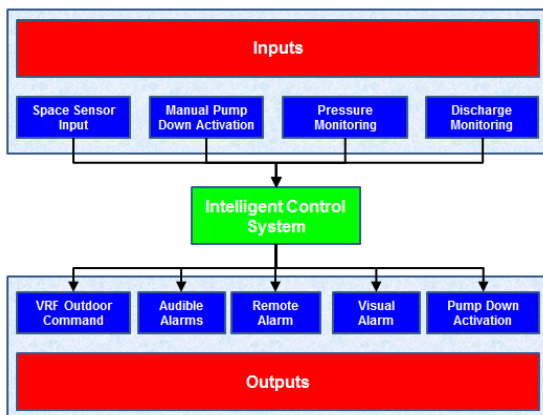


Toshiba Solutions

Hotel Leak Detection & Containment with BREEAM & BSEN378 Compliance

Application Example

- 5 star hotel
- 66 x Bedrooms
- 2 Floors, 33 x Bedrooms per Floor
- Leak Detection Pump-Down
- Room Concentration Sensors required
- Fail Safe Pump Down/Detection Indication



Leak Detection Set-up

The leak detection system works via a range of sensors which detect changes in the refrigerant pressure and system temperatures that signify a decrease in the levels of refrigerant gas. This triggers an audible and visual alarm and shuts down the device.

In the case of the RBC-RD6 the system will go into pump-down mode and all refrigerant will be recovered from within the building to ensure the safety of the occupants.

Challenges

The challenge is to provide a system that would achieve heating and cooling to the bedrooms in the most energy efficiency way and a leak detection system to comply with the requirements of BSEN378 achieved by the means of using an individual room concentration sensor. With full integration of a management system to ensure no false alarms activated a pump down process. The client also has their own standard requirement of system control strategy including the following key elements:-

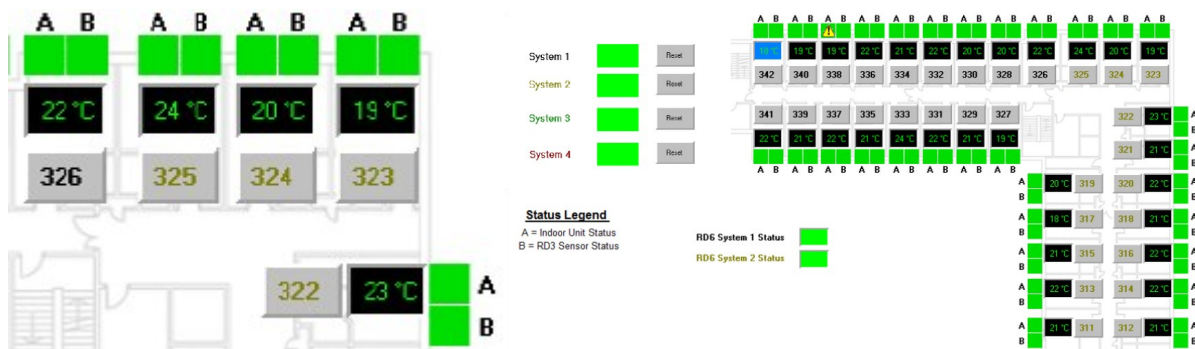
- Temperature control limitation to the user
- Thermal room control
- Global reset of the system at a set time during the day
- Simple central control of the system via a PC software based system
- Remote indication and reset of the leak detection system
- Elimination of any potential false alarms
- Provide a detector that sits flush on the wall so cannot be knocked off or broken

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Solution

- 4 x 16HP SHRMI VRF 3 pipe systems (2 per Floor)
- 66 x RBC-RD3 Room Concentration Sensors
- 4 x RBC-RD6 Leak Detection & Pump Down Controls
- 1 x RBC-WP1 (Windows Interactive Controls Software)
- 3 x TCB-IFLN642TLE (Software Interfaces)
- 1 x RBC-AIP2 (Remote Alarm & RD6 Reset)



Screenshots of customised graphics from the WP1

RBC-WP1

This provides the ability for the hotel to centrally monitor and control the VRF systems feeding the bedrooms, enabling the following to be achieved:-

- Visual indication of individual room status
- Adjustment of system set points
- Global reset of operating temperatures
- Audible & visual alarm in the event of leak detection activation
- Remote RD6 Leak Detection reset from RBC-WP1 Software
- 3 Levels of administration entry rights to the software.

Level 1 – Monitoring all areas only with no ability to change operating functions

Level 2 - View all areas & enable changes to be made to operating functions

Level 3 – Administration or engineering access level – Full ability to monitor, change & see recorded data regarding the performance of the system

Peace of Mind Monitoring:

In addition to the WP1 software Toshiba have also provided a means of identifying that there has been a leak on the system even in the event of the managing PC being turned off. This is achieved by the use of an RBC-AIP2 remote indication of alarm & reset panel. The panel enables a remote alarm to be raised at a supervisory level in the event of the RD6 pump-down being activated as a result of a refrigerant leak, this is in line with the requirements of BSEN378 2012.

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RBC-RD3

RBC-RD3

The newly developed recessed room sensor is triggered if the concentration of R410A refrigerant exceeds the practical safety limit of 0.44Kg/m³ as stated in BSEN378 2012. The sensor raises an audible and visual alarm within the bedroom and also via an L30 fault alarm this can transmit an indication alarm at the Toshiba WP1 software control loaded onto the reception office PC. As a result this provides compliance with the requirements of BSEN378.

RBC-RD7

In conjunction with the RBC-RD3 room sensor via the RBC-RD7 Toshiba are able to provide a means to isolate an individual bedroom or occupied space without the need to fully shut down the air conditioning system therefore enabling the remaining indoor units on the system to be operational maintaining comfort levels within the building.



RBC-RD7



RBC-RD6

RBC-RD6

The RBC-RD6 enables either a major or gradual refrigerant leak to be identified and the activation of a system pump-down to be triggered. The solution includes all isolation valves and central control panel. The combination of the RD6 & RD3 solution enables us to achieve the standard design requirements for the client to provide compliance with BSEN378 & BREEAM

How it all Works

By utilising the above controls solution we are able to provide the client with a fully integrated controls system for Toshiba VRF air conditioning. As a result this provides a leak detection system that complies with BSEN378 and also helps the maintenance team with the requirements of the F-Gas regulation by giving them the ability to identify any potential system leaks at an early stage. Thereby reducing the amount of R410A leaked into the atmosphere and helping to make sure the system runs at its peak energy efficient performance level.

Furthermore, the advanced technology employed within this system ensures that any false alarms do not interfere with the operation of the system, making this a failsafe way to not only ensure safety but to ensure comfort within a building.

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Leading Innovation >>>

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Hotel Leak Detection & Containment with BREEAM & BSEN378 Compliance

Leak Detection & Containment



Toshiba's creditable solution...

Toshiba has a solution to help you gain BREEAM credits and more.

Inline with the building services industries continued pro-active efforts to reduce CO² emissions and to meet targets to build greener buildings, Toshiba have developed a market leading Leak Detection and Pump-down system that enables BREEAM credits to be

claimed on a building using both Split DX and VRF systems. In addition, our solution also provides a means to demonstrate compliance with the current EN378 2008 standard where refrigerant concentration levels may exceed practical safety limits of 0.44kg/m³.

TOSHIBA AIRCONDITIONING

Advancing the **eco**-evolution