

# Screens for **digital**



When installing DCI-compliant projectors, screen choice may have more impact than at first thought. Auditorium shape, screen gain, projector set-up and even choice of 3D technology can all make a difference. Harkness Screens' **Andrew Robinson** offers the following at-a-glance tips.

## 2D Auditoria

- Consider screen gain level together with lamp power; these can affect projector choice (model size) as well as lamp selected. It is important to consider this in new-build cinemas; in existing auditoria screen replacement may be beneficial to help reduce lamp power. If showing 3D, other considerations also apply (see below).
- Matt white screens usually have a gain of 1; higher-gain levels are available (typically 1.4, 1.8 and 2.2 – gain is measured according to international standards such as British Standard BS5550). 14-fl is the recommended brightness level for digital projection.
- For a given screen brightness level, lamp power can be reduced as screen gain increases. This can confer financial benefits in initial investment, as well as ongoing operating and maintenance costs. Xenon lamps for digital projectors are more expensive than for 35mm, and lamps from 1.2-7kW are available.
- Viewing angles of gain screens and the impact on screen light distribution should be considered. High-gain screens should be curved to improve the light distribution. 1.4 gain screens can be mounted on flat frames, although a slight curve is preferable. Screens may need to be raked with steep stadium seating.
- Auditorium shape can be important, particularly for high-gain screens. Rectangular shapes (long throw) are better than square when using gain screens.
- Intrinsic light distribution on-screen from digital projectors is more even than from 35mm models, so digital projectors are less likely to 'hot spot' with high-gain screens.
- Manufacturers' quoted brightness levels for digital projectors may be unrealised in practice, depending on how aspect ratios are set up; lenses, lamp choice and age, port glass losses etc. all affect screen brightness.
- Interference fringes can occasionally be experienced (between pixels and perforations). Adjusting the projector set-up can usually overcome this; screens with different perforations can also be used. This is not normally a problem in cinemas.
- If a screen is damaged or old, changing it when installing new digital projection will ensure the overall quality of the projected image.

## Digital 3D

- Several technologies exist. For single d-projectors, the main technologies are polarised light; colour filters; or 'active' glasses.
- All single projector 3D systems 'lose' light – typically 85% of that available in 2D mode. Real D's XL system loses about 70%.
- 3D systems need gain screens and more powerful lamps to compensate for these losses. Lower screen brightness levels are accepted for 3D (typically 5fl compared with 14fl for 2D).
- Polarised light systems use 'silver' screens, which are intrinsically high-gain (around 2.4). The current maximum screen size with a single projector is about 15m (20m+ with Real D XL).
- Other technologies use 'white' screens but also require gain. Recommended gain levels are 1.4 at 9m; 1.8 to 13m and 2.2 to 13-15m.
- Polarised light systems will always require a screen-change (to silver); other 3D systems may require a screen change to higher gain.
- When auditoria are showing 2D content, lamp power should be reduced. **S**