Aalto University
School of Arts, Design
and Architecture

Designed for Cinematographers & Gaffers

LEDS WORKSHOP - November 23

LIGHTING INTENTIONS AND CINEMATOGRAPHIC TEXTURES

JTL 5 TIPS & ADVICE

V4

Tips & advice the head of department & tutors :

- **Rauno Ronkainen,** Cinematographer, FSC, Professor in Cinematography, Aalto University | School of Arts, Department of Film, Aalto University Slides 9 >> 15
- **Philippe Ros,** Cinematographer, AFC, Co-chair of IMAGO TC - Slides 18 >> 21
- **Ville Penttilä,** ICLS, Gaffer & Partner | Angel Films - Slides 4 >> 8
- **Pentti Keskimäki,** Senior Colourist FSC Slides 16 >> 17

Esmeralda tests Slides 22 >> 38

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Tips & advice the head of department & tutors :

This file is part of a larger presentation give
to all students and professionals after the workshop.



VILLE'S RECOMMENDATION ON LEDS

Ville Penttilä, ICLS, Gaffer & Partner | Angel Films

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VILLE'S RECOMMENDATION

Generally

- Always test a new LED fixtures before using them. Take a spectrometer reading and if possible, test it with the camera you are shooting with. Test it against other LED lights you will have in your kit. This way you will understand how well they are matching. Do SSI test for lights (against each other) to understand how well they match.

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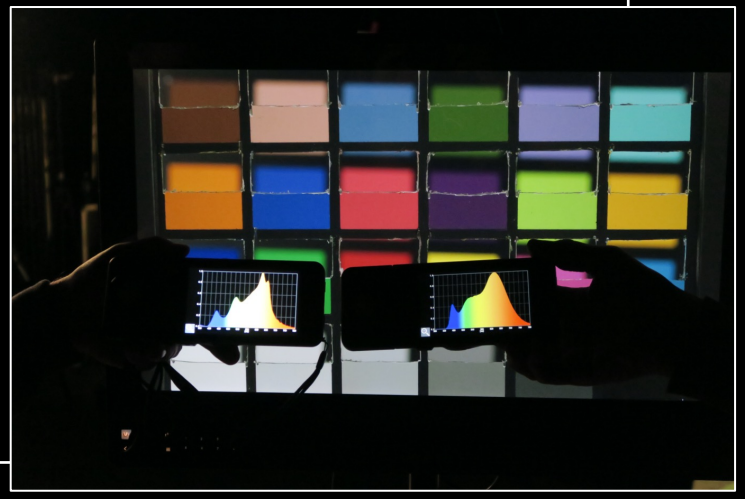
VILLE'S RECOMMENDATION

- Don´t mix too many different type of LED fixtures from different manufactures. I´m always trying to keep minimum amount of different LED manufactures on my kit. In other words, less different type of LED lights meaning less color problems in grading.
  - My previous show (Klaus Härös upcoming movie Never Alone) I had LED lights from: Arri – Skypanels, Astera Titan and Helios tubes and Hydra panels, and KinoFlo
  - FreeStyles.
    - Skypanels were never used for lighting faces unless they had a strong color. They were used for lighting backgrounds. Skypanels were chosen due variety of lamp heads; S30, S60, S120 and S360.
    - For shots of faces (when clean beautiful light) only KinoFlo FreeStyles or sometimes Asteras.



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VILLE'S RECOMMENDATION

- I think nowadays most important tool on set for gaffer is Spectrometer. I'm using Sekonic C-800 meter. Sekonic C-800 is giving you many readings including SSI, TLCI, CRI. It also gives you X&Y coordinates to match for example KinoFlo FreeStyle panel with LED panels on locations.

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VILLE'S RECOMMENDATION

- Remember:
  - LEDs are using drastically less power than tungsten or HMI fixtures. You can often run them with batteries or with battery banks / inverters like Instagrid One Max for hours.
  - LEDs are not getting as hot to operate than tungsten and HMI fixtures.
  - But LEDs do need a lot of ventilation.
  - Most LED fixtures we are using today are soft panel lights. It is essential that you can control light and therefore honeycombs and/or egg crates are must for LED panels. Traditional barndoors does not work as effective as honeycombs on soft panel lights.
  - LEDs are often (you can say all serious manufacturers are having DMX) having DMX control. This means that you can add it on your lighting board and have even more accurate control of light (color, intensity, effects, etc)

RAUNO'S RECOMMENDATION ON LEDS

Rauno Ronkainen, Cinematographer, FSC, Professor in Cinematography,

AaltoUniversity | School of Arts, Department of Film, Aalto University

RAUNO RONKAINEN'S RECOMMENDATION

- There is still a strong need to understand basics of lighting. Ability to use both traditional tungsten and HMI-lights is a must if cinematographer want full control over effective lighting that creates lighting variations according the story.

- Always think first what qualities you need for your lighting (intensity, direction, color, texture, movement...) and only after that choose your equipment.

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RAUNO RONKAINEN'S RECOMMENDATION

- Usage of LED-lights has changed the way how chief electrician and DOP have control over lighting and lighting variations. Instant and fast changes are executed more fluent than ever before.
  Communication is clearer since final adjustments can be done and seen almost immediately (in many cases) and different choices can be verified almost without any delay.

RAUNO RONKAINEN'S RECOMMENDATION

- Yet, there are few major considerations to think about when working with leds.
- First. Ability to control and changing lighting fast shouldn't reduce the importance of pre-planning, a vision that should be the backbone to the reason that supports the story and content.
- Second. Using led-lighting seem to lead general soft- and pastel type of lighting that tends to create a "safe choice", general look that has a lack of power – lack of roughness and courage (this of course is very subjective vision, but worth while of thinking).
- Third. Technical challenges when using cinema leds and consumer leds side by side on the set. How to match these together and control different consumer led's light qualities, true color & spectrum, dimming possibilities and flickering problems? How to make sure that art department and lighting department "speak the same language"?
  To this last question, answer is luckily quite simple – test everything together!

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RAUNO RONKAINEN'S RECOMMENDATION

When I mix different types of led-lights or combination of consumer leds and professional cine-leds, I simply can't assume that I could control the light quality entirely. To make sure that lower quality consumer lights won't provide inconsistent color quality, I probably must add some "clean" extension light using cine-lights with a better spectrum and make sure that they are the ones that light e.g. faces in close-ups. The same applies when I must mix lower quality- and better quality led-lights. I am most likely to save my best lights to light the foreground where most of the skin tones are visible and therefore most critical.

RAUNO RONKAINEN'S RECOMMENDATION

When the light source is directly in the image (as in this example above, behind the windows – horizontal bright colored lights) and it has strong color information, it is possible that this color information would be out of color gamut.

If you try to correct this information and fit it into the display gamut with gamut compress tool (e.g. in Baselight) the results might be unsatisfactory and odd.

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RAUNO RONKAINEN'S RECOMMENDATION

- As I mentioned already earlier, ability to use also traditional tools is essential. But so is also ability to use simple tools and not to hide behind technical equipment or fascinating fine tuning without clear goal.

- These new, and also old, tools suppose to serve us, serve the story. Not vice versa.

PENTTI'S RECOMMENDATION ON LEDS

Pentti Keskimäki, Senior Colourist FSC

PENTTI'S RECOMMENDATION

Use of Led lights has introduced new challencies in color grading due to colour spectrum differencies. Care should be taken when using multiple different LED sources. Different colour casts on faces from multible LED sources can create situations where grading can not produce clean or natural looking skin colour. This may be not noticeable on set !!

With the introduction of dual base ISO it is possible to shoot in very low light situations. This can sometimes provoke situations where domestic light sources are used as a part of lighting or even primary lighting. These domestic light sources today are mostly LED sources often with unpredictable colour spectrums. If combined with daylight or tungsten they can cause problems in grading. In such situations I would always recommend testing and checking in a colour grading suite.

PHILIPPE'S RECOMMENDATION ON LEDS

Pentti Keskimäki, Senior Colourist FSC

PHILIPPE ROS' RECOMMENDATION

- Choosing & testing LEDs
  - Check that on the LED's graphic interface, the CCT and power levels correspond to the spectrometer and meter measurements.
  - If this is the case, check that after several power-ups and power-downs of the LED, the level displayed by the LED dimmer still corresponds to the spectrometer and meter level.

PHILIPPE ROS' RECOMMENDATION

- Choosing & testing LEDs
  - A good SSI level of an LED does not predict its quality over time.
  - Test the SSI of the LEDs used for the main characters every 2/3 days.
  - Avoid LEDs with confusing power indications
  - Beware of strong sources without adjustable fans
  - Check for sound problems created by LEDs (with and without fans)

PHILIPPE ROS' RECOMMENDATION

- Don't mix too many sources from different brands
- Choose LEDs dedicated to faces with care
- Always have a back-up incandescent source and an HMI source to illuminate faces
- A recent camera with very good color science will allow more use of medium-quality sources
- Test the digital chain thoroughly: the color pipe-line

ESMERALDA TESTS

SSI: Spectral Similarity Index

The SSI value is always denoted with respect to the reference, which is indicated within square brackets; examples:

SSI[P3200] 86

SSI[CIE D55] 78

0 - 70	70 - 80	80 - 90	90 - 100
Color rendering issues	Possible problems	Good	Excellent

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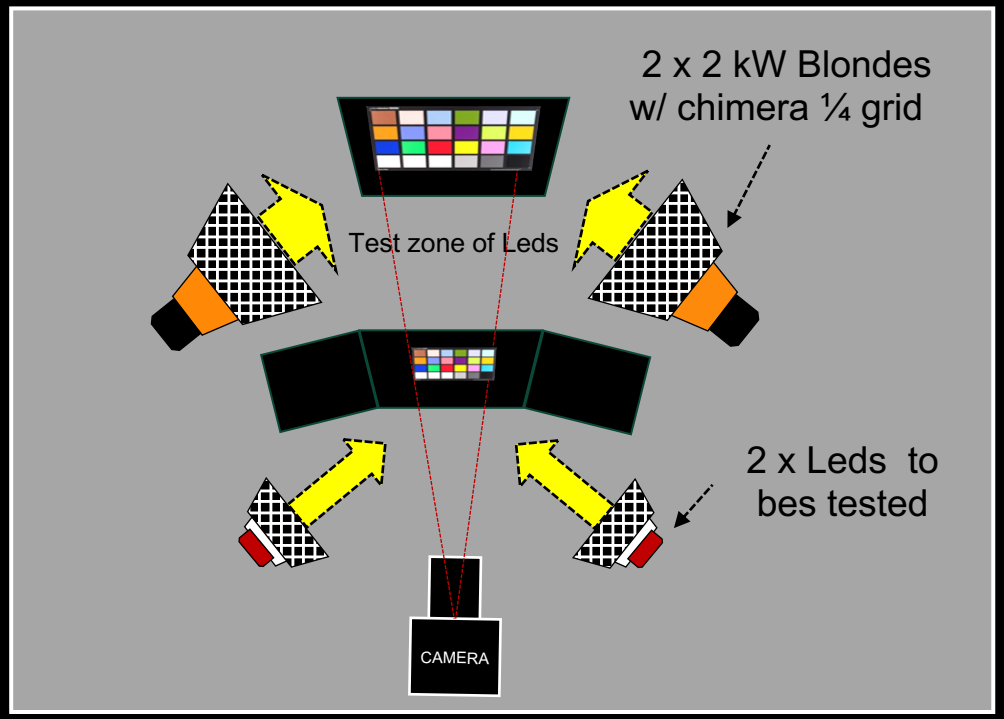
Lighting set - Esmeralda



Two Macbeth Color Checker charts:

- The first in the foreground lit by a LED source consists of squares of color with only the upper part preserved. The other recessed part allows you to see behind, the second larger chart.
- The second chart is lit by a Tungsten source

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A live test to check the quality of an LED

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FRAMING TWO CHARTS TO CREATE ONE IMAGE WHERE BACKGROUD CHART IS SEEN “THROUGH” FOREGROUND CHART THAT HAS BEEN CUT SO THAT ONLY LOWER PART OF EACH SQUERE IS LEFT.

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UPPER ROW – Background: Tungsten

LOWER ROW – Foreground: LED

FOLLOWING SLIDES

NANLUX_EVOKE_1200B

SSI: 84

CRI: 95

Bi-color

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ALPHA_300_LED_K5600

SSI: 87 CRI: 95

Bi-color

Fresnel

SSI: 87 @ 3000K

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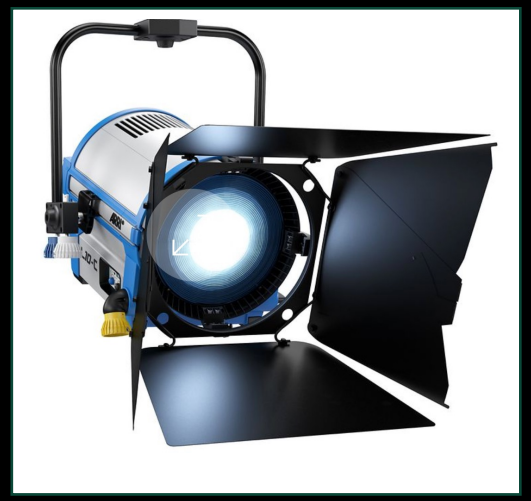
ARRI_L10

SSI: 78

CRI: 91,8



Full-color

Fresnel

@ 3000K

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ASTERA_TITAN

SSI: 85

CRI: 97,6

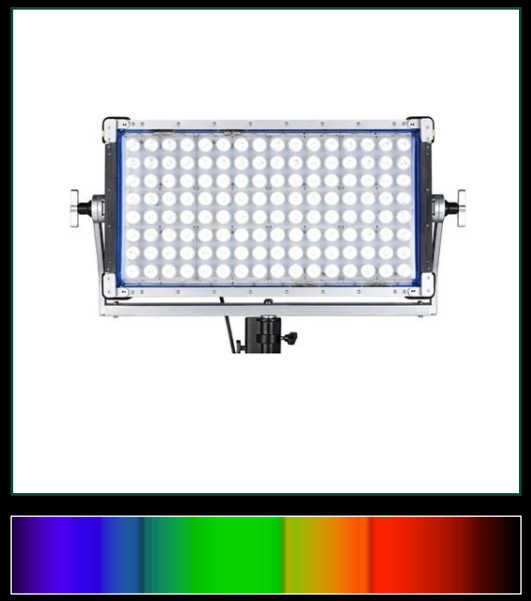
Full-color

Tubes

CREAM_SOURCE_VORTEX_8_650W

SSI: 84

CRI: 95



Full-color Panel

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DMG_SL1

SSI: 87

CRI: 95

Full-color Panel

KINO_FREESTYLE

SSI: 84

CRI: 94

Full-color Panel

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ORION_675_FS

SSI: 84

CRI: 97,3

Full-color Panel

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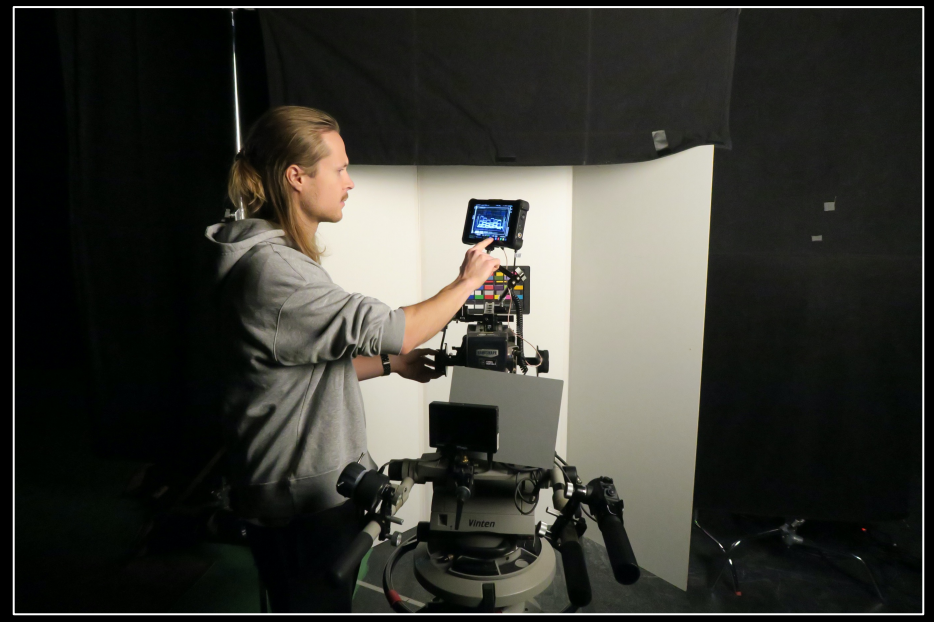

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WORKING ON SET