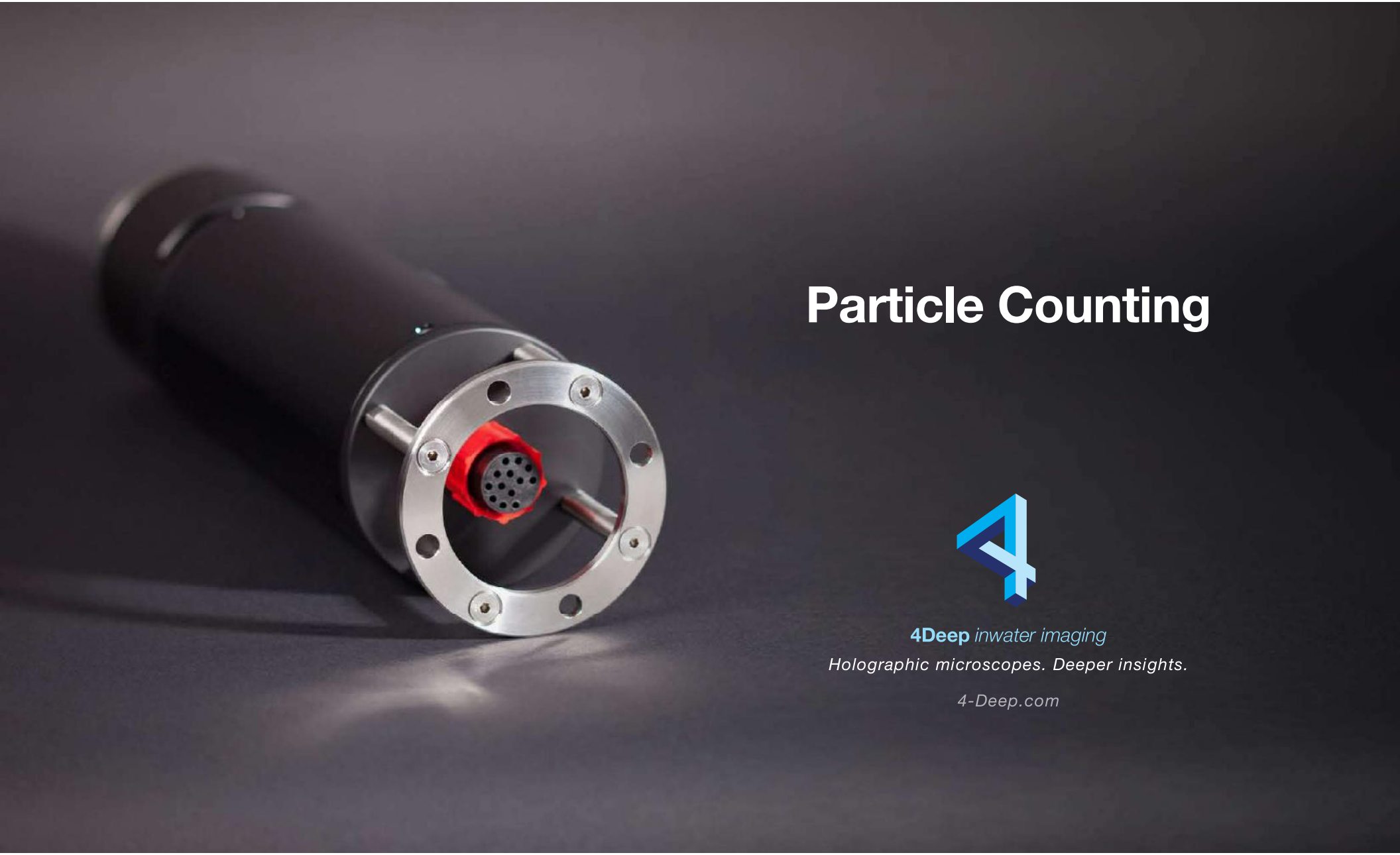

Particle Counting

4Deep *inwater imaging*

Holographic microscopes. Deeper insights.

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Particle Counting

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In many fields, high-resolution particle counting analysis is time consuming and costly for the user. In many research areas, traditional population sampling is unnecessary, as real-time in situ monitoring is one of the greatest strengths of 4Deep's Submersible microscope.

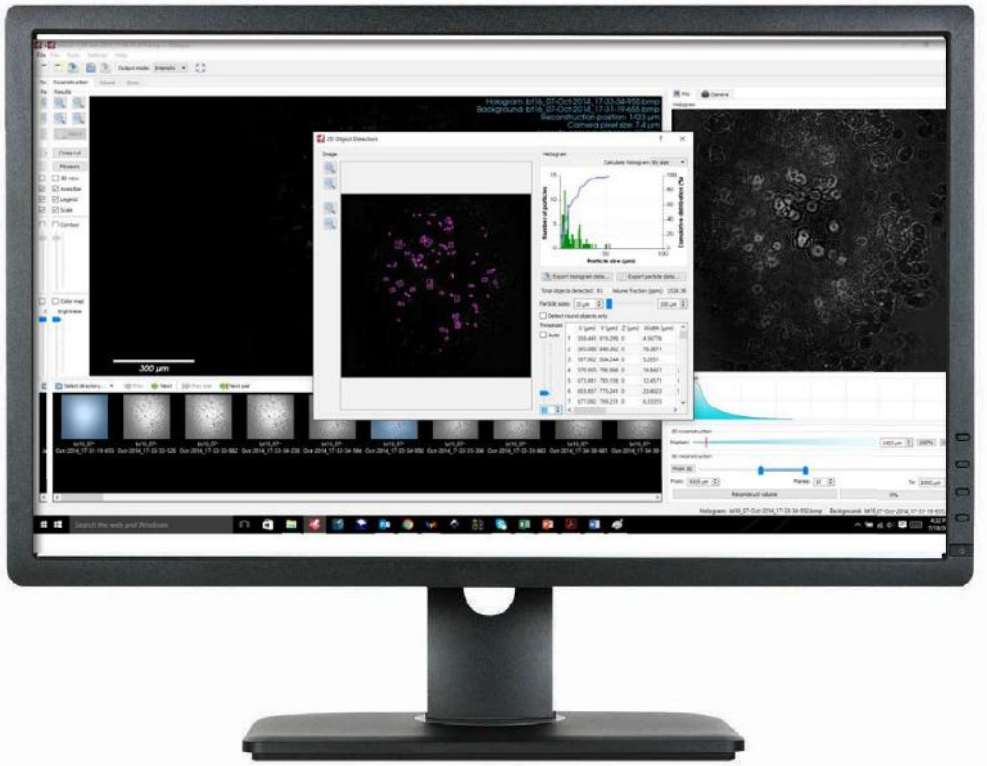
Benefits

Replace the need for particle counters

Offers more functionality outside of particle counting, such as Cell Viability information from Phase imaging

No need for calibration for different particle size classes

Particle identification in Octopus



Particle Counting

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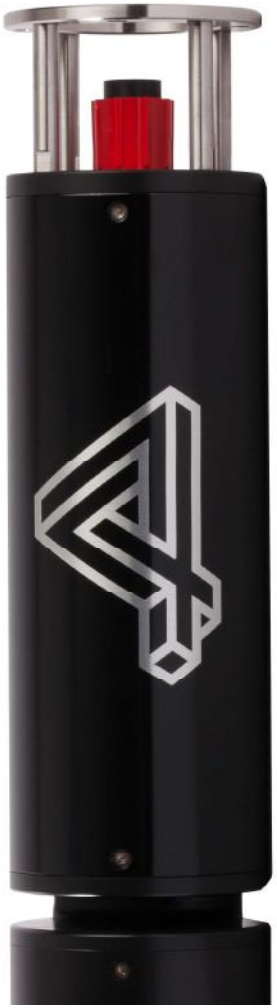
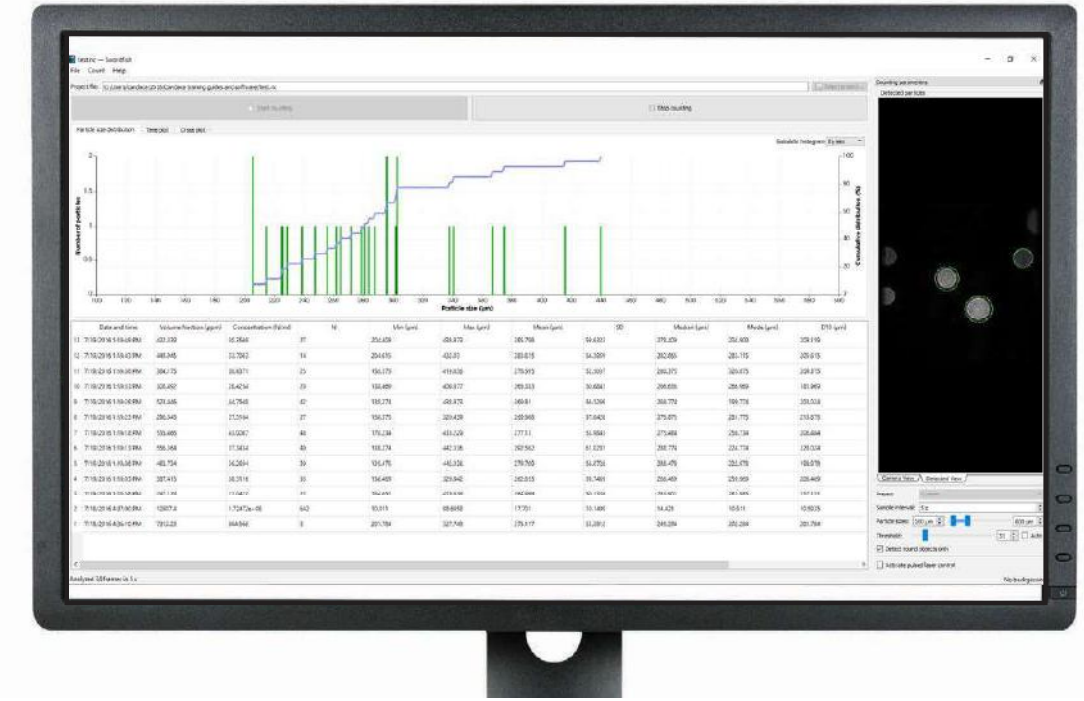


Submersible Microscope

The Submersible microscope can simply be deployed in a test tank or in the field, and also can be used as a desktop microscope, using the flow through chamber and pumping the sample through the microscope.

Swordfish Software

The Swordfish software is capable of both real-time particle counting and analysis of already recorded holograms (called offline holograms). Counting in offline mode makes it possible for the user to reanalyze data quickly and easily, and calculate particle statistics for different particle size ranges. Swordfish detects and counts particles in a range set by the user, and produces particle distribution statistics by size, volume or relative volume.



Particle Counting

Oil & Gas

4Deep's system can be used for general detection, quantification, and characterization of the effect of chemical dispersants on oil droplets by analyzing a sample before and after a disperant is used on a sample.

Food & Beverage

Particle counts and the resulting distributions are also applicable in Food & Beverage to identify and count microorganisms present in samples. In the wine-making industry, monitoring the concentration of yeast and bacteria cells is critical in the quality control stage of wine- making. 4Deep's system is used to quantify yeast and bacteria cultures, providing fast and efficient data on particle distributions, instead of using traditional microbial analyzes, which are time, resource and space consuming.

Water Quality, Aquaculture, Algae, Pollution

The data collected by 4Deep's microscope allows the user to generate statistics regarding particle size range and distribution for waste distributions in Aquaculture, floc particles in Water Quality, and Algae size distributions from Harmful Algae Blooms (HABs). In addition, particle counting and distribution information are necessary for pollution remediation, for example, monitoring concentrations of particles from effluents.

Filter Breaches

In many applications, membrane filters are used (beverages, pharmacology, etc.) and are very efficient, when correctly used. Filter breaches are common, and 4Deep's system can be used as a quality assurance measure, to determine whether a breach has a occurred by quantifying the sample pre- and post-filtering.

Oceanography

In Oceanographic applications, 4Deep's system can be used for general exploration, or as an Optical Plankton Counter. In conjunction with the automatic quantification of morphological data, the microscope can be used to observe, identify and quantify marine species and to determine important particle concentrations such as planktonic larvae and/or eggs from invasive species.

Particle Counting

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ARE YOU PARTICLE COUNTING IN REAL-TIME?

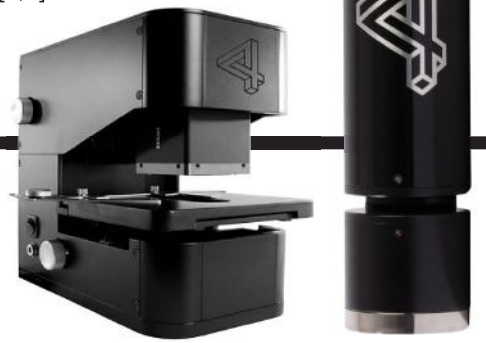
YES

Set up Microscope

1. Set up the recording options (Threshold and Particle sizes)

2. View Results by:

- Size
- Volume
- D [4,3]



Set up Swordfish

NO

Set up Holograms

1. File-> Analyze Offline Holograms, and select the Holograms you wish to analyze

2. Start counting.