

Toshiba Solutions Hotel application

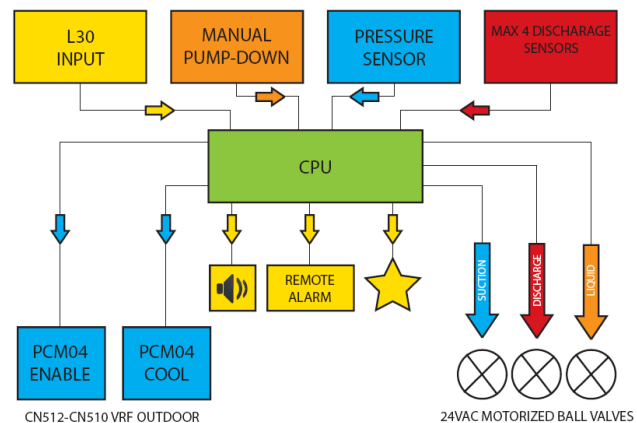
Application Details

- 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 sensors which detect changes in the refrigerant pressure 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 cooling mode and pump-down will commence.



Challenges

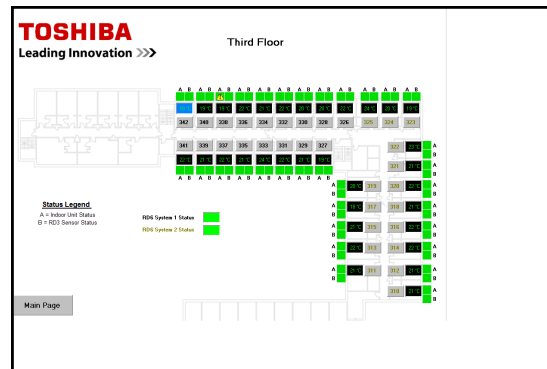
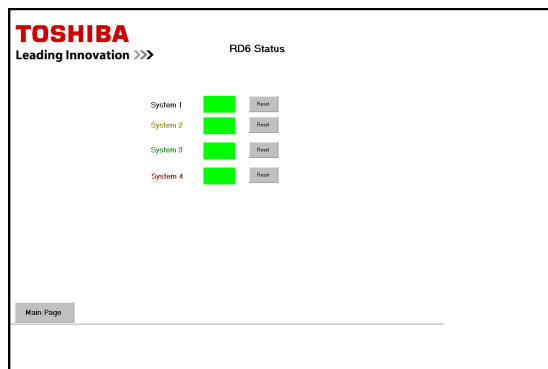
The challenge from the client was to provide a system that would achieve heating and cooling to the bedrooms in the most energy efficiency way. The client also stipulated that all rooms be installed with a leak detection system to comply with the requirements of BSEN378 by the means of using a room concentration sensor. 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

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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

In addition to the WP1 software Toshiba have also provided a means of identifying that there has been a leak on the system in the event of the PC being turned off 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-RD6

This provides a means to enable either a major or gradual refrigerant leak to be identified and the activation of a system pump-down to be triggered. In the case of this client this is currently not directly linked to the RBC-RD3 sensors this is to reduce the activation of the pump-down in a false alarm situation of the RD3 being activated.

The solution included all isolation valves and central control panel. The combination of the RD6 & RD3 solution enabled us to achieve the standard design requirements for the client to provide compliance with BSEN378.



RBC-RD3

This provides the means for Toshiba to comply with the client's standard design brief that a leak detection system needs to be installed into the bedrooms that is based on the means of detecting a refrigerant leak through the use of a room concentration sensor.

The sensor is triggered if the concentration of R410A refrigerant exceeds the practical safety limit of 0.44Kg/m^3 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.

How it all Works

By utilising the above controls solution we were able to provide the client with a fully integrated controls system for the VRF systems installed. This also provided them with a leak detection system that not only gave them compliance with BSEN378, as per their standard specification, but also gave them a system that will help their maintenance team with the requirements of the F-Gas regulation by being able 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.

TOSHIBA

Leading Innovation >>>

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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