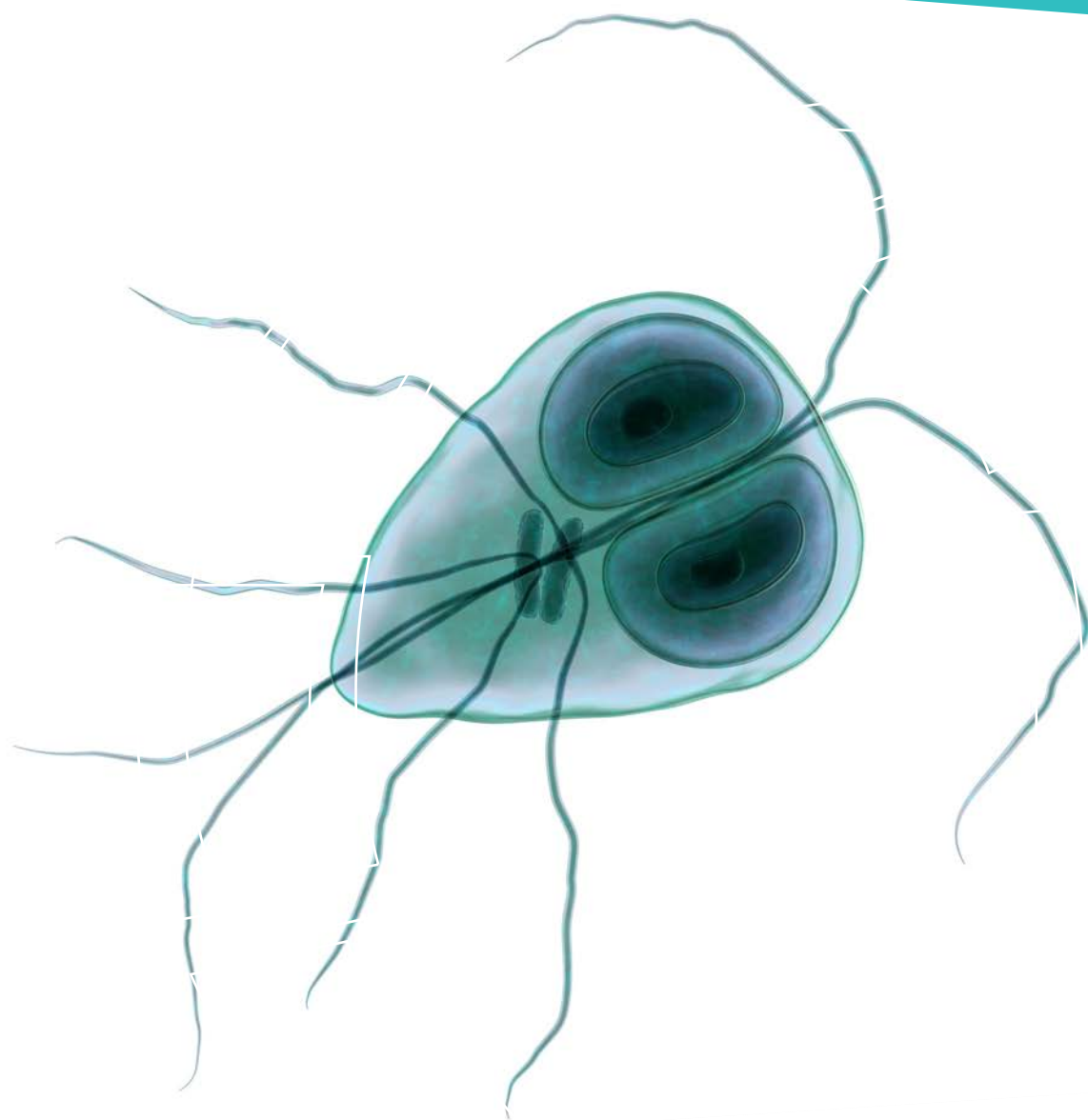


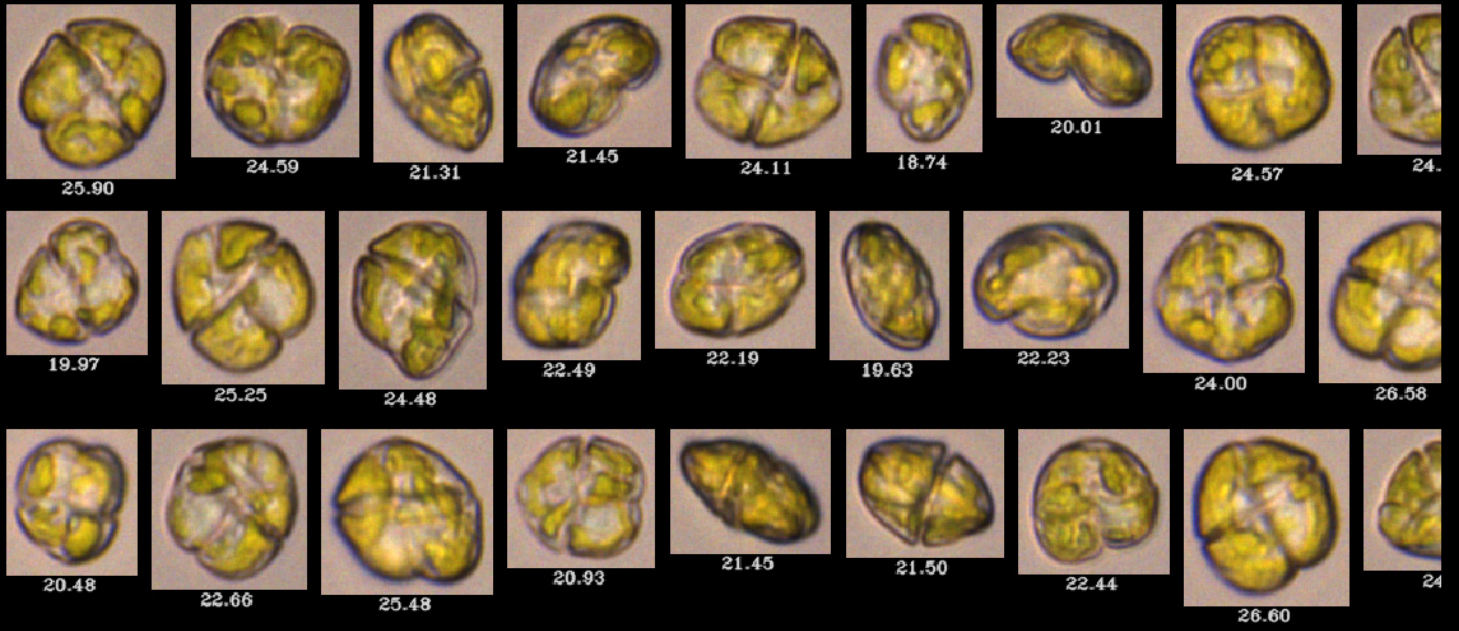
# WATER RESEARCH ANALYSIS SOLUTIONS WITH FLOWCAM

SEPTEMBER 2019



# WATER RESEARCH

## Particle Analysis Solutions with FlowCam



Cultured *Karenia brevis* captured with 20x lens and 50 µm flow cell  
Image source: Florida Fish & Wildlife / Fluid Imaging Technologies

The FlowCam instrument combines the functionality of an imaging flow cytometer and a microscope in a single, powerful research tool: fluorescence analysis, digital images, physical measurements, biovolume calculations, robust statistical analysis, and semi-automated classification of organisms.

The FlowCam was developed at Bigelow Laboratory for Ocean Sciences in 1997 by Dr. Chris Sieracki, the current Chairman and primary inventor of Fluid Imaging Technologies, as a faster, more informative method of phytoplankton enumeration and analysis than the existing technologies at the time. Since its development, the FlowCam has found numerous applications in aquatic research and industry.

## KEY APPLICATIONS

### • Phytoplankton & Zooplankton Analysis

A fast, accurate, and easy-to-use alternative to manual microscopy for monitoring phytoplankton community composition

### • Harmful Algal Bloom Monitoring

Differentiate cyanobacteria from other algae to quickly verify the presence and quantity of cyanobacteria

### • Drinking Water Monitoring

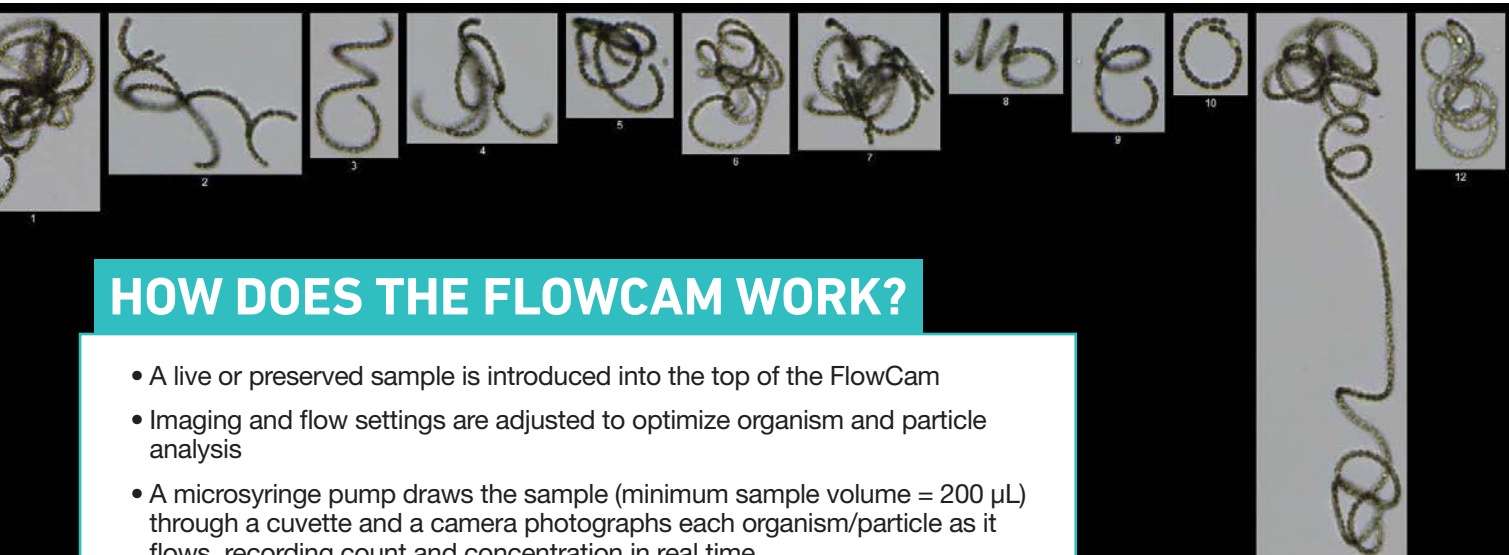
Reduce labour hours, detect nuisance algae, and predict harmful algae blooms or taste & odour events

### • Microalgae Cultivation & Industrial Research

Prevent culture crash with high-throughput monitoring of algae in real-time

### Further Applications:

Aquaculture, wastewater analysis, ballast water testing and research, paleolimnology, microplastic analysis, invasive species detection



## HOW DOES THE FLOWCAM WORK?

- A live or preserved sample is introduced into the top of the FlowCam
- Imaging and flow settings are adjusted to optimize organism and particle analysis
- A microsyringe pump draws the sample (minimum sample volume = 200  $\mu$ L) through a cuvette and a camera photographs each organism/particle as it flows, recording count and concentration in real time
- Image recognition software, VisualSpreadsheet, measures 40+ physical properties from each image
- Data is analysed using VisualSpreadsheet, either on the FlowCam or a personal computer. Image libraries and statistical analysis techniques enable identification and classification of taxa. Reports can be exported in CSV format.

*Anabaena (Dolichospermum) – Cyanobacteria – Taste & Odor Culprit, Image source: Fluid Imaging Technologies*

## WHICH MODEL IS RIGHT FOR YOU?

	5000	Macro	8100	8400	Cyano
<b>HARDWARE</b>					
Particle Size Range	3 $\mu$ m - 1nm	300 $\mu$ m - 5mm	1 $\mu$ m - 1nm	1 $\mu$ m - 1nm	1 $\mu$ m - 1nm
Multiple Objectives			✓	✓	✓
Field of View Flow Cells		✓	✓	✓	✓
Focus System	Manual	Manual	Automatic	Automatic	Automatic
Automatic Cleaning / Rinsing			✓	✓	✓
Automatic Priming			✓	✓	✓
Laser Excitation				✓	633nm
Continuous Sampling	✓	✓	✓	✓	✓
Teflon Fluid Lines			✓	✓	✓
Hard Drive	500GB	1TB	1TB	1TB	1TB
ALH Auto-Sampling Compatibility			✓	✓	✓
<b>SOFTWARE</b>					
Count, Size Calculation	✓	✓	✓	✓	✓
Concentration Calculation	✓		✓	✓	✓
Image Libraries and Filters	✓	✓	✓	✓	✓
Automatic Illumination Adjustment		✓	✓	✓	✓
Database File Structure		✓	✓	✓	✓
Multiple File Analysis		✓	✓	✓	✓
Satellite Licences	✓	✓	✓	✓	✓
21 CFR Compliant		✓	✓	✓	✓

## FLOWCAM MODELS

### FLOWCAM 8000 SERIES

For particles 1 µm to 1 mm. Compatible with the ALH Automated Liquid Handler. Several fluorescence detection options available.

**Applications:**

**HAB monitoring, phytoplankton and zooplankton community composition, microplastics analysis, cell vitality analysis, track cell size distributions, monitor contamination, lipid analysis**

### FLOWCAM CYANO

Differentiate cyanobacteria from green algae using chlorophyll and phycocyanin fluorescence data.

**Applications:**

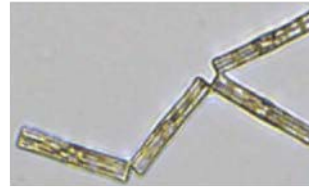
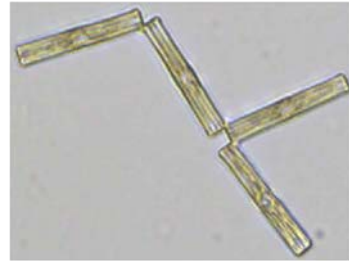
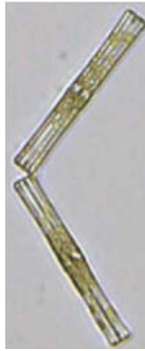
**Monitor cyanobacteria, taste and odour algae, and filter-clogging diatoms, phytoplankton and zooplankton community composition, nuisance algae monitoring**

### FLOWCAM MACRO

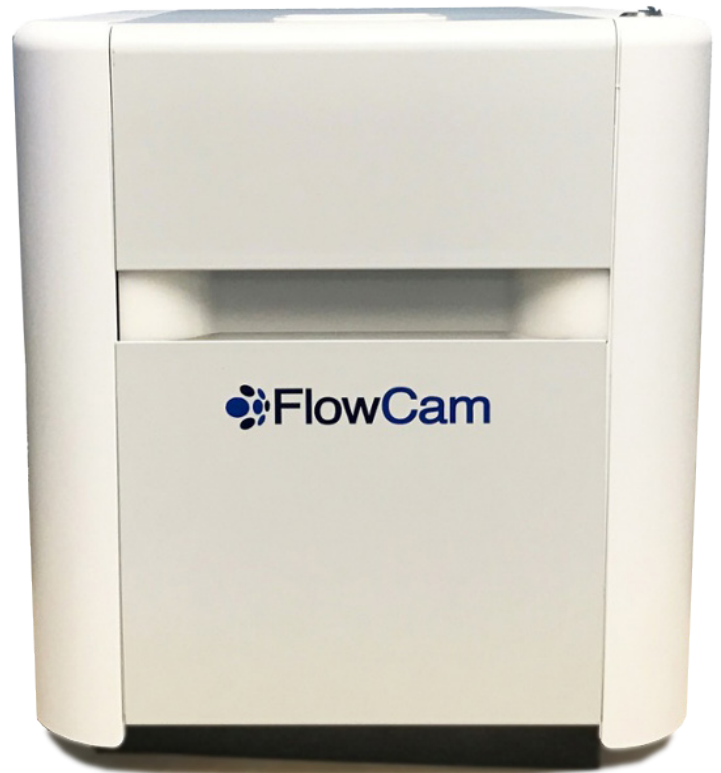
For microorganisms sized 300 µm to 5 mm. Uses an external peristaltic pump rather than an internal microsyringe pump.

**Applications:**

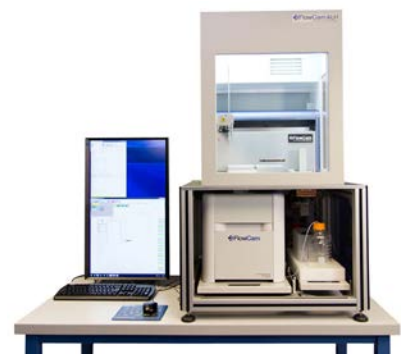
**Zooplankton analysis, large particle analysis**



*Tabellaria – Diatom – Capable of clogging filters  
Image source: Fluid Imaging Technologies*



NEW



### FLOWCAM 5000 SERIES

The most affordable FlowCam model, streamlined for rapid data acquisition and analysis.

**Applications: Analyse freshwater and marine samples, calculate cell counts, concentration, & biovolume, provide semi-automated classification of taxa, identify cyanobacteria, taste & odour algae, nuisance & filter clogging algae**

### FLOWCAM AUTOMATED LIQUID HANDLER ALH

... For automated, high-throughput, unsupervised sample analysis of up to ninety-six 1-mL samples. Compatible with the FlowCam 8000 Series and FlowCam Cyano.

# ANALYSIS SOFTWARE

## VISUALSPREADSHEET® 5

VisualSpreadsheet is a powerful software program that allows you to interact with the particle images captured with the FlowCam®.

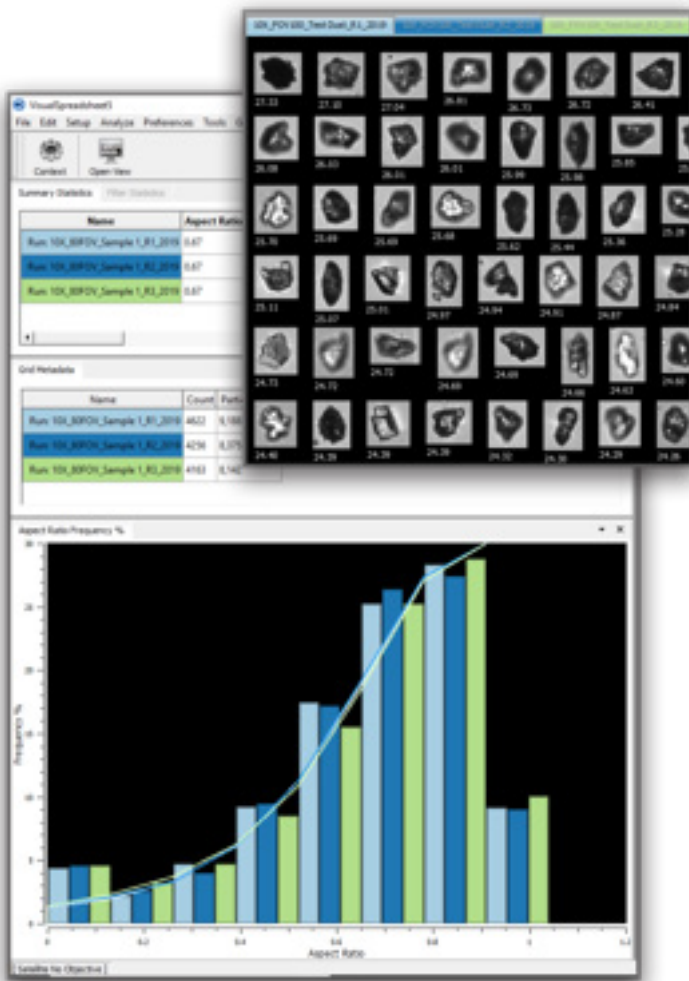
Version 5 represents the biggest software update in Fluid Imaging Technology's history.

Improving on other spreadsheet software programs that only allow you to sort and filter rows of numeric data, VisualSpreadsheet gives you the ability to sort and filter actual images.

Upgrading to VisualSpreadsheet 5 comes with the following benefits:

- Create data sets from multiple runs
- View and compare data from multiple runs
- Quickly load, manipulate, and analyse large sets of data
- Compare data captured from multiple objectives and/or multiple flow cells

FlowCam 8000, FlowCam Cyano, FlowCam Macro and satellite licenses are eligible to upgrade to the newest version.



## CAPTURE OVER 40 UNIQUE PARTICLE MEASUREMENTS

### Basic Shape Measurements Include:

Equivalent Spherical Diameter (ESD), Area Based Diameter (ABD), Length, Width, Aspect Ratio, Area, Volume Advanced

### Morphology Measurements Include:

Circularity, Elongation, Compactness, Circle Fit, Perimeter, Convex Perimeter, Edge Gradient, Fiber Curl

### Gray-Scale and Colour Measurements Include:

Intensity, Average Intensity, Sigma Intensity, Transparency, Average Red, Green, Blue, R/G Ratio, R/B Ratio, G/B Ratio

- Sort and filter particle data based upon criteria you supply - results are displayed immediately as particle images instead of numbers.
- Accomplish complex particle filtering in seconds with immediate visual feedback - find and display all similar-type particles in a heterogeneous sample with sophisticated pattern recognition capabilities.
- Create and save defined particle type libraries - compare incoming FlowCam data against one or more libraries to instantly enumerate concentrations of specific particle types.
- 21 CFR Part 11 compliant software package available.

VisualSpreadsheet is included with all FlowCam instruments. A satellite version is also available so you can work with your FlowCam data on your own computer.

## THE VISUAL SPREADSHEET® DIFFERENCE

# KENELEC SCIENTIFIC

## Our company:

Established in 1962, Kenelec Scientific is one of Australia's leading scientific and environmental technology companies. Based in Melbourne, with distributors located throughout Australia and New Zealand, we are industry leaders in the supply of globally sourced, latest generation technologies at competitive prices.

## Our services:

### Sales

Buy the latest equipment from some of the most trusted brands in the industry.

### Rental

Rent or rent-to-buy the latest instruments for the duration that you need them.

### Calibration

Professional calibration of your instruments in our accredited laboratories.

### Validation

Wide range of validation services to ensure compliance with regulations.

### Service & Repairs

Local after-sales service and support from our experienced technicians.

### Education

Product education and support available in-house, onsite or online.

### Financing

Secure your equipment without relying on up-front capital funding.

## More solutions

As well as being a key analysis tool for the water and aquatic research industry, the FlowCam range from Fluid Imaging Technologies also provides comprehensive solutions for:



### Biopharmaceutical

- Formulation development
- Protein aggregation studies
- Protein stability studies
- Manufacturing process improvement
- Final product QA/QC

### General Industry

- Food and Beverage
- Abrasives
- Column Packing Material
- Microencapsulation
- Washwater - Heterogeneous Sample Analysis



## Don't see your solution here?

For more products and solutions, visit our website:  
[www.kenelec.com.au](http://www.kenelec.com.au)



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KS BROCHURE | FLOWCAM-WATER | SEP19

We look forward to  
working with you.

