Panasonic Projector Technologies
- Benefits of Laser and 4K in the Rental market

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THE 4K MIGRATION
Where is 4K demand coming from?

- Handling large resolutions is not new in the event industry
- 4K will create new applications
  - Full-HD Picture-in-picture for presentation and conferences
  - Large projections with short viewing distances
Why 4K+ Pixelshift?

The industry dilemma
Texas Instruments not offering a small form factor 4K chip

Panasonic intention
- Keep current concept
- Offer best-value 4K products

<table>
<thead>
<tr>
<th>OPTICS</th>
<th>DMD : pixel pitch</th>
<th>Projector products</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.4” PF</td>
<td>Not available NOW</td>
<td>For D-Cinema 30klm+ models</td>
</tr>
<tr>
<td>1.0” PF</td>
<td>4K 4096 x 2160</td>
<td>Panasonic 3 chip DLP (DZ21K 20klm, DZ13K 12klm)</td>
</tr>
<tr>
<td>0.7” PF</td>
<td>WQXGA 2560 x 1600</td>
<td>Panasonic 1 chip DLP (DZ870 8.5klm, DZ770 7klm)</td>
</tr>
</tbody>
</table>

Currently available device
**4K+ Performance**

**4K Source**
3840 x 2160 (16:9)

**Upscaling**
5,120 x 2,880 (16:9)

**Real Motion Processor**
- High frame rate sampling
- x4 Frame Creation
- V&H Pixel shift

**Quad Pixel Drive**
- x4 speed

**Create 4K+ by 4 frames**

**Beyond Ultra HD (4K+)**
5,120 x 3,200

**IMPRESSIVE IMAGE QUALITY**
Combination of high frame rate 240(RQ)/120(RZ)Hz processing with frame creation technology, The RQ13K/RZ12K series reproduces smoother video image with minimal motion blur.

**Frame Creation :OFF**
- Motion blur loses resolution

**Frame Creation :ON**
- Interpolated frame makes better resolution

*Frame rate varies dependent on input signal frequency*
1. Keep current value proposition

Small and light projector

2. Projection lens compatibilities

Able to support existing lens range

<table>
<thead>
<tr>
<th>Zoom lens</th>
<th>Fixed focus lens</th>
<th>Ultra short throw</th>
</tr>
</thead>
<tbody>
<tr>
<td>ET-D75LE6</td>
<td>ET-D75LE8</td>
<td>ET-D75LE90</td>
</tr>
<tr>
<td>ET-D75LE10</td>
<td>ET-D75LE10</td>
<td></td>
</tr>
<tr>
<td>ET-D75LE20</td>
<td>ET-D75LE20</td>
<td></td>
</tr>
<tr>
<td>ET-D75LE30</td>
<td>ET-D75LE30</td>
<td></td>
</tr>
<tr>
<td>ET-D75LE40</td>
<td>ET-D75LE40</td>
<td></td>
</tr>
<tr>
<td>ET-D75LE50</td>
<td>ET-D75LE50</td>
<td></td>
</tr>
</tbody>
</table>

3. Superior Picture Quality

Best Motion Reproduction

Original frame (60Hz)

Motion adaptive frame creation (240Hz)
The Laser Revolution
Will event clients pay a higher rental fee for a laser projector?
Lamp projector requires **10x lamp** investment to reach 20,000hrs
Laser renders 5% more brightness

**PT-DZ780**
7,000 ANSI Lumen

**PT-RZ670**
6,500 ANSI Lumen

\[
y = -0.1625x + 6500 \\
y = 0.0008x^2 - 3.43x + 7000
\]
EDGE BLENDING LAMP PROJECTORS?

- Avoid projectors with big brightness difference
- Rental Managers pre-select based on running hours
- Early change of good lamps unavoidable
- Sometimes at 25% of the lamps capacity

Panasonic booth: widescreen application w/ DZ21K
PANASONIC LASER IS THE SOLUTION

- Linear and slower brightness decay
- Brightness Priority Mode
- Stay within 90% uniformity for 5000hrs
- For the same performance lamp projectors require 10-14 or more lamp changes to reach even 5000hrs

Panasonic booth: widescreen application w/ DZ21K
Dynamic Contrast achieves high contrast of 20,000:1 with power saving

Thanks to flexible laser power modulating technology, Dynamic light control achieves scene-linking high contrast.

Since controlling power directly, it saves average power consumption.

**Frame by Frame Instant modulation**

**Lower Average Power Consumption**

**PT-RQ13K Average Power Consumption**

<table>
<thead>
<tr>
<th>Image Mode</th>
<th>Dynamic Contrast</th>
<th>IEC62087:2008 Broadcast Content</th>
</tr>
</thead>
<tbody>
<tr>
<td>Spec(max)</td>
<td>-</td>
<td>1270W</td>
</tr>
<tr>
<td>Dynamic</td>
<td>3</td>
<td>913W(-28%)</td>
</tr>
<tr>
<td>Graphic</td>
<td>Off</td>
<td>1220W(-4%)</td>
</tr>
<tr>
<td>Standard</td>
<td>2</td>
<td>1063W(-17%)</td>
</tr>
<tr>
<td>Shutter</td>
<td>-</td>
<td>238W(-81%)</td>
</tr>
</tbody>
</table>

**IMPRESSIVE IMAGE QUALITY**
SUPERB SYSTEM FLEXIBILITY

Full 360-degree projection is available thanks to laser light source optical engine

Tilting 360-deg. (Vertical & Horizontal)

Lamp projectors:
Use of portrait lamps is 4x more cost!
DURABLE PERFORMANCE

Durable laser optical engine maintains high brightness with minimal fail-safe laser module design for mission critical application.

Conventional Dual-lamp model
If Lamp failure happens, brightness drops significantly.

Lamp 1  On  100%
Lamp 2  On  Off  50%

Competitor’s Laser module design
If Laser failure happens, it shuts multiple laser modules off.

Series Circuit
Laser Failure
Brightness huge drop

Redundant light source system
Even if highly reliable laser diode failure happens, the optical engine maintain high brightness.

Light 1  On  On  On  On
Light 2  On  On  On  Off
Light 3  On  On  On  On
Light 4  On  On  On  Off

Maintain High Brightness
Laser Failure
Dual Phosphor module illumination - Patent Pending -
- Redundant components and mechanics
- Increased failure safety
POWER MANAGEMENT

Reliable and efficient power management

Auto power management prevent sudden shut down due to under voltage.
Interviewing rental professionals across Europe, ROI Team, 2014

KEY DYNAMICS FOR THE R&S SECTOR

- Average hire period: 4.5 days
- Rental paid for: only 1 or 2 days
- Projector hired out approx. 57 times per year
- Own projector for between 1 to 8 years
- 1368 hours operational use per year
- 30% time in the warehouse
- 70% time on hire
- R1600 can resell for 40% of initial purchase price
- At resale R7670 still has 15,000 maintenance free hours of life
Based on the current average hire period of 4.5 days, the number of hire events per projector per year can be raised from 57 to 76 – an increase in productivity of 33%!
ELIMINATING, HOT BACK-UP‘s

Achieve considerable savings by forgoing the unnecessary process of pre-checking, transporting, calibrating, testing and running redundant equipment.

Eliminate worries about failure

- Reliability of Panasonic’s laser/phosphor optical engines
- ‘failover and fallback’ technology
There is a point at which a maintenance-free projector can be sold advantageously when its brightness no longer matches the expectations of that business.

Right time of resale
- After average usage of 4 years
- 10,000 to 15,000 hours remaining
Changing to ultra reliable projectors can transform the performance of your business:

- **Point to Point hiring** – increase hire events per projector per year by 33%
- **Replace ‘hot back-up’ with ‘at location cover’** – halving requirement and costs of back-up
- **Minimise Accelerated bulb change** – saving on average almost €6.000 across lifetime, with consequent reductions in environmental damage
- **Early re-sell fleet management model** – re-sale after four years with 15.000 maintenance-free hours remaining
Thank you!

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