

MRI Room Applications



Peace of mind. Guaranteed.

Continuous monitoring
of Oxygen in MRI rooms for
hospitals & clinics.

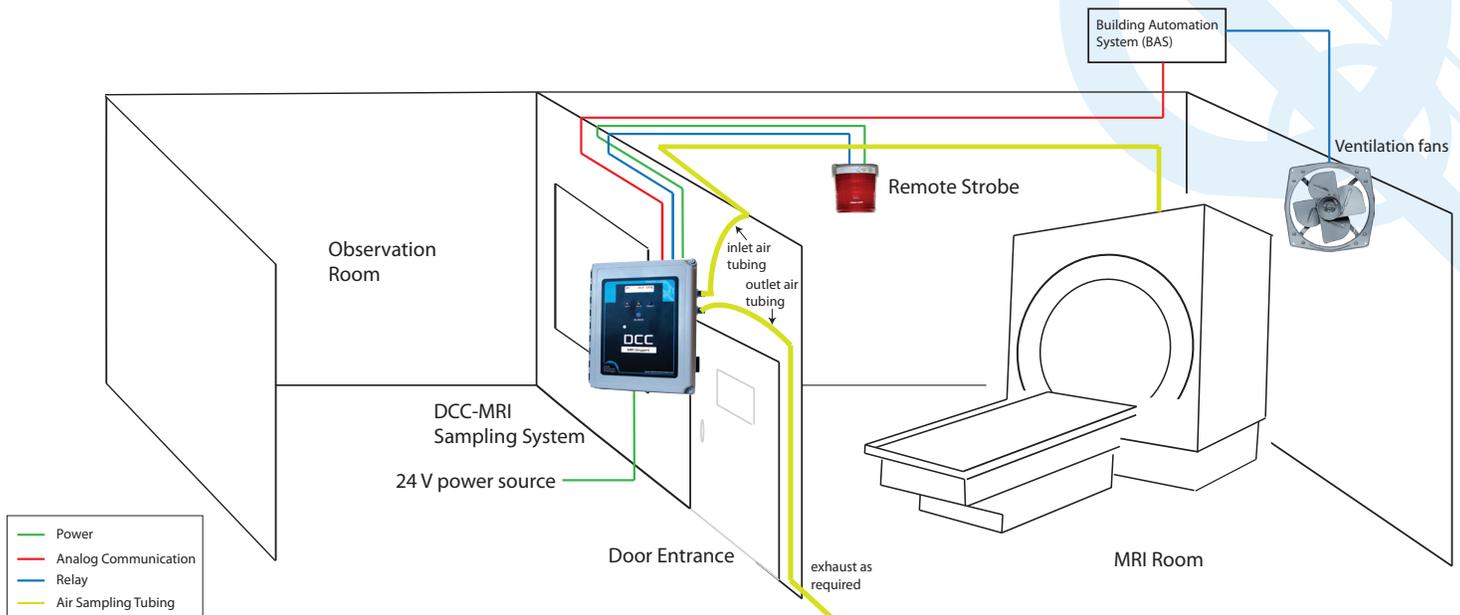
Magnetic Resonance Imaging (MRI) machines use a powerful magnetic field to produce 2D or 3D images of the internal human body. Liquid helium is used to cool the superconducting magnets in the MRI machines. If a coolant leak occurs, the helium can displace the oxygen (O_2) in the environment, creating a dangerous situation for the people in the room. A continuous oxygen sampling system needs to be in place to monitor for potential oxygen deficiency levels to ensure the health and safety of patients and staff in the room.

Critical Environment Technologies Canada Inc. (CETCI)'s **DCC-MRI Oxygen Sampling System** is the solution. If a leak occurs and the O_2 level drops below the alarm threshold, an audible alarm will sound and the relay will trigger a switch to activate the exhaust fans.

By detecting leaks early, the danger to the occupants in the room from O_2 deficiency and additional costs due to inefficiencies in the MRI unit can be reduced.

MRI Room Applications

Typical MRI Room Oxygen Sampling System



The strong magnetic field inside MRI rooms can interfere with electronic equipment inside the room and cause it to malfunction, therefore the DCC-MRI should be mounted on the wall outside of the MRI room with flexible tubing running from the inlet port fitting to the area where a leak is most likely to occur inside the MRI room. The DCC-MRI will constantly monitor the target area air, indicating the real time Oxygen levels on the LCD display. Normal Oxygen levels in a room with good air exchange are approximately 20.8% to 21.0% volume. The DCC-MRI can be configured with a low alarm and high alarm setpoint depending on the application requirements. The 4-20 mA output can be connected to the Building Automation System (BAS) which in turn can switch on the emergency ventilation system or exhaust fans and the relay can be configured to turn on a remote strobe inside the MRI room when an alarm is triggered. For example, if configured with a low alarm setpoint, when the Oxygen level drops below 19.5%, Channel 1 LED will turn amber, the loud side mounted buzzer will sound, a 4-20 mA signal will be sent to the BAS and Relay 1 will be de-energized, triggering the actuation of the remote strobe. The buzzer can be silenced by pressing the "Silence" push-button.

Once the Oxygen level stabilizes, the DCC-MRI will return to normal operation. The Oxygen sensor life span is approximately three years. If the Oxygen level drops dramatically low and the system goes into full alarm and will not recover or reset, the Oxygen sensor may have expired.

Regular maintenance should be conducted two times per year, with periodic bump tests in between. If the inlet tube becomes blocked and/or the filter becomes dirty, the display will show "Flow Alarm" and the Channel 2 LED will turn red, the buzzer will sound and the pump will shut off. After the blockage has been removed / the dirty filter replaced, press the "Silence" push-button to stop the buzzer, restart the pump and clear the latching.

If the exhausted sample air must be directed someplace else other than the room where the DCC-MRI is installed, additional flexible tubing can be connected to the outlet port fitting and exhausted as required.