GUIDELINES TO THE INSTALLATION AND OPERATION OF A LASER CINEMA PROJECTOR

INTRODUCTION
Laser projectors are becoming more prevalent in cinemas worldwide due to their high brightness, lower cost of operation and lower cost of maintenance. While similar in some respects to the installation and care of Xenon projectors, there are important differences an exhibitor needs to be aware of prior to installation of a laser projector. This handout is designed to provide a guideline as to the installation and operation of a laser projector regardless of laser technology.

TWO TYPES OF LASER PROJECTORS

RGB Laser: which is split into 6P and 3P. The P refers to the number of primary colors used to generate colors.

Laser Phosphor: Uses Blue, Blue+Red or Red+Green+Blue lasers to excite a phosphor wheel and add yellow light to the spectrum.

LASER PROJECTION AND 3D
Existing active and passive 3D systems (excluding Dolby) used with lamp-based projectors can also work with laser-illuminated projectors. In addition, RGB 6P projection can also offer its own version of 3D, using color separation and non-disposable glasses.

LASER LIFETIMES
Achievable runtimes of the laser light source varies according to the laser type and initial brightness of the projector. Typically manufacturers state lifetimes of 20,000 hours and more, dependent on model and technology. Please check with your manufacturer, as this is evolving. This means that laser illuminated projectors do not require lamps to be changed anymore, which is a significant operational and health and safety benefit.
**POWER EFFICIENCY**

There are savings to be made on electricity usage and efficiency for laser projection. The exact number depends on projector model, cooling system required, the type of laser projection system...but is typically between 25%-60% better compared to Xenon lamp base projectors. This also can have an impact on booth ventilation and conditioning systems. In most cases, switching from lamp to laser allows for either booth exhaust recycling or full extraction out of the booth through the ceiling. In both cases significant HVAC and electricity savings can typically be achieved.

**LASER SAFETY**

With the advance of safety regulations, today it is possible to classify laser projectors in the same way as lamp projectors, obtaining a ‘Class 1’ certification, with associated risk group. Typical cinema projectors (e.g. 10,000 lumens or more) are classified as Class 1, risk group 3. This means that there is no fundamental difference between laser or lamp projectors when talking about eye hazards.

There is only an optical risk from laser projection if a cinemagoer looks directly into the projector lens. To protect moviegoers and cinema staff, the installation shall comply with the following installation requirements:

- **Hazard Distance (HD):** Is the distance from the source at which the intensity or the energy per surface unit is dangerous for the eye and on the skin. The light beam can thus be considered as dangerous if the operator is closer from the source than the HD.

- **Restriction Zone (RZ based on the HD):** Light output levels in excess of the limits shall not be permitted at any point less than 2.0 meters (*) above any surface upon which visitors are permitted to stand or 1 meter below or in lateral separation from any place where such persons are permitted to be. (*) Region depending. Check local regulation. Right now the minimum SH (Separation Height) for the HD is 2 meter (6.6 ft) for Europe and 2.5 meter (8.2 ft) for US.

**MAINTENANCE AND SERVICE**

Most projector manufacturers advise that the person operating the projector needs to have a minimum required level of laser and projection training e.g. factory-based training programs. Please check with your manufacturer or integrator and adhere to all local and regulatory health and safety policies. Apart from the specifics of the light source, which is the only real difference, laser projectors are treated the same as a lamp-based projector and a suitable maintenance regime is as important.

This handout should not take the place of any manufactures’ official technical manual. Always read the official manual when installing and servicing a device.

Note: ICTA is not liable for issues relating to this information.