



Matching Light Sources with the ARRI PAX LED System

Watching production experts set up shots is an interesting pleasure – and one you can always learn from. In this case it was even more interesting: conventional light sources were mixed with a VFX light making full use of the ARRI PAX's potential to copy in-frame practical light and to add an invisible extra punch where necessary. Digital Lighting Designer, Mark Read (Hypercube, Boulder CO) provides us with a deeper insight into his current work:

*"To match the ARRI PAX LED system with incident or reflected light from practical on-set sources, we first measure the colour by using an electronic camera," explains Digital Lighting Designer Mark Read. "Through shooting the practical light source we assign the proper RGB values from the footage. When film is shot – like in our current project – we use L*a*b values obtained from a spectrophotometer, which are converted to RGB/HSB. Actu-*

THE SACRIFICE OF OLD SAN JUAN

The final key sequence was a low light dramatic set with a pick-up truck and constantly changing external lights. When the truck was properly lit, there was no easy way to get a natural "glow" from the dashboard to illuminate lead actor Chris Kelly.

The dashboard offered us the natural "fire-side glow" that we wanted, but this was impossible to get with gels – a) for reasons of missing space behind the steering wheel, and b) – much more complicated – because we also wanted to incorporate all the changes the fast way. The sequence was a very complicated one and needed some camera, set and lighting changes as well. There was a constant need to adjust not only the bright-

ness of the light, but also the colour, as the reflections and the external lights changes from shot-to-shot. In post any failure would have meant a great deal of colour correction and windowing, if possible at all. The ability to know exact spectral data of the actual lighting at the set also enabled the Digital Intermediate of our film project to offer a precise reproduction for the final D-Cinema release throughout the postproduction process.

Director: AK Hottman
DoP: Pablo Berron
Digital Lighting Director & Colorist: Mark Read
Gaffer: Dylan Rumney
Producer in charge of Digital Intermediate: Claudia Meglin



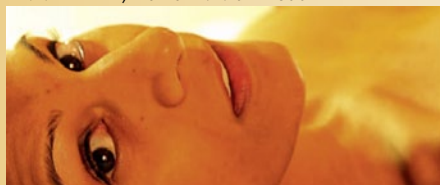
In less than a minute, we checked the lights and put them in place.

ANNIE LALLA

For ANNIE LALLA the task was to measure the white point of the light and the light values of a source in one portion of the composition (the practical lights and ambient lighting spill). The PAX system was used to obtain the same color values and white-point (or desired offset) in the rest of the composition, to amplify the rich tone of the lamps to fill the room.



ANNIE LALLA, DoP & LI: Mark Read



Close-up from a scene of ANNIE LALLA



PAX behind the set-up of ANNIE LALLA



Mark Read

ally it has become a very easy task to reproduce these values with the PAX system by just setting them in the PAX controller."

"Absorption, reflection and transmission also needs to be considered, and it helps tremendously to be able to fine tune the light by the turn of a knob. With gels this used to be a painful and time-consuming process. Any light source can be easily replicated or be invis-

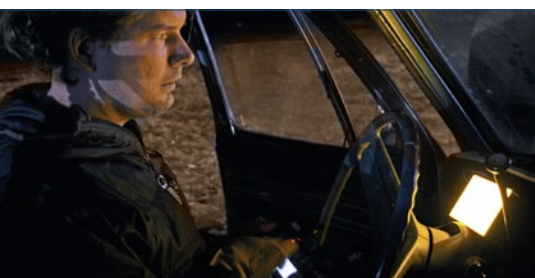
bly enhanced in case its light emission is too weak for the desired effect. Fireplaces, candles – even lightning bugs might be perfect candidates for such a treatment. The palette of effects is ranging from a subtle enhancement to the most dramatic VFX light used to exaggerate – all of this right during shooting."

"In case of lighting for VFX, the values set in PAX can be brought to post for perfect matching. Another aspect of VFX is compositing multiple scenes that are shot separately, but are planned to have a common lighting. With PAX the ability to set and match is vast: Lamp type, color temperature, white point, filter emulation and luminance can all be recalled at the push of a button. This does not only apply to complex CGI scenes, where images are composited with 3D. Almost any time we used a grading window to enhance or illuminate an actor's face for example, we found out, we can do it much better and faster if we shoot it right away with the PAX system."

"If you are going digital you might even watch the set monitor and make real-time adjustments with the wireless PAX remote controller. As the lighting on a set is subject to frequent last minute adjustments this offers a very comfortable way to respectively balance your lighting in almost no time at all."

"For us, the ARRI PAX system is the most revolutionary lighting instrument since long. We thoroughly tested the PAX Kit on some of our productions, when it still was in its prototype state and were already amazed. Our Studio carries truckloads of lighting equipment, but these lights are what we always dreamed of."

With the ARRI PAX system, colour temperature, HSB values, overall brightness and a myriad of filters and gels can be reproduced – be it in front of a daylight, tungsten, or any other light source with a desired wavelength. LED units can be controlled precisely by a multichannel wireless remote.



Next we adjusted the temperature and the color, zeroed-in on the specific reflected ambiance that was desired.

When Actor Chris Kelly took his place on the set, final adjustments were made without interfering with the production process, using a remote camera monitor

and the wireless PAX control. There was no delay in shooting caused by the ongoing adjustments of the ARRI PAX LED system and all the shots were consistent in end appearance, though the actual conditions changed throughout the scene, requiring PAX adjustments to be made.

Presets can be recalled for reference and versioning with the press of a button. When the camera needs to roll, the setting for the shot can be recalled instantaneously.

The history behind Mark Read's quest for PAX

Doing productions from concept to mastering, we needed to implement a common lighting and white-point. As a consequence our initial purpose for investigating adjustable LED lighting was to have a precision system allowing us to establish and select between various white points (D55, D60, D65, etc.), taking into account that the absorption and reflection can change a room's lighting from the nominal D55 a lamp may produce in a black-body environment, to a shift that changes

the apparent white-point by hundreds or even thousands of degrees. Even if the paint and decor is consistent, it is never neutral, so we wanted to have a way of setting the room ambiance to a nominal 5500K to exactly match the D55 white-point of the screening.

Within only a few minutes of using the ARRI PAX system, we knew we had a far more powerful tool than we ever dreamed of. It was not only capable of calibrating and matching viewing environments to each other for color matched dailies, editorial, color correction and final review, but also capa-

ble of matching viewing environments to practical on-set environments, or to match the lighting of practical on-set elements to each other, in multiple different shots.

With PAX we are able to match lighting conditions from one viewing environment to another, from one set to another, and from one VFX layer to another, not to mention the creative control allowing us to match practical in-frame lighting and to simply dream-up new lighting expressions that make the shot have the punch it was missing before.

Interviews: Dr. Markus Ludwig