LASER CASTLE

# Laser Safety Enclosures

**Lasermet's laser safety enclosures protect personnel from the dangers of laser beams by absorbing the laser power in the specially designed walls and ceilings.**

These modular, Class 1, room sized laser enclosures - for high power lasers - are tested and certified to EN 60825-4 (Safety of Laser Products Part 4 - Laser Guards), and can be rapidly designed, built and installed by Lasermet.

They are supplied complete with Lasermet's interlock control system and dual message, dual colour, low voltage, illuminated LED signs. Lasermet's audible warning system can also be installed.

A CCTV system (Standard or High Definition) covers the operations inside the laser safety enclosure and provision is made for fume extraction making this a cost effective and extremely easy method of enclosing the laser system, which then complies to international laser safety standards.

## Active "Laser Jailer" upgrade option

The passive enclosure can be upgraded to an active enclosure by specifying the patented "Laser Jailer" Active Laser Guarding System. Modular active tiles cover the internal walls, ceiling and doors to detect high power laser beam strikes. If this occurs Lasermet's fail-safe technology isolates the laser safety input in less than 50ms. The laser machine responds to this laser termination signal and laser radiation is terminated.

*Laser Safety Enclosures*

## Ventilation

In the example shown here, two vents are built into the rear wall to enable air to enter the enclosure. This air is extracted through a vent in the roof. The main photograph shows an extraction vent on the side wall.


***Typical passive laser safety enclosure***

## PEL ratings

The panels are tested and certified to the PEL ratings

| Irradiated Area | PEL (T3) 10s | PEL(T2) 100s |
|---|---|---|
| 4mm² | 310MW/m² | 170MW/m² |
| 2000mm² | 3.1MW/m² | 1.7MW/m² |

lasermet
laser safety solutions

ISO 9001 REGISTERED FIRM
Cert No GB3164
2682
ISO/IEC 17025:2005
Only for optical testing to:
IEC/EN 608251
IEC/EN 6082512
IEC/EN 60601222

LASER CASTLE

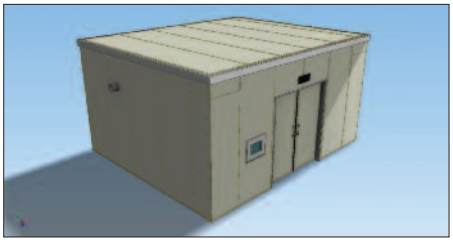
lasermet
laser safety solutions

## Specification to EN ISO 13849-1

To meet the laser safety requirements of EN 60825-1, the enclosure requires a safety interlock control system including appropriate warning signs. The ICS-6 "ELISe" Interlock Control System meets Performance Level e (PLe) of ISO 13849-1 (Safety of machinery. Safety-related parts of control systems) and is ideal for compliance to the required laser safety standard.


## Equipment and system designed, manufactured and installed

The system comprises of an enclosure made from panels constructed from passive laser safety compliant material and certified to the Laser Safety Standard EN IEC 60825-4. The panels are connected together (including a roof) to form the enclosure.



## Doors

Access into the enclosure is provided by double doors operated by a sliding mechanism to provide maximum access while using minimum space. Single hinged doors are also available.

## Illuminated Sign

A dual message, dual colour, LED laser warning sign above the door indicates the status of the laser as it is controlled by the interlock controller. The LED sign, including the laser warning triangle, reads "Danger Laser On" illuminated in red when the laser is powered on, and reads "No Hazard Laser Off" illuminated in green when the laser is off.


## Closed Circuit TV (CCTV) monitoring system

A CCTV system is installed with the enclosure. Either one or two remotely controlled cameras operate inside the enclosure transmitting video to the video monitor(s) outside the enclosure. When two cameras are installed, the video monitors can be controlled to show the view from either camera using a joystick controller.

## Electrical system

The electrical wiring is run in containment channels inside the enclosure.

## Relocation

Being a lightweight, modular design, the enclosure can be dismantled, moved to another location, and be re- assembled very quickly. The standard sized panels also enable the enclosure size to be changed.

This is an ideal, flexible, lightweight solution for today's rapidly changing environment.

## Control of Substances Hazardous to Health (COSHH)

### Fire

Fire can be easily extinguished in the early stages if quickly tackled with a water, CO2, dry powder or BCF extinguisher.

### Smoke and Fumes

Burning panels give off carbon monoxide and styrene gas. The amount given off is less than that emitted by wood and other traditional construction materials in comparative tests. The smoke hazard of burning panels is similar to that of any other construction, decorating or packaging material.

### Cleaning & Maintenance of Panels

Panels may be washed down with fresh water from a hose or a bucket. Water may be heated to 60°C.

A solution of fresh water and Tepol or non-aggressive detergent may be used to remove heavy deposits, followed by a fresh water rinse.

## Laser Safety Compliance

The enclosure complies with the laser safety standards and other standards listed below as well as the European Directives also shown below.

| | |
|---|---|
| • Machinery Directive | 98/37/EC |
| • Low Voltage Directive | 2006/95/EC |
| • EMC Directive | 2004/108/EC |
| • EN 60825-4 | Safety of Laser Products Part 4: Laser Guards |
| • EN ISO 13849-1 | Safety of Machinery: Safety Related Parts of Control Systems |
| • EN 60947-1 | Low Voltage Switchgear and Control gear |
| • EN 61010-1 | Safety Requirements for Electrical Equipment |

**Lasermet Limited** Lasermet House
137 Hankinson Road Bournemouth, BH9 1HR.
Tel: +44 (0)1202 770740 Fax: +44 (0)1202 770730
sales@lasermet.com www.lasermet.com





lasermet
laser safety solutions