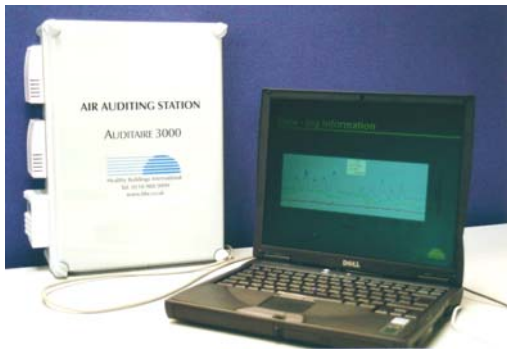




CONTINUOUS MONITORING: THE HBI AUDITAIRE 3000

Building Managers and Owners worldwide have become increasingly concerned about indoor air quality and its potential threat to staff, visitors and customers. In the event of any indoor environmental problems becoming apparent within their premises, and for conscientious managers who want to prevent future problems, many are beginning to solicit advice and service from specialists in indoor air quality diagnosis.



HBI now offer a unique and comprehensive indoor air quality monitoring service based around the use of a dedicated air auditing station known as the AUDITAIRE 3000. By monitoring the indoor conditions on a programmed, continuous basis over each and every day, the AUDITAIRE 3000 gives a reliable record of air quality. Interpretation of the results will enable managers to give staff and visitors the reassurance that the indoor air quality is satisfactory and assist them to comply and prove compliance with any relevant guidelines, codes of practice and legislation.

What is an HBI Air Auditing Programme?

A proactive air auditing programme consists of the installation of HBI AUDITAIRE 3000 Air Auditing Stations within the building at selected locations. These become a focal point of a continuing surveillance service. They record continuously the critical characteristics associated with comfort and well being and the information gained is integrated into a comprehensive air quality data base which becomes the benchmark for evaluating changes in the air quality in the future.

The ongoing monitoring involves repeat investigations at quarterly intervals. At these visits readings are also taken for the key criteria in other locations throughout the building, for comparison purposes with the results from the AUDITAIRE 3000. Routine plant inspections may be undertaken and additional monitoring of such important indoor air criteria as the levels of respirable dust, airborne microbes, etc. are also carried out.

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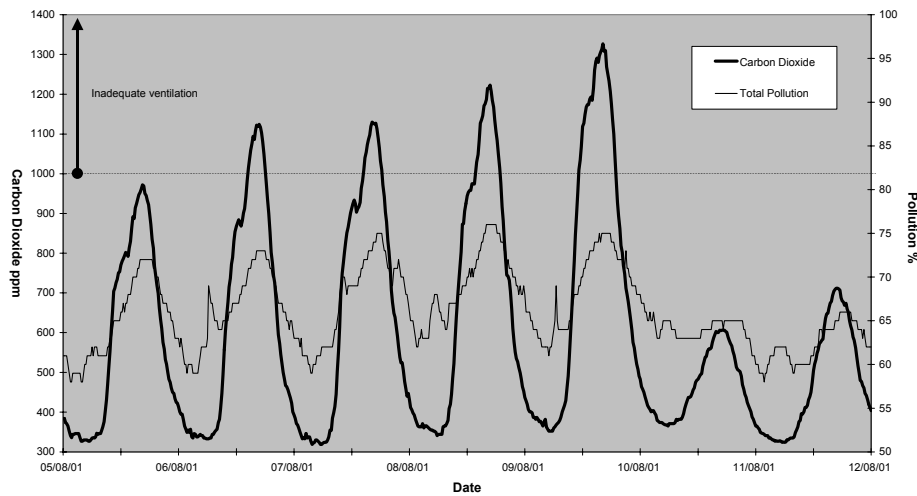


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Environmental Conditions Recorded by the AUDITAIRE 3000

Carbon dioxide, temperature, relative humidity and the total indoor pollutant loading are recorded by the station and from the results obtained, graphical representations illustrate the conditions over the whole period but also offer the ability to focus in on any unsatisfactory periods.

Example of Carbon Dioxide and Total Pollutant Load Monitoring

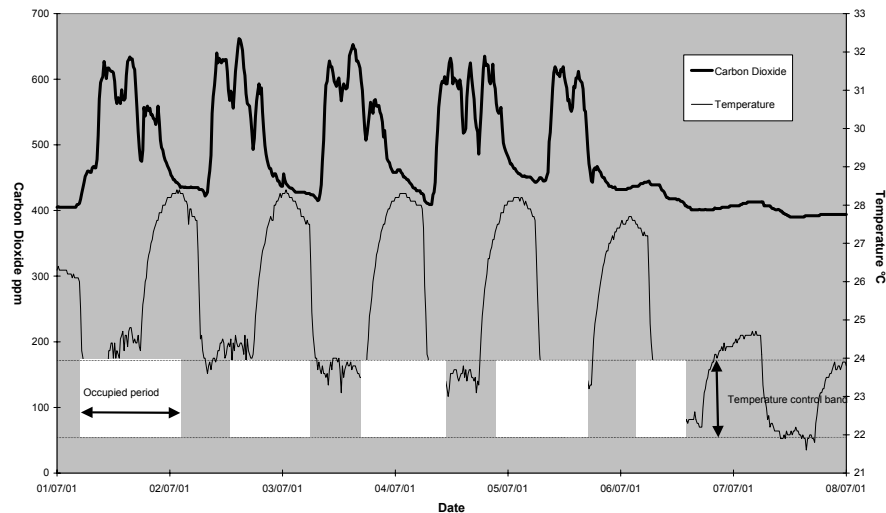


Carbon dioxide monitoring shows whether ventilation is adequate. Office churn leads to frequent changes in occupancy and monitoring carbon dioxide will illustrate whether areas become over populated, as the example above shows. It will also highlight problems which may otherwise go undetected.

Total pollutant loads are often related to occupancy as the example above shows but pollutants are also emitted by building materials. Monitoring can however help to identify single pollutant events or key pollutant periods, such as during installations or furnishings. It may also track the removal of the pollutants over time by the effective use of the ventilation systems.



Example of Carbon Dioxide and Temperature Monitoring



Temperature monitoring shows whether comfortable conditions are being maintained. This example is of an area with high heat gains overnight and shows that the HVAC system switches off too early in the occupied period and also operates over the weekend when the building is unoccupied.

The AUDITAIRE 3000 differs significantly from Building Management Systems (BMS) which monitor and control the services on many sites. Although these can be sophisticated and are generally excellent for control they do have limited data analysis capabilities. Also, a typical BMS will not include the range of environmental parameters measured by the AUDITAIRE 3000.

Analysis of data recorded by the AUDITAIRE 3000

Indoor Environment Key Performance Indicators (KPIs) can be set to allow performance targets for occupant comfort to be periodically reviewed. Occupant comfort is a combination of many factors but generally accepted lower and upper limits can be set by building management, based on best practice or particular site requirements, and if conditions are maintained between those limits the majority of occupants will feel comfortable.

The KPI tables can be used to show the number of hours in the monitoring period that conditions were satisfactory, but more importantly it can also highlight the number of hours that conditions were outside the recommended limits during normal occupancy periods. In this way the actual performance of the building systems can be assessed and compared to the KPI targets as part of a process of continual improvement.





The key to a successful programme is that the results of improvements by implementing remedial actions can be quantified. Conversely, in the event of adverse trends in air quality over time, changes can be implemented to rectify the situation before complaints arise from the building's occupants.

HBI has based the range of environmental monitoring criteria on its unrivalled experience and knowledge of indoor air quality. HBI's own data base now contains the findings from over 2,500 major building studies, over 350 million square feet of office space, throughout the world. This reveals, that of the buildings studied, more than 50% were found to have inadequate outside air ventilation and humidity problems were prevalent in a further 18% of buildings. The AUDITAIRE 3000 allows the building manager to monitor all of these issues, and more.

The Future

The U.K. Workplace Regulations 1992 states that ventilation systems should be regularly tested "to ensure that they are kept free from anything which may contaminate the air." Given the increased attention afforded to the "sick building" issue by news media, policy makers and the legal community, it is only a matter of time before proactive monitoring will shift from the novel to the norm.

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