free-running data and low-power electronics to reflect the increasing use of AUVs for pipeline surveys. It can also be deployed on smaller observation class ROVs, with simple and intuitive DyeTector software to display detection data at the surface.



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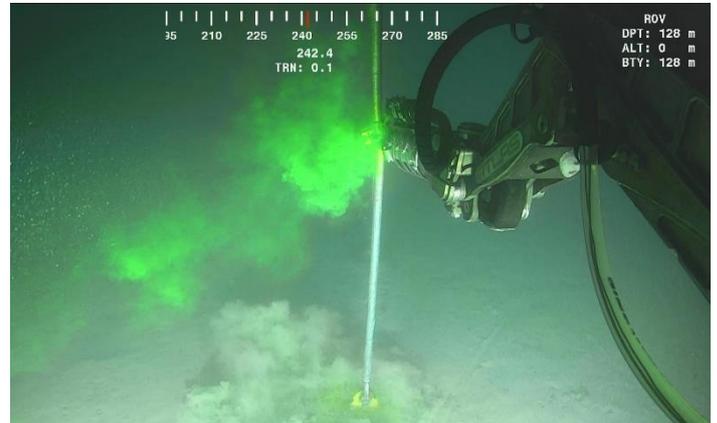
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Applications

The **DyeTector** may be used to detect leaks from subsea infrastructure such as manifolds, wellheads or pipelines if a suitable dye has been added to the infrastructure fluids. Pipeline or flow line pressure testing can be monitored by the **DyeTector** if dye impregnated fluids are used.

The **DyeTector** may also be used during casing cementing operations to detect cement returns. A tracer dye is added to either the seawater spacer or to the cement itself. Unlike pH meters which rely upon the cement passing over them, a **DyeTector** can detect cement from a distance of several metres depending on the dye concentration.



Cement detection with a DyeTector

Detection Dyes

As well as offering the **DyeTector**, OceanTools can supply dyes that have been specifically developed by our friends at Subsea Chemistry Ltd to precisely match the characteristics of the **DyeTector**. This includes the new biodegradable **C-Dye ECO**, developed to fully comply with the latest Substance In Solvent (SIS) regulations. In short, there is no system more capable of detecting dye subsea, nor is there a more detectable dye.

Different versions of the **DyeTector** are designed to excite and detect several types of dye in addition to **C-Dye 530** (Rhodamine) and **C-Dye 370** (Ultraviolet) including:

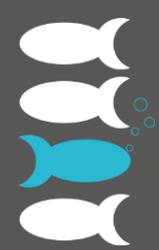
- Rhodamine dyes such as B275, RX9022, Pelagic 100 Pink
- Fluorescein dyes such as HW443, HW540P, Oceanic Yellow LTF
- Ultraviolet dyes such as RX9026E, Pelagic 100, Champion Clear dye, Castrol HT2

Please contact OceanTools for advice on other dyes that may be detected by the **DyeTector**.

Key Features

- Rhodamine, Fluorescein, Ultraviolet or C-Dye ECO detection
- Compact and lightweight design for AUVs or observation class ROVs
- Same powerful DyeTector technology as found in larger units
- Configurable serial control or free-running data output
- 1000m standard depth rating





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Specifications

	D5-R	D5-F	D5-U	D5-ECO
Target dye	Rhodamine	Fluorescein	Ultraviolet	C-Dye ECO
Excitation wavelength	520–530nm	450–460nm	360–370nm	390–400nm
Detection wavelength	570–590nm	510–520nm	410–450nm	450–460nm
Detection range	Up to 10m			
Input voltage	18–36VDC			
Maximum current	0.5A @ 24VDC			
Data communications	RS232 / RS485			
Standard connector	Glenair G5506-1508			
Depth rating	1000m			
Housing material	Anodised Aluminium			
Window material	Sapphire Glass			
Length (excl connector)	145mm			
Maximum diameter	71mm			
Weight in air	1.0kg			
Weight in water	0.5kg			

Related Products

D8 DyeTector dual channel systems have been developed with two sets of optical components to detect Rhodamine and Ultraviolet dyes using a single compact ROV mounted device.

D9 DyeTector diver held systems (pictured right) are self-contained dye detection units featuring ruggedised single switch operation, a built-in detection display and a depth rating in excess of 250m.



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.

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