Argon TV

Presents

7 Tips To Understanding Why Lasers Must Be Safe

By Tim Bennett

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7 Tips To Understanding Why Lasers Must Be Safe

Over the last few years, laser shows have become more popular.

Recent changes in programming stations, make it easier for lighting engineers and other users to enjoy the beauty of laser.

However, many of these new users are completely unaware *(and some just don't care)* that laser can create ocular hazards and that lasers need to be used with care and in a safe manner.

Before you continue this article, know that the over the laser 40 years, there have only been a small number of reported incidents and that very few people have ever experienced any harm from a laser show.

Lasers can damage eyes, skin and also *(under certain circumstances)* can cause fire.

Therefore, as a responsible laser user, it is important that you are aware of the high standards of safety expected in the laser industry.

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The following Laser Safety Measures should be observed by all laser operators:

1 - Do **NOT** put any laser light on or in a hazardous manner near to anyone.

This includes the audience, performers and also the technicians.

The only exemption to this, would be the use of lasers that has been correctly analyzed and approved for human access.

2 - Most Class 3B and Class 4 lasers *(5mw and above)* should normally be at least 3 meters above the floor and at least 2.5 meters *(laterally)* from where a person can stand.

3 - Audience scanning can be performed under certain conditions.

However a laser beam must be measured with a laser meter.

The laser should be fitted with a 'fail safe device' which turns off the laser in a fraction of a second in case of scanning failure.

In some countries, such as UK, USA, Sweden, Finland, Germany and Austria (there may be more) audience scanning is not permitted without special clearance.

In countries where there is no specific law regarding laser safety and audience scanning, operators of laser equipment should still follow basic laser safety principles.

4 - Do Not operate in excess of the MPE (Maximum Permissible Exposure) Limit.

MPE is the highest laser power that is considered safe for the eye.

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There is a video here that explains MPE

5 - Do **NOT** terminate beams on cloth or other flammable objects

There is an excellent download here about the Safety Of Display Lasers

6 - In most countries, it is now illegal to track or intentionally project laser in to a flight path of aircraft, or to hit an aircraft. In the USA it is a Federal Crime and was signed into law on 14th February 2012 under the FAA Modernization and Reform Act of 2012.

There are severe penalties in place.

Aviation Authorities often require outdoor laser shows to have permission to operate.

7 - ILDa has 11 basic safety principles. These can be found here.

Here are the 11 principles in brief:

1 - A laser show must be safe for all persons at the show

2 - I am ultimately responsible for the laser show's safety

3 - I will not present a show which is hazardous

4 - I will not allow others to override safety considerations

5 - My shows will be continuously monitored

6 - Laser safety standards and guidelines should be followed at all times

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7 - I will use backup methods to ensure that beams will not pose a hazard

8 - I understand that audience scanning requires the highest level of laser safety knowledge

9 - I understand that pulsed lasers should never be used for audience scanning

10 - If I do not understand safety standards or cannot ensure audience safety, I will not do audience scanning

11 - I will not illuminate aircraft.

For a full description check the website at ILDA.

Conclusion

Laser safety is a real issue.

Please take it seriously.

This document is not intended as a definite guide to laser safety. It is in fact just an introduction.

Before operating any laser equipment, ensure that the equipment is safe and that you have the correct training.

Please consult a laser safety officer to ensure that your show is safe for all persons concerned.

Tim Bennett and Argon Animation Inc cannot take any responsibility for any events that may arise from your shows and events.

We wish you a wonderful and safe laser career.

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More Reading about laser safety

Create Safe Laser Shows: here

Audience scanning: here

Aviation safety: here

Laser Safety Products:

The Beam Attenuation Map
The SafetyScan Lens
P.A.S.S - Professional Audience Safety System
Beam Brush

Audience Scanning Overview: here

Laser Light Shows FDA: here

Occupational Safety & Health Administration: here

Laser Show Safety: here

Feel Free To Contact Tim Bennett Here

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