

## ISOCOM Provide LED Lighting for Radiation Harsh Environments in Accelerator Tunnels & Nuclear Power Stations



Leading UK manufacturer, ISOCOM Limited, provides hermetically sealed and high-reliability optoelectronic and microelectronic components to businesses in the defence, space and aerospace sectors worldwide.

The niche components have allowed us to contribute to various applications for over 35 years.

In 2018, ISOCOM successfully secured a contract with CERN to assist in the development of an innovative and cost-effective lighting solution for accelerator tunnels with high radiation conditions.

Designed to replace the traditional fluorescent lamps that use magnetic ballasts; ISOCOM's lighting was required to be able to withstand high levels of radiation and utilises LED's. Hence, it has been named Radiation Resistant Luminaire Lighting.

The Radiation Resistant Luminaire was manufactured and tested at ISOCOM's advanced clean room facility, based in Peterlee, County Durham, United Kingdom. ISOCOM's manufacturing facility has been approved under AS9100D and ISO9001 certifications for producing hermetically sealed and radiation hard components.

Testing on the lighting showed, at a typical drive of 250mA, no degradation was present at 1 MeV, had a new fluence in Si of  $2.3 \times 10^{19}/\text{cm}^2$  and an absorbed dose of 11 KGy(Si). These levels mimic conditions of over 5 years of radiation exposure in active radiation areas of tunnels containing particle accelerators.

At input voltages between 110V and 240V, and a current of 250mA, the LEDs are generating light output of 8,500 lumens per unit. This can be increased to up to 10,000 lumens per unit at a current of 350mA. The lights can be customised with different sized lumens to meet the customer's requirements.

ISOCOM is proud to have produced the first 1,000 units of radiation resistant LED lighting to be used in CERN's tunnels. The AC/DC power supply design with current control has proven successful as CERN has confirmed that these LEDs meet the requirements for radiation conditions.