

ARRI NEWS

IBC & CINEC ISSUE 2012



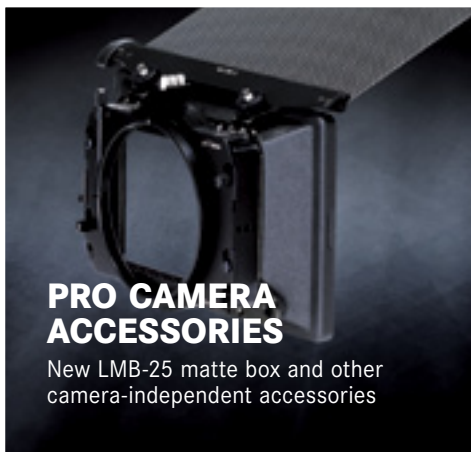
ALEXA ON THE BIG SCREEN

SKYFALL and THE AVENGERS prove
ALEXA/ARRIRAW image quality for IMAX
and 4K DCP release



ARRI M90/60

Lensless MAX Technology in
a whole new 9K power class



PRO CAMERA ACCESSORIES

New LMB-25 matte box and other
camera-independent accessories



MASTER ANAMORPHICS

ARRI/ZEISS Master Anamorphic lenses:
the future of widescreen

DEAR FRIENDS AND COLLEAGUES

In the year that we celebrate ARRI's 95th birthday, we are also celebrating 75 years of collaboration with Carl Zeiss, the world-renowned optics company that developed the lenses for our first reflex camera back in 1937. Today, our ALEXA Studio camera still uses the same reflex design and we are still collaborating with ZEISS. At IBC we unveil the latest fruits of this partnership – the ARRI/ZEISS Master Anamorphic series, a new generation of optically advanced anamorphic lenses and the perfect companion to ALEXA models with 4:3 sensors.



Skyfall, Roger Deakins, ASC, BSC, is joining us for our Big Screen event at the show.

A new addition to the MAX Technology family of lighting fixtures – the M90/60 – is being announced at IBC, introducing a new power class and bridging the gap between the ARRIMAX and the M40/25. Meanwhile our range of LED L-Series lights continues to develop with a new L7-T tungsten model and an active cooling option. On the DI side we have an article detailing another classic film that has been restored with the help of ARRISCAN archive tools.

In this issue we celebrate the many film and program makers who have won awards for their work on productions shot with ALEXA, from commercials to dramas and feature films. With the blockbuster *The Avengers* and the much anticipated *Skyfall*, we have learnt that shooting ARRIRAW with ALEXA delivers images that look phenomenal on even the biggest screens, with a 4K DCP or IMAX release. We are proud that the cinematographer on

As always, there's more on our website than could fit inside one magazine, so do take a look. And if you're travelling to Amsterdam for IBC, make sure you visit both of our stands – we look forward to seeing you there.

Dr. Martin Prillmann

Franz Kraus



Photo: Zade Rosenthal, © 2011 MVLFFLLC. TM & © 2011 Marvel. All Rights Reserved.

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LAWLESS

Benoit Delhomme, AFC, discusses being one of the first to record ARRIRAW with ALEXA on a feature film

Cinematographer Benoit Delhomme, AFC, first worked with director John Hillcoat on *The Proposition* (2005). Now they have reteamed on *Lawless*, which follows a Virginian family of prohibition bootleggers as they resist increasingly violent attempts to curtail their illegal activities. Delhomme and Hillcoat were amongst the first filmmakers to record ARRIRAW with ALEXA on a feature film; Delhomme recently spoke with ARRI about his work on the production.

ARRI News: At what point did you and John start talking about using ALEXA on this film?

Benoit Delhomme: I was just coming off a Calvin Klein commercial I shot with the ALEXA when I met John to talk about *Lawless*. John is really a film person, but I told him I had a feeling he'd love the ALEXA. Initially he wasn't interested in HD because he didn't think it would be any good for shooting in very low light, at dusk and twilight – he'd never seen a picture from the ALEXA before!

AN: How did you decide to shoot ARRIRAW?

BD: I had only shot ProRes with the ALEXA; at that time ARRIRAW was a new development for the camera and I didn't know much about it. John was speaking to a lot of people on the phone to get advice;



Photos courtesy of Richard Foreman, Jr., SMPSP and The Weinstein Company

he spoke to Roger Deakins (ASC, BSC), who had used the ALEXA on *In Time*, and he also called Harris Savides (ASC), who was doing tests with ARRIRAW in New York. After what Harris told him, John was insistent that we go for ARRIRAW, so I had to learn all about it very quickly.

AN: What did your tests involve?

BD: I spent two days testing a complete range of things I wanted to put in the film – high contrast; low contrast; costume textures; light fixtures. We shot it all on 35 mm as well as on ARRIRAW with ALEXA, so we could see the comparison. The ALEXA image was so pure without the grain and everything just looked beautiful, from the skin tones in close-ups to the landscapes in wide shots. It never got muddy in low level light and there's a lovely quality in the shadows. John was amazed how little light we could use for night scenes.



Benoit Delhomme, AFC with ALEXA on the set

“Everything just looked beautiful, from the skin tones in close-ups to the landscapes in wide shots.”

AN: Did you often work at quite low light levels?

BD: John was very enthusiastic to work at low levels. He said at the beginning that if we were shooting HD he wanted me to promise that we would push the limit even further than we pushed film on *The Proposition*. I felt safer doing that on HD because I could check what I had, so in a way we could be bolder. ARRIRAW was new

to me and I didn't want to take too many risks, but John was pushing me and I thank him for that.

AN: Did you find yourself lighting in a different way?

BD: For night scenes I had to design special lighting because I realized all of the lamps I was adding were too strong. The things I would normally do when I wanted to shoot at T2, like bouncing light off a white frame or board, made the source too apparent, so I came up with the idea of black bounce. Usually I use a lot of bed sheets for bounce, but this time I was using black velvet. John likes everything very subdued and dim; it took me some time to find the right material to achieve that subtle look.

AN: Were you operating a camera yourself?

BD: Yes, I operated a camera as usual. With John it feels particularly important for

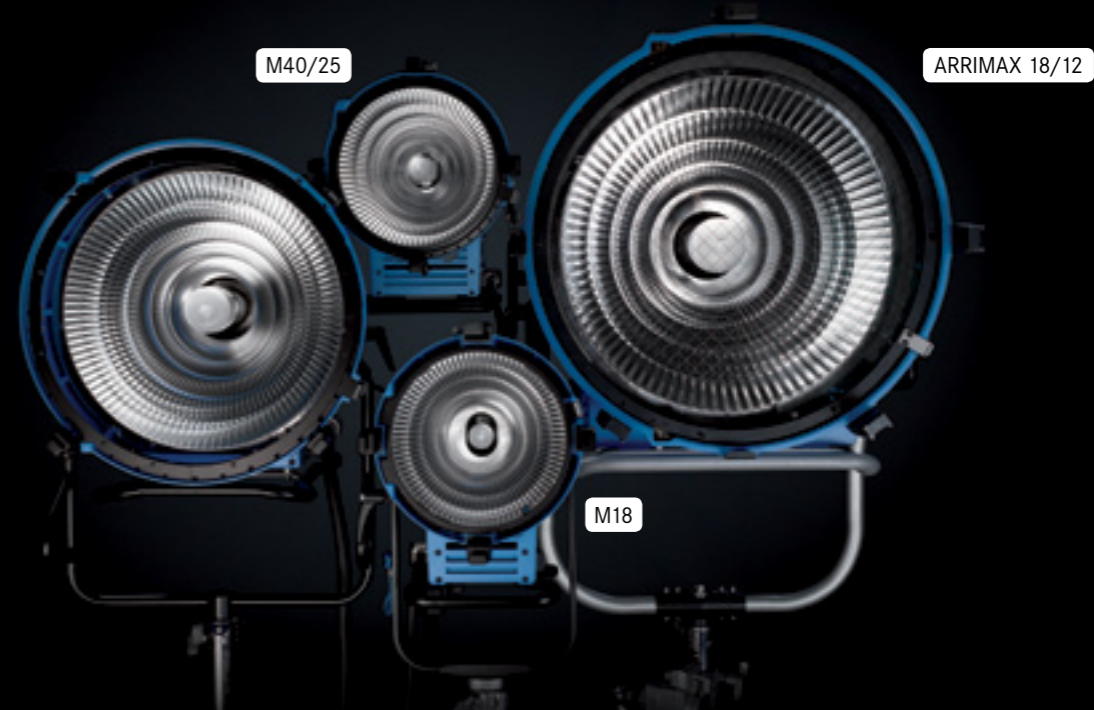
me to be with him and to control things. I mostly operated using the on-board monitor, which felt a bit strange because I'm so used to looking in the viewfinder and getting that concentration. At the time I wished we had a proper viewfinder like you can get now on the ALEXA Studio, especially outside in bright sunlight and for handheld. But I got used to it, and it's good to learn different things.

Read the full length interview online: www.arri.com/goto/0912/lawless

THE SMALLEST BIGGEST LIGHT ON SET



At IBC ARRI unveils the M90/60, a new 9K power class for the award-winning M-Series



M90/60 FEATURES:

- New 9,000-watt power class
- Superior light quality via MAX Technology
- As small and lightweight as a 6K PAR
- Light output close to a 12K PAR
- Focusable from 17-55°
- Can be operated with 9K bulb at 1,000 Hz

EB 6000/9000 BALLAST FEATURES:

- Same size as EB 6000 Baby ballast
- CCL (Compensation for Cable Loss)
- ALF (Active Line Filter)
- Dual voltage (120/230V)
- DMX compatible
- Available in a 1,000 Hz version

Since its introduction in 2005, the ARRIMAX 18/12 fixture has become a ubiquitous presence on film sets all over the world, providing massive light output for the biggest scenes. At the heart of this Oscar-winning fixture is an innovative, patented reflector that eliminates the need for spreader lenses and combines the advantages of a PAR with those of a Fresnel. The same MAX Technology has gone on to be used in a range of other ARRI fixtures, including two further lampheads in the M-Series, the M18 and M40/25. Now the M-Series is being extended with a fixture that ushers in an entirely new 9,000-watt power class – the M90/60.

The M90/60 packs a lot of punch into a small package. Light output is close to that of a 12K, while size and weight are nearer to a 6K. This is a crucial consideration for productions travelling to distant locations, as weight and space on trucks can be extremely limited. The M90/60 delivers 50% of the light of an ARRIMAX, but for every ARRIMAX kit on your lighting truck you could fit three or four M90/60 kits, factoring in ballast and cable needs. That means you could use a smaller truck; you could also use smaller stands or rig the M90/60 higher without any compromise in safety.

The advent of high sensitivity digital cameras such as the ARRI ALEXA, which has a base sensitivity of EI 800, has meant that light levels on many film and television sets

have fallen. In some cases, an 18K is an unnecessarily large and unwieldy fixture, and could be replaced as the biggest light on set by the M90/60. On digital productions it could easily function as a huge keylight in many setups, for example when lighting large areas at night. Up until now the next step down from a 12K or 18K has been a 6K, but the M90/60's new 9,000-watt power class bridges the gap and offers a perfect solution for situations where an ARRIMAX would be a bit too big or bulky.

A completely new 9,000-watt bulb has been developed by Osram, one of ARRI's key technology partners, specifically for the M90/60. Alternatively a 6,000-watt bulb can be used, making this a highly versatile lamphead. Osram has achieved a technical



breakthrough by designing the new 9,000-watt bulb to be stable at 1,000 Hz, which is a remarkable feat for such a powerful lamp. It means that the M90/60 will be an extremely useful fixture for high speed cinematography,

allowing frame rates of up to 1,000 fps while delivering the large amounts of light required.

If the biggest light on set is the relatively small and lightweight M90/60, then workflows will be sped up considerably, bringing several cost benefits. Not only will productions save money by not needing larger fixtures, but the ballasts and cables required will be smaller and lighter, further speeding up work on set and allowing the use of smaller crews. Serviceability of the M90/60 is fast and simple; the back housing and back plate can be removed easily, allowing rapid access to all mechanical and electronic components.

Accompanying the M90/60 is a new high speed ballast, the EB 6000/9000. Like other recent ballasts from ARRI, it features CCL (Compensation for Cable Loss) technology and the power-saving ALF (Active Line Filter). The EB 6000/9000 is DMX compatible, dual voltage (120/230 V) and is no bigger than ARRI's existing EB 6000 Baby ballast.

ALEXA: LATEST NEWS

ProRes 2K recording, improved image quality, cost-saving service plans and a new mounting option for the ALEXA M

With the release of the latest model in the ALEXA range – the Plus 4:3 – earlier in 2012, ARRI has consolidated the ALEXA system to such a degree that it now offers an unparalleled variety of options to film and program makers. Work continues to go on, however, to refine existing features, develop new hardware and software tools, and improve the return on investment enjoyed by ALEXA customers worldwide. To this end, the next free-of-charge ALEXA software update will enhance image quality and make in-camera SxS PRO card recording an even more attractive option for feature films, while new extended warranty plans eliminate uncertainties regarding long-term cost of ownership.

SOFTWARE UPDATE PACKET **SUP 7.0**

SUP 7.0, which is due for release in November 2012, will bring some significant image quality improvements as well as exciting new recording options for feature film productions using ALEXA's in-camera SxS PRO cards.

Replacing the current Regular Speed Debayer algorithm inside ALEXA will be a new algorithm that provides even cleaner, sharper-looking images than ALEXA does today, especially on high contrast edges and in areas with fine detail.

The new Regular Speed Debayer algorithm applies to all HD-SDI outputs, as well as ProRes and DNxHD images in Regular Speed mode (0.75 to 60 fps). At the same time the High Speed Debayer algorithm (for 60 to 120 fps) will also be replaced with an improved version.

Of the two new recording options enabled by SUP 7.0, the first is ProRes 2K 4:3, which facilitates the shooting of anamorphic feature films onto in-camera SxS PRO cards. It will work with all ALEXA cameras that are 4:3 capable (ALEXA Studio, ALEXA M and ALEXA Plus 4:3). On spherical lens shoots, ProRes 2K 4:3 gives extra room for vertical repositioning in post, while on ARRIRAW shoots it provides the option for an extra in-camera backup. ProRes 2K 4:3 records 2048 x 1536 pixels into a QuickTime/ProRes file, supports all ProRes codecs, and works from 0.75 to 48 fps.

The second new recording option, ProRes 2K 16:9, is great for shooting feature films onto in-camera SxS PRO cards without rescaling, as would be needed with ProRes HD. ProRes 2K 16:9 works from 0.75 – 60 fps with all ALEXA models and provides a high quality 2048 x 1152 ProRes file that is ideal for feature film productions.

Due to these new recording options, the choices of what to see in the viewfinder and MON OUT image have been re-worked. Users can decide between seeing just the image being

Extended Warranty

Many ALEXAs are now going out of warranty, so in order to make the cost of ownership more predictable, ARRI is offering an annual extended warranty. This warranty covers all parts and labor required due to defects in materials or workmanship that prevent the camera, any installed options, and the viewfinder from operating within factory specifications.

Although they are manufactured to exacting standards, ALEXA cameras - like all other professional camera systems - are often subjected to extremely demanding conditions on set and will require maintenance from time to time.

Unplanned repair expenses can be avoided by investing in an affordable extended warranty, while discounts for advance and bulk purchase can bring the fixed cost of ownership even lower.

Because there is never any time lost waiting for purchase orders or payments for out-of-warranty repairs, and because cameras covered under the warranty go into a priority repair queue, downtime is reduced to the absolute minimum.

recorded, the image with the surround view, or the image with surround view and also camera status. Other benefits of SUP 7.0 include the LCC (Low Contrast Curve) in every ALEXA by default; 3D sync for the ALEXA M; the addition of a sixth user button, achieved by moving the function of the edit button to the jog wheel; and many other user interface improvements.

ALEXA M D-BRACKET



Diagonal mount

Vertical mount

The new D-Bracket allows the head and body of the ALEXA M to be mounted securely together. It has been designed for situations where space is not restricted and users wish to shoot with the M in the same way as with other ALEXA models, perhaps mounting the camera on a tripod or dolly. The D-Bracket kit includes the Universal Adapter Plate UAP-1, which is necessary for the connection of camera body to head.

UNIVERSAL ADAPTER PLATE UAP-1



With the Universal Adapter Plate UAP-1, ALEXA cameras can be quickly moved from a traditional ARRI cine-style bridge plate (including BP-3, 5, 8 or 9) to a Steadicam dovetail plate. Additionally, it is used to attach the ALEXA M body to the ALEXA M D-Bracket. Previously the BPA-2 bridge plate adapter was used to mount ALEXA to an ARRI bridge plate, but switching to Steadicam shooting and back again proved time consuming. Now, with the UAP-1, quick changes between bridge plate and Steadicam plate can be made with all ALEXA models except the Studio.

FIBER REMOTE OPTION

Adapting ALEXA to the needs of broadcast-style, multi-camera productions



MAIN FEATURES

- Superior look and image quality
- Shallow, cinematic depth of field
- 1080i/50(60) and native progressive mode up to 1080p/50(60)
- Film-like color rendering and natural skin tones
- Very high contrast and dynamic range (14+ stops)
- Pristine level of detail in lights and shadows
- Very low noise level
- High sensitivity (2+ stops more than typical 2/3" camera)
- Flexible setup: parallel SxS recording and fiber remote transmission
- Easy switch between fiber remote mode and standard ALEXA mode

ALEXA FIBER REMOTE BOX



TELECAST COPPERHEAD SYSTEM

SYSTEM COMPONENTS

In addition to ARRI's Fiber Remote Option, other components, certified by ARRI, must be added for ALEXA to function in a live, multi-camera environment: firstly a Copperhead system from Telecast Fiber Systems, which includes a camera unit, base station, power adapter and remote control panel; and secondly a camera monitor.

FIBER TRANSMISSION

The signal provided at the ALEXA HD-SDI outputs, incorporating any image adjustments made with the RCP, is fed into the Telecast CopperHead HD-SDI inputs. It is then transferred to the CopperHead base station via SMPTE 311M fiber connection, facilitating integration into studio and control room environments. The fiber transmission of the ALEXA HD-SDI output is provided in dual 1.5G or 3G, with frame rates up to 60p.

LIVE PAINTING

With the Telecast Remote Control Panel, many of the parameters of ALEXA's internal signal processing can be modified live, allowing direct control of iris, white balance, black level, gamma, black gamma, knee, gain, detail and shutter.

OPTIONS

Following the ALEXA system's mantra of easy upgradeability, the Fiber Remote Option can be configured in a number of different ways. As a separate option, it includes the Fiber Remote Box with monitor mount and also the software upgrade.

ALEXA: the most complete multi-purpose camera system

Alternatively there is a full camera package, which combines the Fiber Remote Option with an ALEXA or ALEXA Plus stripped of its viewfinder, SxS card interface and ARRIRAW capability, though these can be reinstated with a further upgrade.

The ALEXA Fiber Remote Option brings the exceptional, unrivaled image quality of the ARRI ALEXA camera into the multi-camera environments typical of studio broadcast and OB van television productions.

With the Fiber Remote Option attached, ALEXA and ALEXA Plus models can be connected through a SMPTE 311M fiber connection and remote controlled for live

painting of the image. Besides the Fiber Remote Box mounted on top of the ALEXA body, a Telecast CopperHead system and also a monitor are required for typical pedestal use.

This specialized option introduces ALEXA's legendary dynamic range, latitude, highlight and shadow details, color rendering, natural skin tones, high sensitivity and low noise to entirely new applications.

It will allow a dramatic increase in production value for many types of television programs, from soaps, sitcoms and telenovelas to music concerts, talk shows and other TV events or specials.

ARRI will begin taking orders for the Fiber Remote Option towards the end of this year, with deliveries commencing in 2013.

RESTORING THE PRIDE OF A NATION

ARRISCAN archive tools help save the earliest film version of Poland's national epic



AN: Do you have the original camera negative?

PS: No, the original camera negatives are lost. Our copies are on AGFA and Kodak print stock, and the condition is very bad. Originally the film was between 130 and 135 minutes, so it was a very long film for the time. At the moment we only have about 122 minutes, at the original frame rate of 16 fps. We are still actively looking for more material, so if anyone reading this has any leads, they should get in touch.

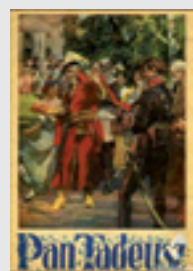
AN: What is the nature of the damage to the film?

PS: The worst damage we have encountered is the emulsion being eaten away by a type of fungus. In many places half of the image is completely missing, so we have to accept that certain elements are beyond repair and we can't do anything with them; it just doesn't make sense to invent new information to fill those gaps. Of course we are able to clean up scratches, dust, spots and splices; we can eliminate many of the scratches with the ARRI Wet Gate

system. Everything has been scanned dry and we will also do a full wet scan. Where there is duplicated footage between our two copies, we put the copy where that scene is in better condition through the Wet Gate.

AN: Why do a dry scan as well as a wet?

PS: We will keep the dry scan for the next generation, for comparison with the restoration and for future analysis of what happened to the film – what the damage looked like and how it occurred. Technology will move forward and we might be able to

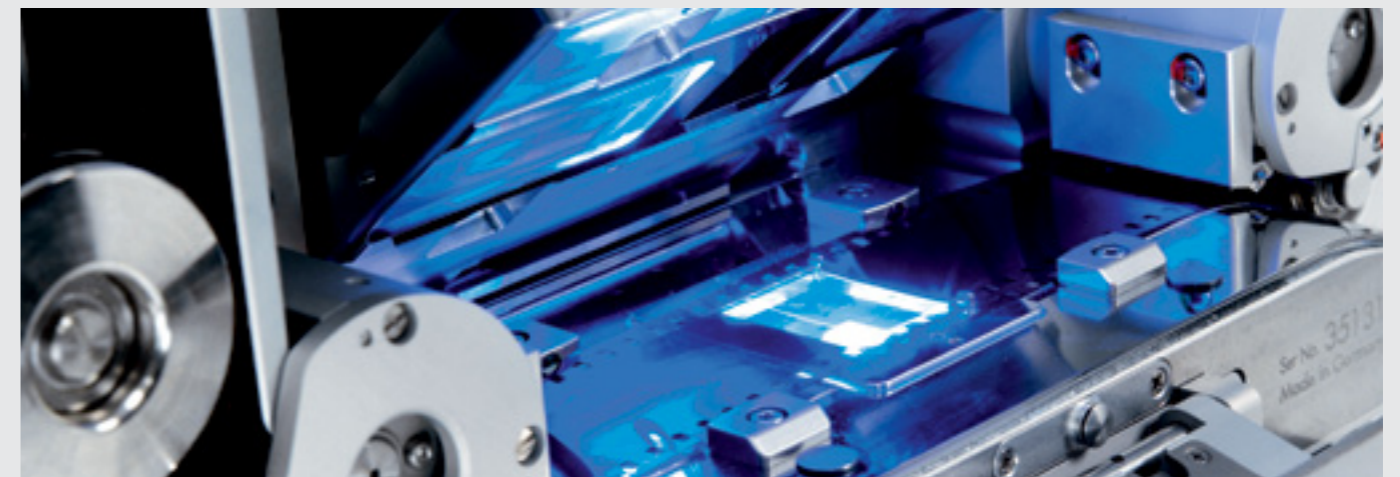


The ARRISCAN and its various archive accessories have been accepted by film archivists and restoration experts as the leading tools for an industry that is in a race against time to save the treasures of our celluloid past. One of the many institutions to invest in ARRI archive technologies is Filmoteka Narodowa, the Polish National Film Archive, which has instigated the three-year Nitrofilm project to carry out full restorations on three of its most important films and digitize 43 others. The first of the three was *Mania* (1918), which was completed last year; the second is *Pan Tadeusz* (1928), based on the national epic of Poland, an 1834 poem by Adam Mickiewicz. ARRI spoke with Pawel Smietanka, Head of Film Restorations at Filmoteka Narodowa, about the work that has been done so far.

ARRI News: Why was *Pan Tadeusz* selected for a complete restoration?

Pawel Smietanka: First of all it was one of the earliest feature films to be completely produced in Poland; it was first screened in 1928, only a decade after Poland had won its independence. It was also the first film adaptation of *Pan Tadeusz*, a poem that is known by almost everybody in Poland. In 1999 the famous Polish director Andrzej Wajda made a new adaptation of the poem, which brought the story to an even wider audience. We were very interested to compare how a filmmaker today approached it with how it was done as a silent film in the 1920s.

The second reason to choose this film for a full restoration was that it is on nitrate film, so it is vital to deal with it as soon as possible. The film is more degraded than our previous project, *Mania*, so there are more technical issues. We only have two fragmentary copies of this film, so we have to be extremely careful handling it.





do a much better job of restoring the film in the future. So we will archive two digital copies – the dry scan and the restoration. But we will record out the restored film with the ARRILASER for archive as a new master copy on film. This has to be a color version because the film has tinting and toning, using a six-color process.

AN: What is your approach to recreating those colors?

PS: On *Mania* we desaturated all the scans before putting the new digitally created colors on each part of the film. On this project

we have decided to keep the original colors in the scans and then after the digital reconstruction we will grade those colors on a scene-by-scene basis to get as close to the original as possible, because each scene varies in terms of the blacks and color saturation. The differences are small, but they exist, so we have decided to keep them. Essentially it means that, while we treated *Mania* as a black-and-white restoration to which we added tints and tones, we are treating *Pan Tadeusz* as a color film all the way through the workflow.



AN: Have you used your ARRI Sprocketless Transport on this project?

PS: For *Pan Tadeusz* we decided to physically repair the damaged perforations and use the transport with sprockets, as we have more experience doing this. We like to prepare the material for scanning very carefully. However, we have done tests and found that for material with much more damage to the perforations, using the Sprocketless Transport is an exciting option.

AN: Why was a 4K workflow important?

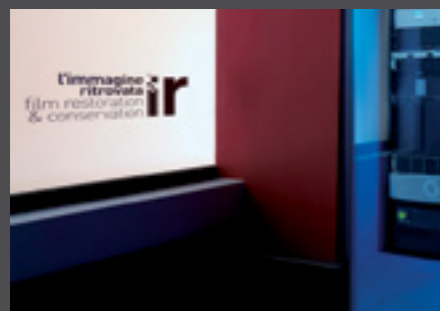
PS: For us, using 4K is very important because we have to capture as much detail as possible, since we are creating a new master copy of this film. For a project like this we don't want to compromise on the image we capture at all. Some of our deliverables – such as HD cassettes for TV stations or Blu-ray DVD – will of course be of lesser quality, but we need to produce a 4K DCP for cinema projection and for our own archive we need to carry maximum quality through to the black-and-white separation materials filmed out with the ARRILASER.

AN: When will *Pan Tadeusz* be screened, and what is next for Nitrofilm?

PS: FilMOTEKA Narodowa is restoring the beautiful late-1940s Illusion cinema in Warsaw and we intend to premiere *Pan Tadeusz* there on November 9th this year, projecting digitally at 4K. The original 1928 premiere also took place on November 9th and was attended by politicians and many of the most important Polish men of the time. We hope our premiere will also be a big event.

Our next project is a feature film from 1927 about Polish sailors on the Baltic Sea; it is called *Zew Morza*, which means *Call of the Sea*.

NEW ARRI WET GATE IN ITALY



L'Immagine Ritrovata, one of world's leading film restoration and conservation laboratories, has purchased an ARRI Wet Gate system to enhance the archive and restoration capabilities of its ARRISCAN film scanner.

Davide Pozzi is the director of the lab, which forms part of the Cineteca di Bologna in Bologna, Italy. He notes, "The Wet Gate system, together with the ARRI

Sprocketless Transport, will make a real difference in the restoration of our film heritage. Since we are exclusively dedicated to restoration, the acquisition of the Wet Gate was a natural choice; it will allow us to further differentiate our services and offer clients the wet scan option, leading to important benefits in qualitative terms and also in workflow management."

AND THE WINNER IS...

A selection of the awards won by productions and creative professionals that have chosen to work with ALEXA

Films, television programs and commercials shot with the ALEXA camera system have been winning prestigious awards all over the world; the highlights shown here represent only a small selection. The achievement of *Hugo* and its creators in winning five Academy Awards earlier this year has been one of the highlights of 2012, though ARRI congratulates every single winner and nominee of all the different awards, and thanks them for choosing ALEXA. With many more nominations announced for both this year and next, the winners list looks set to continue growing.



Robert Richardson, ASC
Photo: Michael Yada/©A.M.P.A.S®



Rob Grossman, Rob Legato and Alex Henning
Photo: Todd Wawrychuk/©A.M.P.A.S®

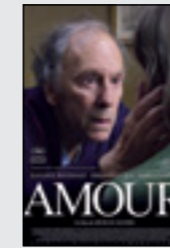


Hugo (2011)
Director: Martin Scorsese
DP: Robert Richardson, ASC

5 Academy Awards of Merit®
84th Academy Awards (2012)
Best Cinematography:
Robert Richardson, ASC

Best Visual Effects:
Rob Legato, Joss Williams,
Ben Grossmann and
Alex Henning

FEATURES



Amour (2012)
Director: Michael Haneke
DP: Darius Khondji, AFC, ASC

Palme d'Or
2012 Cannes Film Festival



Et maintenant on va où? (2011)
Director: Nadine Labaki
DP: Christophe Offenstein

BlackBerry People's Choice Award
2011 Toronto Film Festival

Audience Award
2011 San Sebastian Film Festival



The Hunt (2012)
Director: Thomas Vinterberg
DP: Charlotte Bruus Christensen

Vulcain Prize of the Technical Artist
2012 Cannes Film Festival
Awarded to Charlotte Bruus Christensen



Drive (2011)
Director: Nicolas Winding Refn
DP: Newton Thomas Sigel, ASC

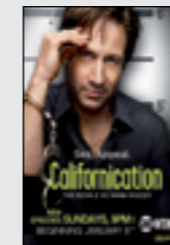
Best Director Award
2011 Cannes Film Festival
Awarded to Nicolas Winding Refn

TV PRODUCTIONS



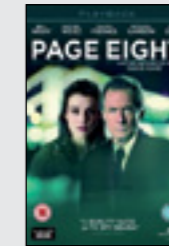
Great Expectations (2011)
Director: Brian Kirk
DP: Florian Hoffmeister

BAFTA TV Craft Award (2012)
Photography and Lighting: Fiction
Awarded to Florian Hoffmeister



Californication (2011-2013)
Director and DP:
Michael Weaver, ASC

ASC Award (2012)
*Half-Hour Television Episodic
Series/Pilot Category*
Awarded to Michael Weaver, ASC



Page Eight (2011)
Director: David Hare
DP: Martin Ruhe

ASC Award (2012)
*Outstanding Achievement in
Cinematography in Motion
Picture/Miniseries Television*
Awarded to Martin Ruhe



The Man with the Bassoon (2011)
Director: Miguel Alexandre
DP: Gernot Roll, BVK

BAMBI Award (2011)
Audience BAMBI for TV Series

COMMERCIALS



The Bear (2012)
Client: Canal+
Agency: BETC Paris
Production company: Soixante Quinze

Film Craft Lions - Grand Prix
2012 Cannes Lions Festival



The Force (2011)
Client: Volkswagen
Agency: Deutsch LA
Production company: Park Pictures

Cyber Lions - Gold Lion
2011 Cannes Lions Festival



Three Little Pigs (2012)
Client: The Guardian
Agency: BBH London
Production company: Rattling Stick

Film Craft Lions - Gold Lion
2012 Cannes Lions Festival



ALEXA GOES large

With IMAX and 4K DCP releases for *The Avengers* and *Skyfall*, ALEXA passes the ultimate test of image quality

"*The Avengers* was my first feature film with the ALEXA. I was really happy with our images. What was particularly impressive was how well it held up in IMAX theaters; this was a revelation to me."

Seamus McGarvey, ASC, BSC

Photo: Zade Rosenthal. © 2011 MVLFFLLC. TM & © 2011 Marvel. All Rights Reserved.

This year has seen an increased take-up of ARRIRAW recording for big-screen movies. Being unencrypted and uncompressed, ARRIRAW helps ARRI's software and post-production partners to create the best possible 4K or IMAX deliverables; post houses such as ILM are praising the ARRIRAW workflow and the most respected cinematographers in the industry are testifying that ALEXA images look incredible on even the largest IMAX cinema screens.

ALEXA was the camera system chosen for the biggest film of 2012 so far - indeed the

third highest grossing film of all time and the fastest ever to reach \$500m in the U.S. - Marvel's *The Avengers*. Cinematographer Seamus McGarvey, ASC, BSC, was so impressed by the functionality of the camera and the image performance of ARRIRAW on *Avengers* - his first digital movie - that he bought his own ALEXA. "*The Avengers* was my first feature film with the ALEXA," he notes. "I was really happy with our images. What was particularly impressive was how well it held up in IMAX theaters; this was a revelation to me."



Seamus McGarvey, ASC, BSC



SKYFALL © 2012 Danjaq, United Artists, CPII. 007 and related James Bond Trademarks, TM Danjaq.

"It was only after I had chosen the ALEXA that IMAX projection became a consideration. Not to worry! The images I have seen in the IMAX theater are simply superb."

Roger Deakins, ASC, BSC

Another ALEXA film to get the IMAX treatment, as well as a 4K DCP is the next James Bond film, *Skyfall*, directed by Sam Mendes and scheduled for release in November this year. Cinematographer Roger Deakins, ASC, BSC, comments, "On *Skyfall* we are producing a 4K DCP from the ALEXA using ARRIRAW. It was only after I had chosen the ALEXA that IMAX projection became a consideration. Not to worry! The

images I have seen in the IMAX theater are simply superb. The quality of the 4K image makes the usual IMAX 'enhancement' process totally unnecessary."

Deakins will be joining ARRI on stage at the 2012 IBC Big Screen event to discuss his work with ALEXA and show clips from *Skyfall*.



Watch the official SKYFALL trailer:
www.ari.com/goto/0912/skyfall



Visit the official James Bond 007 website:
www.007.com



A NEW ERA FOR ANAMORPHIC

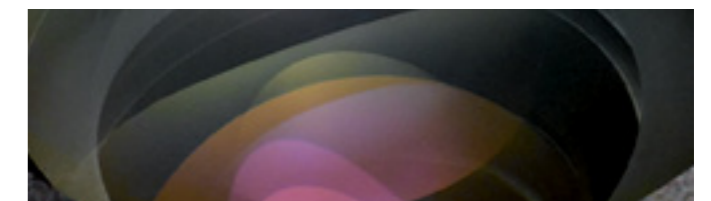
ARRI and ZEISS team up to develop a revolutionary set of seven Master Anamorphic lenses



ALEXA'S NEW BEST FRIENDS

Though they are also compatible with analog film cameras, the Master Anamorphic lenses are the first anamorphic primes to have been designed for modern digital cameras. More specifically, they are intended to perfectly complement the ALEXA Studio, M and Plus 4:3 models, all of which have a 4:3 sensor. The size and shape of this sensor is ideally suited to anamorphic image capture, maximizing image quality and faithfully rendering the optical characteristics of the lenses.

Weighing in at under 3 kg each and with a front diameter of only 95 mm for most focal lengths, the Master Anamorphic lenses are comparatively compact and lightweight, allowing them to be used in combination with ALEXA cameras as freely as any other prime lens. At IBC 2012 ARRI is showing a working prototype of the Master Anamorphic 50 mm (MA50) and a mock-up of the MA35. Deliveries of the MA35, MA50 and MA75 are planned for early 2013, with the MA100, MA40, MA60 and MA135 following later in the year.



THE MAGNIFICENT SEVEN

ARRI announces an entirely new range of anamorphic lenses for 35 format digital and film cameras. Comprising seven high performance primes, ranging in focal length between 35 mm and 135 mm, the ARRI/ZEISS Master Anamorphic series represents a significant step forward in the technology and practicality of anamorphic cinematography.

Every one of the seven Master Anamorphic lenses has a T-stop of T1.9 and is super color matched to the other primes and zooms in ARRI's current lens line-up. For the very first time, a perfect combination of compact form factor, minimal weight, exceptional optical performance and very high speed has been achieved in a set of anamorphic lenses. The Master Anamorphic range shares the same reliable mechanical construction as the Master Prime and Ultra Prime lenses, and has been tested for a temperature range of -40°C to +70°C.

INNOVATIVE OPTICAL DESIGN

Drawing on its unparalleled expertise in the field, ZEISS has engineered a new and cutting-edge optical design for the Master Anamorphic lenses, overcoming many of the common distortion problems associated with other front or rear anamorphic systems. Virtually no image breathing is displayed by the lenses and the problem of anamorphic 'mumps' (fattening the faces of performers) is automatically compensated for without any need for calibration on the set. The near telecentric optical design also reduces color fringing and shading at the image corners.

A sophisticated focusing mechanism keeps both the vertical and horizontal focal lengths of each anamorphic lens perfectly sharp, thereby eliminating astigmatism. It also obviates time-consuming mechanical readjustments on the set because lens elements will not become misaligned, even in situations involving heavy vibration such as car mount shots. In essence, the Master Anamorphic lenses are less delicate and technically challenging than anamorphic lenses have been up until now; they can be used in much the same way as other modern cine lenses.

THE ANAMORPHIC LOOK

While the Master Anamorphic lenses have consigned to history many of the problems associated with anamorphic cinematography, they have lost none of desirable visual elements that have made the anamorphic look so enchanting and popular for the last 60 years. Among these are the unique blue streak lines, reflections and flares produced by anamorphic lenses, which are highly valued by cinematographers for their artistic effect and have been optimized in the Master Anamorphic series.

Another important and distinguishing visual facet of anamorphic images is the appearance of out-of-focus background elements, or bokeh. A newly developed iris with 15 aperture blades has been incorporated into the Master Anamorphic lenses, creating perfectly oval and evenly illuminated out-of-focus highlights. This ensures a pleasing bokeh that filmmakers will enjoy manipulating creatively.

MAN OF TAI CHI

Hollywood star Keanu Reeves speaks to ARRI about directing his first movie in China with the ALEXA Studio and anamorphic lenses



Photos: K.C. Chan

Keanu Reeves swears he didn't mean it when he said he was going to break the new ARRI ALEXA Studio camera during its maiden shoot in the dusty outskirts of Beijing: "Oh, I did say that, didn't I? Not the wisest choice of words. When I said I would break the camera, that was just youthful exuberance," he says, chuckling.

Reeves is speaking on the set of *Man of Tai Chi*, the *Matrix* star's directorial debut, featuring Tiger Chen, Karen Mok and Reeves himself, as well as martial arts choreography by the legendary Yuen Woo-ping. For his first film behind the camera, Reeves is working with an ALEXA Studio package supplied by China Film Group through a special arrangement with the recently opened ARRI China facility in Beijing. The movie is being shot by cinematographer Elliot Davis in the dust-ridden

environs north of Beijing and the damp, humid atmosphere of Hong Kong.

"The camera was just out of beta and I wanted to test its limits," says Reeves, qualifying his comment about "breaking" the Studio. "We've been shooting in water, high temperatures, dust, using strobe effects, really pushing the camera - it's been getting a good workout! ALEXA is easy to work with and very well-made."

Taking advantage of the ALEXA Studio's 4:3 sensor, *Man of Tai Chi* is being shot with V-Lite, V-Plus and V-Series Hawk® anamorphic lenses from Vantage. Being far more similar to the size and shape of a Super 35 film frame than the sensors of other digital cameras, the ALEXA Studio sensor better captures the unique look of anamorphic lenses, faithfully carrying a long-

established 35 mm widescreen aesthetic into the digital realm.

Reeves has been extremely pleased with the images created by combining ALEXA with the Hawk® anamorphic lenses. "It's a lovely combination, a filmic combination," he says. "It's sharp, but with a softness too, and it's nice on the eye." Ensuring maximum image quality and an easy workflow into postproduction, the film is being recorded in ARRIRAW to Codex Onboard recorders.

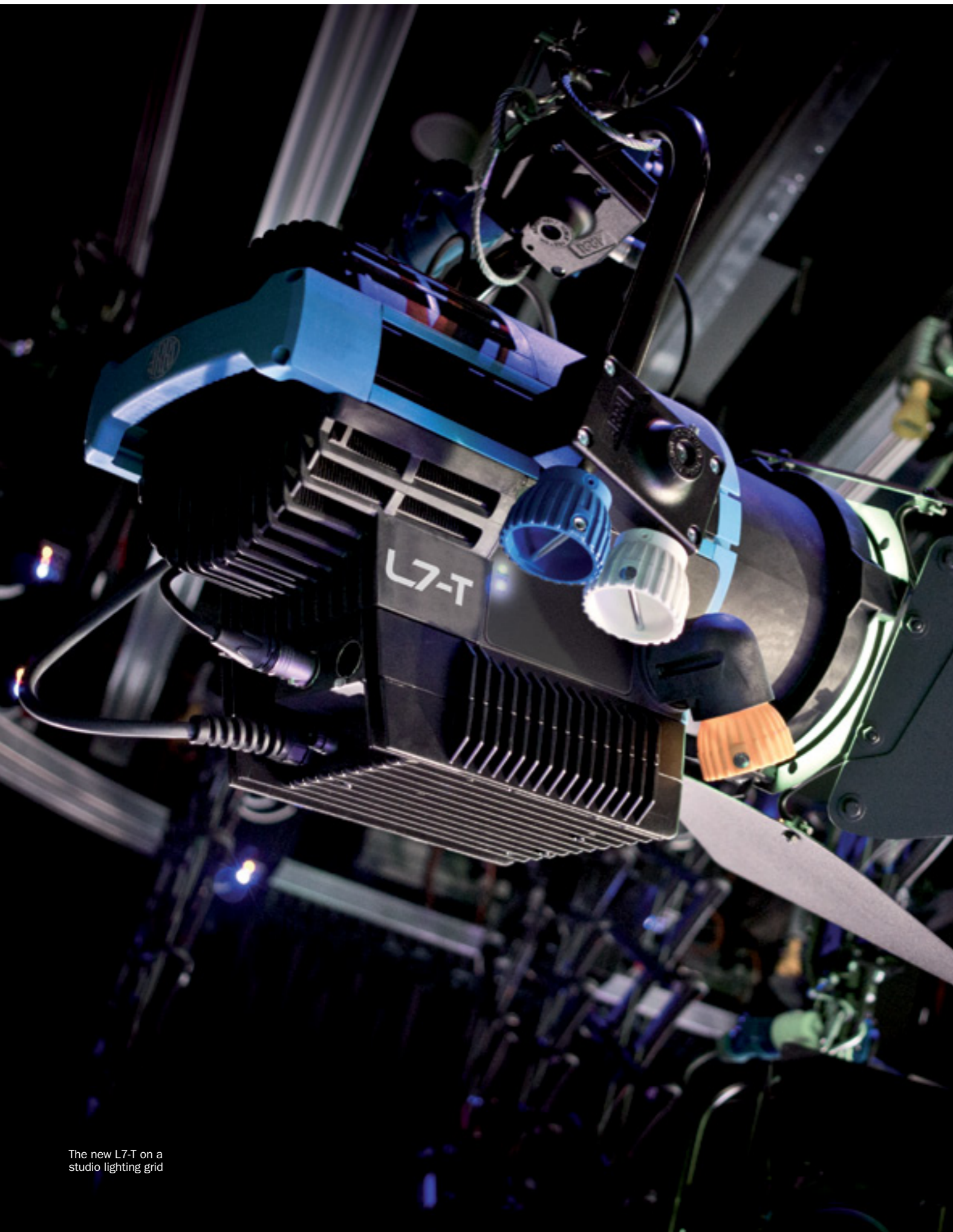
Producer and long-time Reeves collaborator Limore Syvan echoes her

director's praise for the camera. "I will be going back to ALEXA again and again and again," she says, standing on the set. "This camera hasn't failed us and we've been shooting six-day weeks in all kinds of conditions. Today's location is dusty and we have a wind machine in there now, but the ALEXA is holding up fine. And the support from ARRI has been huge."

Cinematographer Elliot Davis explains that working with the ALEXA Studio has, for him, gone the furthest towards closing the gap between film and digital. "I like the

outcome - it's the future," he says. "As much as I love film, I'm getting used to the ALEXA and to the immediate gratification of the workflow. And it's a great image - very clean, modern and beautiful."

Read the full length article online:
www.ari.com/goto/0912/motc



The new L7-T on a studio lighting grid

BRIGHTER COOLER SMALLER

The ARRI L-Series of LED Fresnels now offers a tungsten model and optional active cooling

ARRI's L-Series of LED lights, which launched with the color-controllable L7-C model, has quickly been accepted by the industry as an efficient, eco-friendly and cost-saving alternative to traditional tungsten Fresnels. Now a dedicated tungsten model, the 30% brighter L7-T, is being released, alongside an option for active cooling that reduces both the weight and the size of L7 units, making them perfect for location shoots.

L-Series fixtures reduce electricity usage by 75% and further savings are brought about by the exceptional life span of the LED light engine, which lasts around 200 times longer than a conventional tungsten lamp; the reduced maintenance and minimized power distribution combine with other cost-saving attributes such as built-in dimming to provide a rapid return on investment.



The L7-T is a single-color, 3200 K tungsten version of the popular L7-C, providing in excess of 30% more light while maintaining the same size and weight, and offering the same calibrated color quality. It is also even more affordable than the L7-C and is particularly suited to applications requiring maximum intensity for a given fixture size.

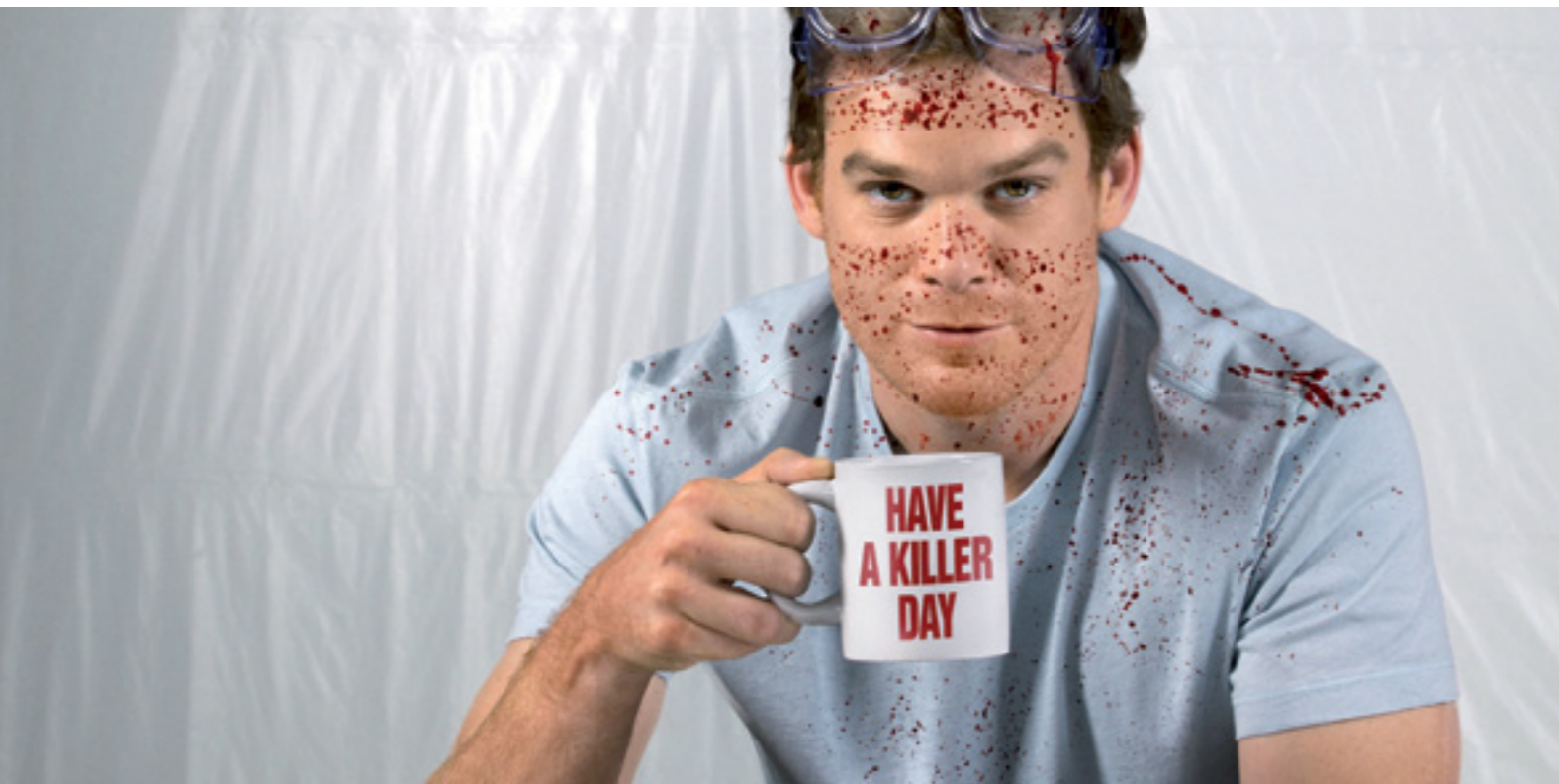
L7 lampheads provide the same light quality and simplicity of use as conventional tungsten Fresnels, and can easily be used alongside them. This allows studio facilities to make a gradual transition from older tungsten fixtures to the L-Series, spreading the cost over a longer period without any workflow inefficiencies or changes to working practices.



ACTIVE COOLING

A new active cooling option is premiering for both the L7-C and the L7-T, still providing energy savings and impressive light output, but in a smaller and lighter package. Featuring a super quiet fan, L7 lampheads equipped with active cooling are ideal for low-ceilinged studios, portable lighting kits and location use, as their reduced size and weight make them easier to transport and allow them to be used in space-constrained environments.

Visit the L-Series microsite:
www.arri.com/l-series



INSIDE THE MIND OF **DEXTER**

Jeffrey Jur, ASC, dissects the dark hit series shot on ALEXA

Photo: DEXTER® © Showtime Networks Inc. All rights reserved.



“... it's just amazing to have a full extra stop available when you need it.”

Jeffrey Jur, ASC (left) with ALEXA
Photo: Randy Tepper/Showtime

Cinematographer Jeffrey Jur, ASC, admits he had some concerns before signing on to shoot the current season of the Showtime series *Dexter*. His trepidation wasn't about the cinematography, it was about the subject matter; the show's lead character, Dexter (Michael C. Hall), is a serial killer. "One of the producers said early on, 'We shoot *Dexter* on location – in Dexter's mind'," Jur recalls. "Was I really going to immerse myself in this world that's a little disturbed?" It was the humor of the show that won him over. "Michael can do a threatening personality but be aware of what he's doing in a funny way," he says. "That made all the difference to me."

Soon after agreeing to do the show, Jur helped convince the producers to start shooting on the ARRI ALEXA, which he'd used previously on a couple of pilots. "As soon as I'd spent two or three

hours in a rental house with the ALEXA I knew it was perfectly designed for a cinematographer," he says. "I find some digital cameras to be less user-friendly – all the menus and everything – but with the ALEXA I just felt I already knew the camera very well."

Jur was pleased with the sensor's dynamic range and the way it handles extremes of light and dark. "I often like to have something in the background that's just a bit over-exposed so it doesn't have much detail but there's still some depth to highlights," he notes. "I'm able to do that with the ALEXA without getting the clipping that can happen with some other digital cameras."

The cinematographer is even more impressed with ALEXA's low-light capabilities. Generally keeping the EI setting at the native 800 (dropping to 400 for day exteriors), Jur says he has frequently been

pleasantly surprised by the low levels of light he's able to work with. "I'm not the kind of cinematographer who likes to shoot wide open," he says, "but even so, I'm working at surprisingly low light levels."

Besides changing out all the 10Ks on the standing sets for 5Ks, Jur has been able to take advantage of the existing lighting in dim restaurants and bars with only some simple augmentation. When he needs to bring the level up he prefers to widen the shutter angle to 270 or even 360 degrees. "Of course we'll get a bit more motion blur,"

he explains, "but nothing that's a problem. It's really a nice look and it's just amazing to have a full extra stop available when you need it."

Jur also notes that the ALEXA's high speed option is particularly useful for his work on the show. "When we shoot from Dexter's POV we are usually slowing things down a bit," he says. "Dexter wants to be normal but he doesn't really know how, so he's always observing and studying other people's behavior. So we carry one camera body that goes to 120 fps and one that can

go up to 60. For a film guy like me who's used to only being able to shoot 40 fps, that's great!"

It turns out that Jur isn't averse to spending time in Dexter's mind at all; quite the opposite. "You have a license with this show to be very creative and to take chances," he says. "And that's really what I hope for on any project."



ARRI PRO CAMERA ACCESSORIES OUTFIT DEXTER

On the Showtime series *Dexter*, Eric Fletcher has operated camera as well as Steadicam for several seasons; he appreciates well-engineered camera tools and thoughtful ergonomics.

In addition to ALEXA cameras, the show makes use of Nikon D800 DSLRs equipped with ARRI Pro Camera Accessories for car interiors and surveillance-style shots. "I've been testing the first of the ARRI Pro DSLR cage and focus systems, and it rocks!" says Fletcher.

"We love it, and the reason we love it is that by using ARRI Pro gear we are using

something that at its most basic level is not only instantly familiar, but solid and robust like any ARRI accessory since it is an ARRI product," he continues. "Every other DSLR cage or adapter out there lacks a 'system integration' approach. I wanted something that my assistants would be not only familiar with, but - most importantly - comfortable using. I wanted them using real matte boxes with real filter trays and real follow focuses. In the end, ARRI figured out how to make a DSLR work seamlessly with an ALEXA and now it's a fantastic shooting combination."



Eric Fletcher

ARRI QUALITY FOR SMALLER CAMERAS

New additions to the growing range of ARRI Pro Camera Accessories



KIT FOR CANON C100/300/500



KIT FOR SONY NEX-FS700



KIT FOR CANON EOS 5D MARK III



KIT FOR NIKON D4/D800

Appearing at IBC this year are more additions to the already extensive range of ARRI Pro Camera Accessories. This rapidly growing side of the company's camera division makes the legendary precision and durability of ARRI matte boxes, follow focus units and support systems available to users of small form factor cameras. By working closely with both end users and manufacturers, ARRI is able to quickly produce professional-quality accessories for the latest models to be released, such as the Blackmagic Cinema Camera, Sony NEX-FS700, Canon 5D MkIII and Nikon D800.

The LMB-25 is shipping with combo 4" x 4"/4" x 5.65" filter trays, although it is also compatible with all existing LMB-5/15 filter trays, including 5" x 5". Two new additions are available for the LMB-25: an accessory mount for 3/8" accessories such as ultrasonic devices, and a bottom-mounted 'tray catcher' that secures filter trays in place more elegantly than the traditional gaffer tape.

CANON C100/300/500 ACCESSORIES NOW SHIPPING



HGA-1 Recorder / Battery Bracket

ARRI is now shipping the Handgrip Adapter HGA-1, which works for all three Canon models (C100, C300 and C500), as well as the recorder/battery bracket, which allows external recorders and/or batteries to be used with any kind of camera.



LMB-25

ARRI is introducing the LMB-25, an exciting new lightweight clip-on matte box. The LMB-25 expands the feature set and creative possibilities of the LMB-15, while retaining the low price tag of an entry-level LMB-5. It comes with a metal tray stage for two or three filters, top/bottom flag, and is compatible with all LMB-5/15 clamp adapters up to 143 mm in diameter. The hood can be easily released on set via four captive screws, allowing macro shots or special applications.

BASE PLATE ADAPTERS



The MBP-3 has new adapter plates and is now compatible with the Blackmagic Cinema Camera, Sony FS700, Canon 5D MkII and 5D MkIII, Canon 7D, Olympus i-Speed PL, Nikon D4, Nikon D800 and Phantom Miro.

New base plates for the recently announced Canon 1D C and 1D X will be shown on the ARRI booth at IBC. Most of the cameras supported by the MBP-3 will also be compatible with the new ARRI Cage System.

UNIVERSAL SHOULDER PAD USP-2



ARRI is introducing a new shoulder pad for smaller form factor cameras and DSLRs: the Universal Shoulder Pad USP-2, a longer variant of the USP-1 that is shipped with both straight and curved foam pads to suit all operators' needs.

Pro Camera Accessories website: www.arri.com/pca

GO WIRELESS



New wireless control options with the WCU-4 and CLM-4



ARRI's Wireless Remote System is a sophisticated toolset for wirelessly controlling lens and camera functions on set. At IBC 2012 ARRI is announcing the new Wireless Compact Unit WCU-4, which will be the most sophisticated and user-friendly unit on the market, succeeding the WCU-3.

The WCU-4 is an all-inclusive and yet affordable hand unit offering up to 3-axis lens control. It includes a newly designed, super-smooth focus knob with adjustable friction and backlit, optionally pre-marked focus rings that are easy to read in the dark but not distracting to performers. The whole unit is completely splash-proof, further enhancing its typical ARRI reliability. An advanced built-in iris slider has its scale on the 3" display, providing clearly readable T-stop numbers and optional on-screen markings. If preferred, the slider can also be set to show zoom scales.

Included on the left side handle is an ergonomically designed, pressure-sensitive zoom knob that can additionally be used for scrolling through the unit's setup menus. A user-programmable button underneath the handle permits rapid access to functions such

as quick zoom (zap) or setting marks. An optional hand strap provides extra stability and leaves the thumb of the holding hand free, thus allowing even the most challenging simultaneous shifts of iris and focus.

The large 3" transfective display reflects ambient light and remains clearly visible even in direct sunlight, while also saving battery power. It provides enough room for status information of camera and hand unit, measured distances from ultrasonic devices or lens data in a graphical form. Focus, iris and zoom marks or limits can easily be set by pressing one of the sealed, backlit buttons next to the display. ARRI Lens Data Display is integrated and when used with the ALEXA camera, the unit displays camera settings and status; it will even be possible to control ALEXA with the WCU-4 following a future software update.

Users can save their preferred settings on an SD card, enabling them to immediately personalize any WCU-4, anywhere in the world. The WCU-4 is designed to be expandable; new firmware versions can swiftly be installed to the unit via SD card. Various mounting points

allow future accessories to be mounted, including brackets for mini monitors or iPod Touch. The unit is powered by an affordable camcorder battery and is compatible with existing ARRI motor controllers equipped with the white coded radio modem. It is easily serviceable with many exchangeable components, including the display.

Also unveiled at IBC is a new Controlled Lens Motor CLM-4, available with various different gear modules. Flexible and highly affordable, the CLM-4 is a compact and lightweight lens motor which

is faster and quieter than the CLM-2. The CLM-4 will prove especially useful in tight situations with limited space, since the gear modules can be mounted either side of the motor. The motor offers rod-to-rod mounting options and a Hill Bracket rosette, as well as the standard rod bracket. The clamp console is adjustable and, crucially, the motor cable is detachable, allowing quick and easy on-set maintenance and trouble-shooting.

WCU-4

- The most feature-rich, modern 3-axis lens controller
- Affordable price
- Comfortable, ergonomic and user-friendly design
- Smoothest ever ARRI focus knob, with adjustable friction
- Backlit focus rings
- Advanced iris slider with on-screen scale
- Versatile zoom knob

CLM-4

- Highly visible transfective display
- Integrated Lens Data Display
- Optional ALEXA setup and status display
- Sealed, splash-proof casing
- Personalized settings and updates via SD card
- Programmable user button
- Various mounting points for accessories



- Affordable and flexible lens motor
- Small and quiet
- Detachable motor cable for easy exchange on set
- Various gear modules
- Adjustable clamp console
- Additional mounting options

STUDIO LIGHTING SOLUTIONS

ARRI lighting and suspension systems equip new QVC studios in London



Besides its home in the United States, the televised home shopping company QVC broadcasts in four countries: the UK, Germany, Japan and Italy. The operation in the UK recently relocated to a purpose-built office and studio complex in Chiswick, West London. Taking the opportunity to equip this state-of-the-art facility with the latest technologies, QVC UK turned to ARRI Lighting Solutions, with which it already had a well-established relationship, to provide ARRI tungsten and fluorescent lighting fixtures as well as various pantographs from the ARRI suspension range.

The new complex contains four studios, two small and two large. The smaller studios are for pack shots, auditions and certain postproduction tasks, while the larger studios, at 425 m² each, are where the main program content is filmed. They have been kitted out with 84 True Blue Studio and 82 ARRI Junior tungsten Fresnel lamphoods, 122 ARRI Studio Cool fluorescent fixtures and several different types of ARRI pantographs. The Studio Cools provide fill light and in some instances back light, while the Fresnels serve as traditional back and key lights.



Many more fluorescent lights were installed than at QVC UK's previous facility, a change that has brought several benefits, as Shift Operations Manager Peter Bower - a lighting director of long experience - explains: "The transition to cool lights for all our soft lighting requirements enabled a reduction in the power supply needed, the number of dimmer channels purchased, and also the amount of air conditioning required. In addition, the fluorescent tubes have much longer lifespans than the tungsten bubbles they replaced." QVC UK broadcasts live from its two main studios for 17 hours every day, so they are in almost constant use. The reliance on remotely operated cameras and range extenders for extreme close-ups of items such as jewelry mean that the studios must operate at high light levels. Technical Operations Manager David Hansford-White notes, "Although we did look at LED, tungsten remained the best option for our key lights because we're usually at about 1,200 lux, whereas most places these days are at 800 lux or below." Each of the main studios contains seven or eight different sets and the lighting grid remains fairly static, although the ARRI spring pantographs allow lights to be swapped or repositioned when

necessary. "The sets have a fixed lighting rig regarding the type and positioning of the luminaires rigged, but the pantographs enable easy height adjustment and all the lamps are pole-operated so that their coverage and barn doors are easily adjusted as required," says Bower. "Each luminaire has its own dimmer channel or DMX address so that the final lighting balance can be adjusted on air." With live broadcasts taking place almost all of the time, reliability of equipment was a major factor in the decision as to which lights and pantographs to install in the new facility. "Our experience with ARRI lights meant we knew they would give us the punch we needed," says Hansford-White. "We also knew that they are fantastically reliable, so we had no hesitation in choosing a mix of ARRI Fresnels and soft tube lights."



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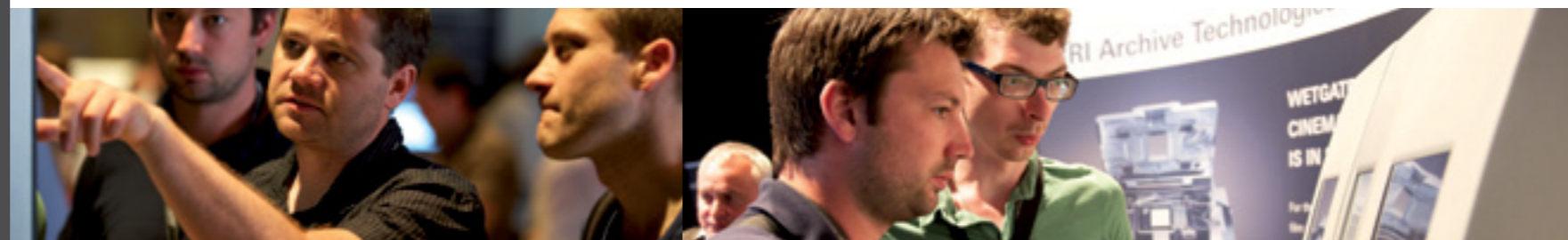
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“The ARRI Archive Workshop is an invaluable source of new ideas and motivation.”

Fabrizio Carraro, Cinecittà Digital



2012 ARCHIVE WORKSHOP

ARRI's third annual Archive Workshop brings restoration experts together

The third annual ARRI Archive Workshop took place at ARRI's headquarters in Munich on June 19th and 20th 2012, attracting more than 130 professionals from the world of film restoration. Some 15 different speakers delivered seminars or screened restored material over the two-day event, covering a broad range of issues within the often challenging discipline of film preservation and image restoration. As well as addressing the problems of historic film materials, the event also looked at the archival needs of films being produced today and the potentially short lifespan of digital file formats.

Seminars were presented in the ARRI cinema, while the various exhibitors – representing leading manufacturers and software developers – were set up in one of the ARRI television studios on site, providing further space for attendees to mingle and network. The workshop's dual structure, combining presentations in an auditorium

with 'hands-on' technology demonstrations in the studio, makes it unique. Many of those present were returning for their second or third visit.

It became clear at the event that it is not just technical conundrums facing those who must make decisions about what to do with some of the most fragile and historic film materials in the world – there are also ethical considerations. To what degree should modern digital imaging tools be used

to generate images that have been lost? How do you best represent an original film if the only version that exists today is a patchwork of later reprints? If the camera negative is missing, by what basis do you decide upon an appropriate grain structure for your restoration? Questions such as these were illustrated with screened examples and provoked passionate debate amongst those in attendance.

View all the seminars online:
www.arri.com/archiveworkshop



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www.arri.com/l-series

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