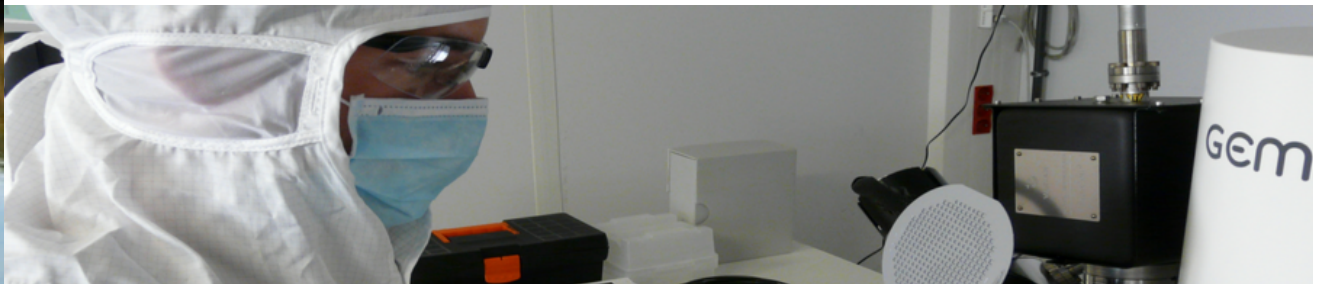


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*Environmental
Drinking water
Recreational water
Wastewater*

fluidion
fluidic intelligence

*OSPR-Chevron Workshop March 01, 2017
Overview of fluidion sampling and analysis technology
Applications to spill response and monitoring*



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fluidic intelligence

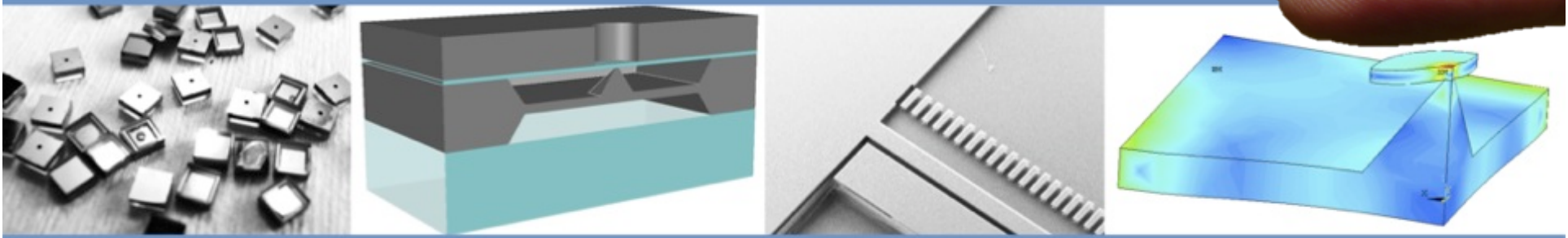
www.fluidion.com

contact@fluidion.com



fluidion technology highlights

- Proprietary technology, integrated fluidic components
- Products for
 - *Spill First Response and Environmental Monitoring*
 - *Water Quality (drinking, wastewater, recreational)*
 - *Oceanography*
- Remote connectivity
- Complete sample manipulation protocols
- Multispectral optical measurements
- Multiple international patents



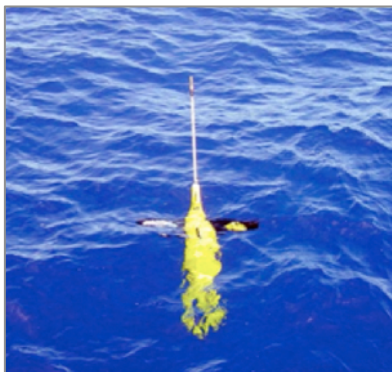
Products and markets



Sampling and Analysis
RS-14V Sampler
Chemical analyzer



Microbiology
In-situ E. Coli ALERT System



Subsea
Sampling at depth (AUV/gliders)



Oceanography
Ocean acidification (pH)

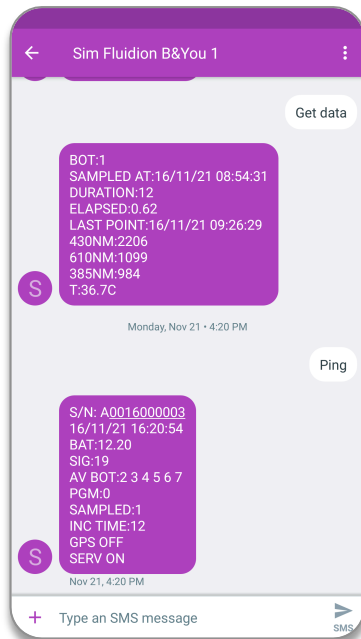


Connected real-time field products



Smart control interfaces (cell, web)

- ❖ Secure web interface
- ❖ Cell phone SMS interface
- ❖ PC/Mac software (USB)



fluidion
fluidic intelligence

ALERT SYSTEM

Welcome, web admin Home Log out

English

Devices Administration User center

My devices

- RS-14
All RS-14s
- E.Coli Analyzer
A0016000002
- RS-14 V
All RS-14 Vs

General information:

Status: Activated
Alias: A0016000002
Last update: 9 Dec, 2016 10:53:03
Location: 48.8699700,2.13010000
Last GPS update: 5 Sep, 2016 12:01:37
GPS status: OFF
Incubation time: 14h

Bottle status:

1 2 3 4 5 6 7

Operations:

Synchronization Take a sample Need synchronization!

Inline sensor data Samples history Commands history Maintenance

GPS was disabled while sampling, using the last known location.
Location: 48.8699700,2.13010000
Sampling time: 9 Dec, 2016 10:44:00
Elapsed time: 14h
Incubation time: 14h
Status: Finished

Stop measurement

Ecoli bio sensor

1 2 3 4 5 6 7

Abs Fluor (a.u.)

Absorbance Fluorescence

Fluorescence time: 8.44 h
Absorbance time: 6.89 h

Find Next Detection Manual Fluorescence Detection
Find Next Detection Manual Absorbance Detection

Export

Start Date: 00:00 End Date: 00:00

Only show the last 20 points.

Show Advanced Data Update Graph

RS-14 Rapid Sampler

- *Fully autonomous sampling workhorse*
- *On-demand remote or sensor trigger*
- *Versatile: use near shore or in open waters on buoy or boat, surface or submersed*
- *No sample cross-contamination*

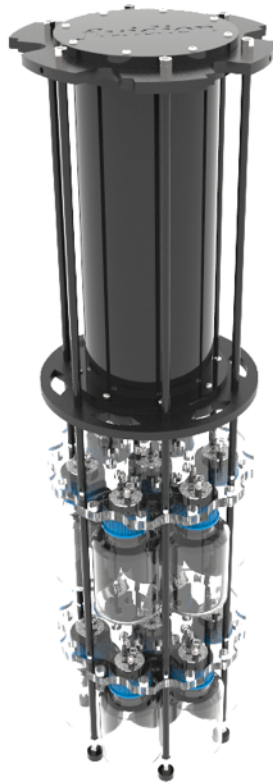
For the most demanding applications:

- ✓ *spill response monitoring*
- ✓ *impact studies*
- ✓ *sample time series*
- ✓ *storm sampling*



RS-14 configurations

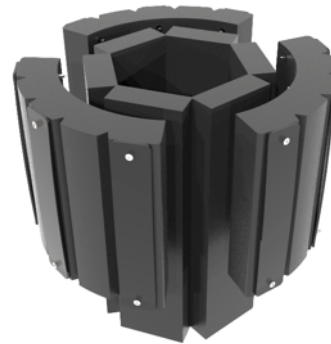
Sampler body



Protection housing



Optional
Buoyancy floats

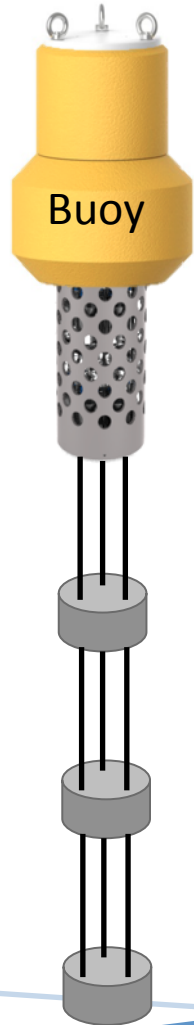


Wireless communication
GSM / Radio / LoRa

Water sampler configuration



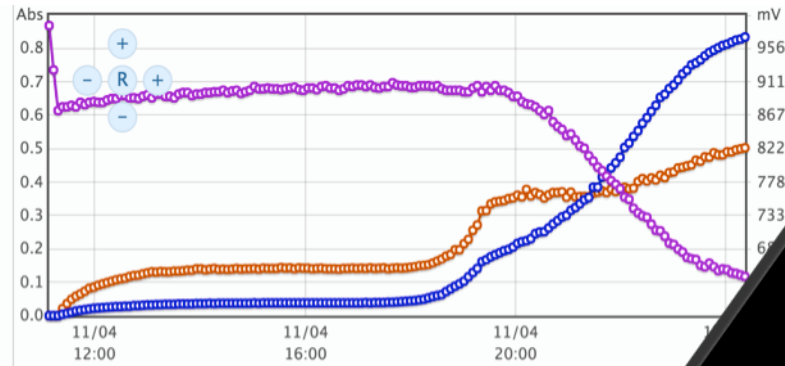
RS-14 configurations



Communication and control module, battery

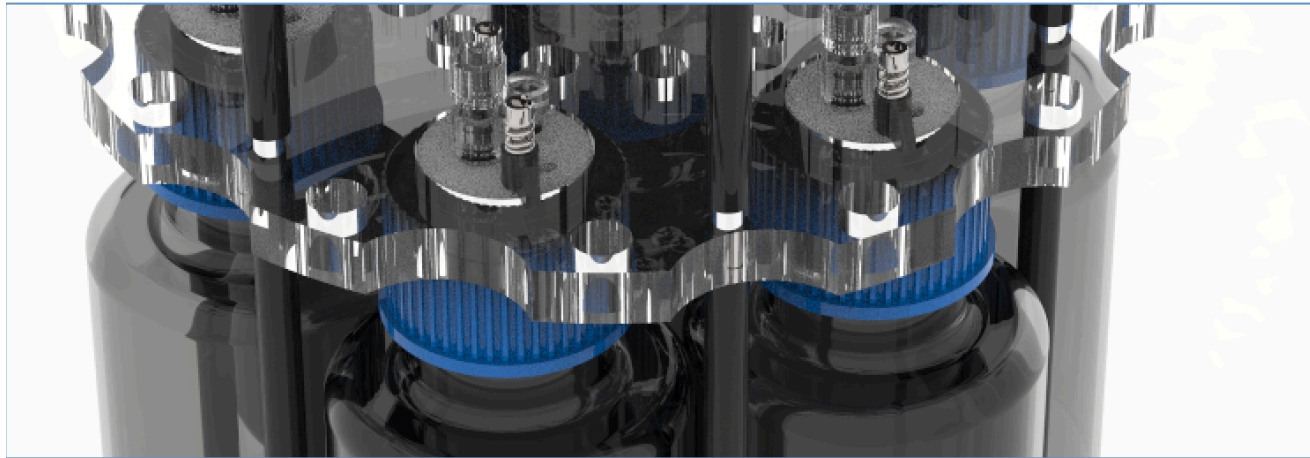
RS-14V sampler
Trigger sensors
(pH, fluorometer)

Depth sampling
stations



- ❖ *Real-time data communication*
- ❖ *Activation of sampling on-demand*
- ❖ *GSM or LoRa networks*

RS-14 specifications

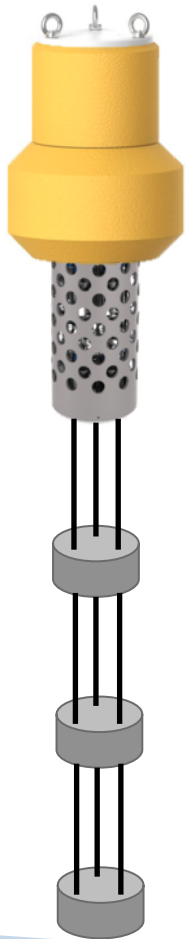


TECHNICAL SPECIFICATIONS

Dimensions	<i>L : 90 cm, D : 25 cm</i>	Number of samples	<i>14</i>
Weight	<i>15 kg</i>	Sample volume	<i>250 mL</i>
Sample trigger	<i>On-demand, pre-program, inline sensor</i>	Bottle materials	<i>Glass, plastic (optional)</i>
Inline sensor	<i>Optional, different sensors available</i>	Communication	<i>GSM/GPRS, USB, radio (optional), secure web interface (optional)</i>
Body materials	<i>PMMA, PVC Acetal, SST 316L</i>	Antenna	<i>Internal (standard) External (optional)</i>
Battery type	<i>Li Ion</i>	Autonomy	<i>4 weeks to 2 yr. depending on operational mode</i>

RS-14 example applications

Special Monitoring of Applied Response Technologies (SMART)



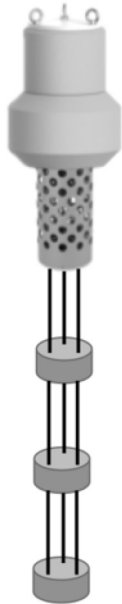
RS-14 obeys Tier III SMART recommendations:

- ❖ Water column monitoring
- ❖ Representative depth sampling
- ❖ Remote real-time activation
- ❖ Wireless data transmission
- ❖ Fast deployment in crisis
- ❖ Simultaneous sampling at multiple locations (mapping)
- ❖ Simple and inexpensive logistics
- ❖ Assist with decision-making
- ❖ Can implement sample treatment and analysis

RS-14 example applications

Comprehensive surface and at-depth monitoring of oil plumes

*RS-14V
Sampling Buoys*

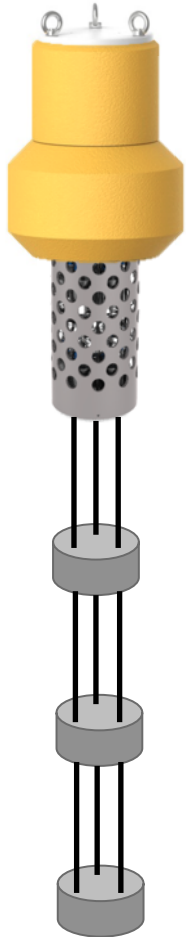


Control ship

AUV/Glider Sampling



Fluidion technology



- *Real-time data collection – radio (LoRa) or GSM*
- *Sample acquisition – multiple locations and depths*
- *Simple installation logistics*
- *Wide range of applications*

Can be used wherever there is a monitoring need:

- ❖ *Spills – chemical and oil*
- ❖ *Biological contamination*
- ❖ *Fresh water or sea water*
- ❖ *Evaluate treatment efficiency*
- ❖ *Objective assessment*

Thank you!

For additional information:

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