# Pathogen Alert deployed to monitor microbial contamination in operating theatres

**May 2017**

**Deployment Environment:** Operating Theatre Environment

## Background

Modern operating theatres are now highly regulated environments as the presence of microbial contamination can present a serious risk to patients undergoing surgery. Operating theatres employ various technologies including High Efficiency Particle Air (HEPA) filtration as well as clothing and hygiene practices designed to mitigate the risk of contamination.

The presence of microbial contamination in the air of operating theatres is known to have significant impact on the control of healthcare associated infections, and regular microbial monitoring can assess environmental quality and identify critical situations which require corrective intervention[1]. Typically, this is done by collecting air samples using settle plates or impactors. Both techniques require subsequent incubation of samples as well as lab testing and analysis.

A modern operating theatre

## Specific Customer Requirements

The customer involved is currently undertaking a number of innovative approaches to monitoring air quality and microbial contamination in the air of the operating theatre. Monitoring of particulates in the air, which are known to transport harmful bacteria, was possible using existing sensor technologies. Monitoring of microbial contamination was made possible using the Pathogen Alert pathogen detection system. The objective was to have a complete monitoring system to track all possible sources of contamination in the air.

## Key Advantages of the Pathogen Alert for the customer

For the customer, the key advantages of the Pathogen Alert were twofold. Firstly, the system could alert staff at the earliest possible time of microbial contamination in the operating theatre so intensive decontamination procedures could be carried out.

Secondly, the system's ability to communicate online, to the cloud based monitoring platform, allows the environment to be monitored externally, alongside any other on-site sensors, ensuring the surgical staff and environment are not disturbed during normal operating hours.

## Configuration of System – Hardware

The Pathogen Alert operates using wireless technology which permitted a non-invasive installation of the sensor in the operating theatre. The sensor requires only a single power input to become operational, which allowed for a quick and easy installation in the theatre.

Outside the operating theatre a data gateway was installed which wirelessly receives data from the sensor, to which it pairs automatically. The data hub connects to the internet and is monitored via an online portal. This connection is normally via a standard Ethernet connection but in this case a GPRS connection was used to provide internet connectivity and ensure the installation could be carried out immediately.

## Selection of Cartridge

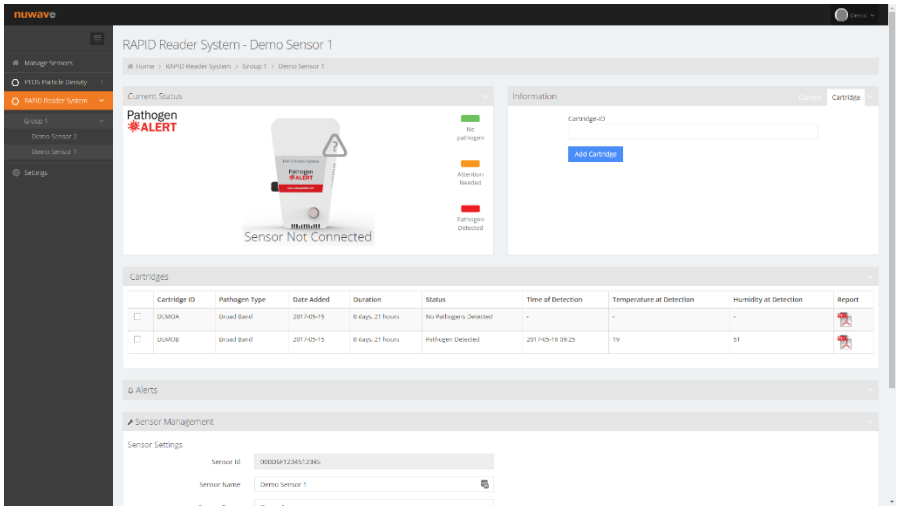
After assessing the requirements of the customer, a broadband cartridge targeting bacteria, yeasts and mold was chosen. These cartridges are used to throw a wide net over analysing potential contaminants in an environment, an important feature we felt considering the sensitivity of the location. Although more specific targets may be chosen, understanding the environments general bio-load is an important step in contamination control.


Pathogen Alert sensor and cartridges

## Setup of Remote Monitoring

The customer manages the sensor via the Pathogen Alert online monitoring portal. Using their own login details they configure the sensor and have the ability to monitor multiple sensors in a single interface.

Once a cartridge is installed, and activated online, a system status is visible to users on login and should a pathogen be detected the status will change and the customer will be alerted by e-mail of the detection event.




Pathogen Alert Web Portal

In addition to the above management of the sensor, customers also have the ability to view and export an automatically generated cartridge test report which is created each time a cartridge concludes its monitoring cycle.

For more information on the Pathogen Alert please contact us at;

info@pathogenalert.com

Phone: (901) 800-1719

1. Napoli, C., Marcotrigiano, V., and Montagna, M. T., Air sampling procedures to evaluate microbial contamination: a comparison between active and passive methods in operating theatres. *BMC Pub. Health* 12:594, 2012