

## 6.- Optisense, optical biosensor technology for real time monitoring

<b>Title and name of product or technology</b>
Optisense, optical biosensor technology for real time monitoring
<b>Abstract</b>
Patented biosensor platform technology for instant and ultra-sensitive detection of (bio-)chemical substances. Technology based on unique combination of integrated optical chip technology, bio-chemistry and micro fluidics. Measurement of refractive index changes of agent specific absorbents.
<b>Description including main features/advantages</b>
The Optisense optical biosensor technology is based on integrated Mach-Zehnder interferometry and SiON-technology. Principally, the sensors consist of a chemo-optical transduction layer (the refractive index of which is sensitive to the chemical concentration of a specific analyte), an integrated optical system (which converts the change of refractive index into an electrical signal) and processing and control electronics. The generic part of the sensor (integrated electronics, software and sensor chip) can be customized for specific use by applying application-specific, selective bio-chemical layers. The bio-chemical layers can be regenerated (on site) and reused (up to 500-1000x).
<b>Innovative aspects</b>
<ul style="list-style-type: none"> <li>• On-site detection of contaminants (portable options)</li> <li>• Instant on line read-out of measuring results</li> <li>• Platform technology</li> <li>• High sensitivity (laboratory quality, ppb)</li> <li>• Flexibility (choice of bio-chemical layers)</li> <li>• Reliability</li> <li>• Cost efficiency (on-site applications, no highly skilled staff required)</li> </ul>
<b>Current and potential industrial users/domains of application</b>
<p><i>Current domain of application</i></p> <ul style="list-style-type: none"> <li>• On line monitoring of drinking water quality Example: The SafeWat-project (Σ! 3181) This project encompasses: (1) the development of an integrated monitoring system for drinking water supplies which enables immediate response to water quality changes and (2) the construction of a sensing system integrated in the drinking water supply infrastructure for the 'source to tap' monitoring of drinking water quality. The SafeWat-project is a cross-border cooperation representing all links of the drinking water chain: <ul style="list-style-type: none"> <li>- Vitens</li> <li>- Kiwa Water Research</li> <li>- Mekorot National Water Co</li> <li>- OptiSense</li> <li>- Sandia National Laboratories</li> </ul> </li> <li>• On site detection of specific contaminants Example: Mobile detection of pesticides in drinking water Optisense develops, in close collaboration with Dutch drinking water company Vitens, a highly sensitive (0,1µg/L), portable, field-use measuring system for the concentration of pesticides in water-collection areas.</li> </ul> <p><i>Potential domain of application</i></p> <p>Food industry, health care, security The Optisense sensor technology is available to a wide range of markets that require accurate, quick and sensitive testing methods at low cost per test. Thanks to the platform-based core technology, the Optisense sensors have an almost</p>

infinite range of application possibilities.  
Currently, Optisense is finalizing a sensor for the detection of mycotoxins.

**Current state of development**

Fine tuning of prototype

**Contact details**

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