

EEP has developed a range of long life LED lamps, with a lifespan of up to 50,000 hours, which are unaffected by the magnetic fields in MRI areas.

Regular incandescent lamps last around 1,000 hours under benign conditions, and in an MRI environment may last as few as 100 hours due to the magnetic field causing stress on the filament.

This dimmable control system has been designed to have reliability commensurate with the LEDs. i.e. low component temperature.

Less power is required for the LED lighting compared with incandescent, giving a 67% saving in power input for the same light output. A typical installation of 16 LED lamps would represent a saving of 379 Watts. It would also require 379 Watts less of Air-Conditioning power. Hence, a total power saving of at least 758 Watts.

Users have long expressed a desire for dimmable lighting in MRI facilities, but suitable systems were previously not available. All available systems rely on some form of electronic switching to control brilliance, and are therefore not compatible with MRI scanners due to the RFI (Radio Frequency Interference) they generate. EEP's system does not use any switching and therefore does not generate any RFI. As the power source and controls are outside the screened MRI room, the connections to the LED lamps are electrically filtered. This is to ensure that no external RFI will be conducted into the MRI room.

In addition to dimmable lighting, the EEP system also provides at least 30 minutes of seamless standby emergency lighting, removing the need to provide separate emergency lighting.

The whole system is extremely low maintenance, requiring only periodic cleaning of the fan/air filter and verification of the condition of the standby batteries, which is done by simply switching off the mains input and ensuring the lights stay on for 30 minutes.

The EEP system removes the problem of interference affecting scanner image quality, caused by the breakdown of incandescent bulbs. A further benefit is reduced 'scanner down time' incurred when replacing lightbulbs.

CONCLUSIONS

The EEP system provides a dimmable Ultra High Efficiency lighting system, with emergency standby capability, all of which is fully compatible with MRI applications.

There are also maintenance cost advantages, as the only items that may possibly need replacement during the life of the equipment are the back-up batteries, which have a claimed life of 5 years maintenance free. This itself is probably an underestimate, due to the benign temperature levels that will be incorporated into the equipment.

