Lightstream

*dedolight®

Chapters

Themes

Introduction

The brochure ‚dedolight Lightstream' should not be regarded as a general lighting tutorial. Here we will mainly concentrate on various aspects of reflected light.

We are well aware that light and lighting is a vast subject with an incredible variety of aspects about the character of light. There is unnoticeable natural light, there is unnoticeably created light.

There is unnoticeable light with subtle accents, guiding the attention.

Such lighting can serve as an element of image composition.

Then we have the many characters of noticeable lighting, as gentle as the autumn light in Paris, which makes women all look like they have been painted by Renoir.

All the way from this wonderful, gentle, amiable light character that makes people glow, to the dramatic light characters as you find them in Caravaggio and El Greco.

Yes, we all know that lighting and the art of lighting should not be regarded as a value on its own. The most important is the story that we need to tell and what style we choose. And from this vast field of many subjects, here we are mainly talking about aspects of reflected light in its purity, and mixed with other lighting instruments and characters. Here we want to talk about the tools, the physics and practices; and hopefully we will be able to give some valuable explanations and hints.

REFLECTED LIGHT

Everyone of us has used reflected light in our profession, be it cinematography or other approaches to image creation.

Reflected light can provide a multitude of characters, many of which are not achievable by any method of direct lighting.

Hard reflection can have a very special character. Sometimes, this could be interpreted as simply redirecting the light, where, at the same time we are creating a virtual light source at considerable distance from the object being lit.

Hard reflected light very often is also polarized light, providing a different surface texture, different impressions. Gentler reflections can show a great variety of spreading of the reflected light. In all of these, it is important to consider the area, from which the light is being reflected. Small area reflections may still provide harder light and harder shadows. Larger reflective areas will produce gentler transitions between light and shadow.

Reflective surfaces vary in the degree of reflectivity: All together reflective surfaces provide a rich choice and an incredible variety of influencers for the character of light used.

Colored reflective surfaces may add qualities of their own in an incredible variety from the shiny gold reflector, used to produce warm and pleasant skin tones, to warm-colored wooden surfaces, adding subtle hues of warmth to the image and skin tones.

photo from Sylwester Adamski, Poland

photo from Sylwester Adamski, Poland

In combination with narrow-beam light fixtures or parallel beam light fixtures it is possible to transport tremendous intensity of light over a considerable distance.

Combining such light fixtures with the use of reflective surfaces can be used to redirect light, but can also be used in many different ways, and can add to an incredible variety of creative tools and practices.

Example 1:

To light interiors of a high building, beam projectors are placed on street level, shining straight up. Large, hard reflectors placed overhead of the windows redirect the incoming light and simulate incoming natural daylight. Because we create a **virtual light source** way up and high in the sky.

We add the distance from the light fixture to the reflector, and add distance of a **virtual light source** way behind of such a parallel beam light fixture.
The effect is a light that is placed very far away, thus minimizing the effect of the inverse square law. It allows actors to move freely, without any noticeable change of light intensity and creates a "natural" light.

photo from Sylwester Adamski, Poland: Lighting of a film set in Warsaw

photo from Sylwester Adamski, Poland: HELIOGRAF's night shooting

Big parallel light fixture PB70

Reflector #1
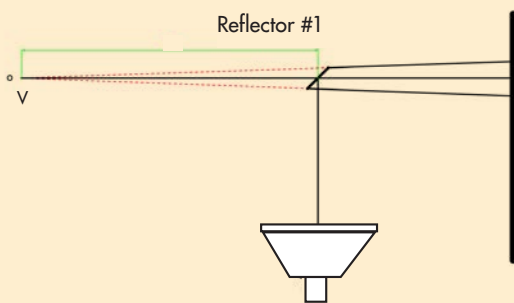
Virtual lightsource on small light with 4° spot

70 mm lens diameter

virtual light source point

$$\frac{lux_{S_2}}{lux_{S_1}} = \frac{S_1{}^2}{S_2{}^2} \qquad S = \frac{70 \text{ mm}/2}{\tan W}$$
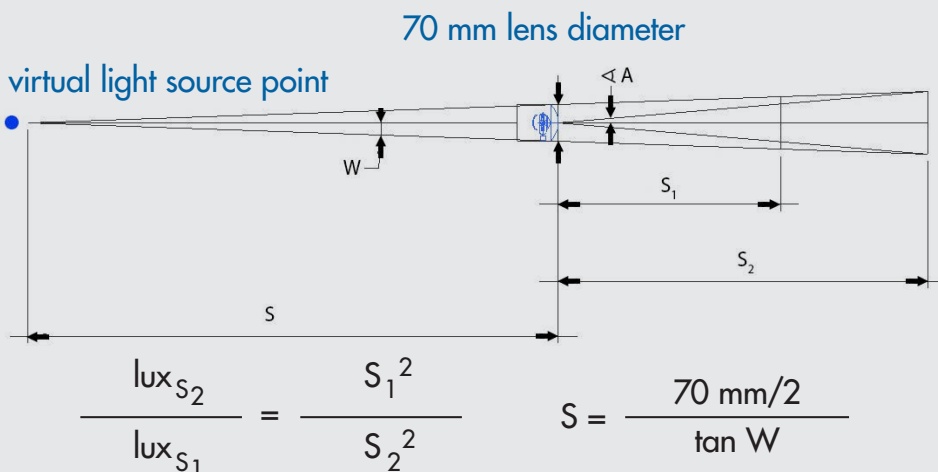
Since the special optical system of the dedolight allows for a very narrow exit angle, down to 4°, the virtual light source results from the elongation of the outer rays, and where those cross, the virtual light source becomes active.

Example 2:

On a film that I shot in the early 1970s in Indonesia, I had to film inside large housings which had rooftops, reaching very far down.

Since in such large (communal) housings the people live on a raised platform, I was able to acquire a considerable number of table-tops, which I fitted with broomsticks on a hinge. I covered these table-tops with a very lightweight reflective material from Rosco (Rosco Flex). There was even a special glue to attach such a reflective material to pretty much any surface (Rosco Bond). Thus, I was able to create with a small budget an efficient multitude of very hard mirror-like reflectors and many other reflectors with a crumpled surface, producing a more dispersed reflection, softer and gentler light that would spread wider.

Placing these table tops at angles all around the building, I was able to reflect the sunlight towards the interior ceiling.

In addition, I covered these interior ceilings with more of such reflective lightweight materials, thus reflecting the reflected light into a very gentle but still controlled and variable way onto the action area in the center of the living spaces.
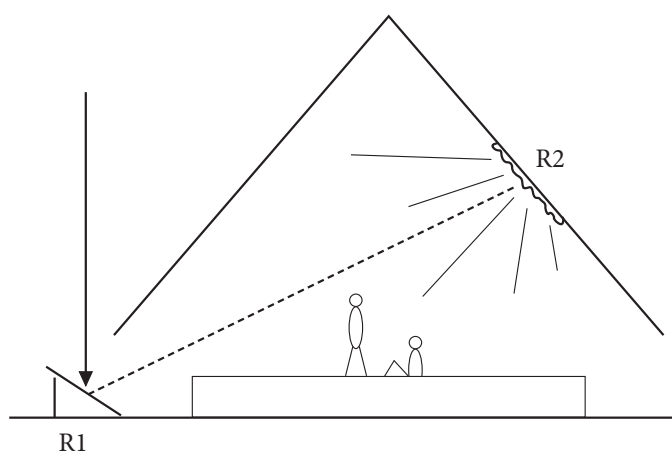
That worked very well. It was simply necessary that my assistant would step out every once and again to re-direct the reflectors as the sun was moving, but since near the equator the sun is friendly enough to stay for a long time very high up in the sky, the re-adjustment was easy and quickly done.

Example 3:

In one of our tutorial videos, the British DOP Ian Murray shows how a hard reflected light becomes polarized, and he holds up his hand and shows how the impression and the narrative of the skin on the surface of his hand is changed by the polarized light, generated by the hard reflective surface.

Everyone of us can add a variety of other examples, including the common practice of using bounce-boards, bead-boards, styrofoam surfaces and such.

Direct light - photo by Ian Murray

Reflected light - photo by Ian Murray

Find on You**Tube**

Shining light through glass

DEDOLIGHT LIGHTSTREAM & EFLECT

dedolight Lightstream and Eflect are the names of our new lighting tools and practices.

The new tools are parallel beam light fixtures and highly developed optical systems which function with dedolight focusing lights.

The tools also include a selection of reflectors with a selection of very efficient reflector surfaces, with a variety of functions, and are available in different sizes.

I - The parallel beam light

Currently available is a high efficiency parabolic light producing a near perfect parallel beam.

There are several other parallel beam lights known throughout the professional industry, but our users find that our PB70 parallel beam light excels in extremely high efficiency and unprecedented homogeneity within the beam, which is a prerequisite for the Lightstream lighting system.

The PB70 has its name deriving from its diameter of 70cm. It works with a very special HMI lamp, produced exclusively for our light, according to the high demands for output, as well as homogeneity of the parallel beam.

In general, reflecting light is a well-known and established practice in image creation and for special effects, but within the dedolight Lightstream system it attains perfection, making it uniquely suitable for the many different ways and uses of this system in lighting practice.

Some of this derives from the use in feature films and drama productions, where it has been used also with great purity and exclusivity.*

We have taken these systems further and expanded the range of tools to an unprecedented choice.

There are other parallel beam lights in pre-production stage, which we will add at a later date.

The other group of exquisite tools is based on **dedolight** focusing lights.

The dedolight focusing lights already excel in their optical system, which, among other features, increases the efficiency in spot position, as opposed to traditional studio Fresnel lights by 300%.

Furthermore, focusing dedolights are known for their unique, patented, non-spherical double-lens design, which provides a perfectly smooth and even light distribution within the beam - we call it the:

Clean-Beam Concept – perfect light distribution within the beam, outside the beam - nothing.

A system and a function that is absolutely unique, and in combination with double and triple movements of the focusing optical elements has been awarded twice by the Oscar Committee of the Academy of Motion Picture Arts & Sciences, and an Emmy.

*For example, by the Austrian Director of Photography Christian Berger and his experienced gaffer Jakob Ballinger in films by the Austrian director Michael Haneke, as well as in the Brad Pitt and Angelina Jolie film ‚By the Sea'.

As an extension of the computer-correlated design, matching the unique dedolight optics, we have now designed and produced parallel beam attachments, (special optical devices).

Not only do they provide a very clean parallel beam with great homogeneity within the beam and great definition, but the amazing fact is that these parallel beam attachments double and triple the light output over the spot position of the focusing dedolights, which were already three times more efficient and powerful than the spot performance of traditional studio lights.

So this is a huge additional step forward.

Furthermore, they are uniquely qualified tools feeding into dedolight Lightstream and Eflect practice.

dedolight Lightstream also works with a selection of highly efficient reflectors, with different surface structures and different functions, providing a wide choice of lighting tools and characters.

Such unique reflectors are available in different sizes from 1x1m to 50x50cm, to 25x25cm, even down to small ones with 7x10cm.

Other reflector sizes and functions are being developed.

II – New Practices and Applications

Our unique tools work in four different applications.

dedolight LIGHTSTREAM DRAMA

This is a system which usually includes the big parallel beam light PB70, augmented by other focusing dedolights with the unique parallel beam adapters.

This can provide a feeling, character and function of natural light by the characteristics of the parallel beam lighting system. Its practical effect is not based on the distance between the light fixture and the object, but works effectively like a virtual light source* from an enormous distance, thus allowing a more natural character of lighting on a set, on a person, on a subject, at the same time eliminating a lot of lighting paraphernalia, stands, flags and other devices that usually clutter such sets.

It also allows for enormous efficiency and very structured lighting, often giving the illusion of depth and space in the resulting images.

dedolight LIGHTSTREAM TV**

This is the transformation of the concept of Lightstream lighting for television studios, where our focusing lights, in conjunction with the amazing parallel beam adapters, can serve a multitude of reflectorsefficiently allowing the lighting of complete sets even in such a way that different positions of actors, presenters or objects can be pre-lit without the need of adjusting and re-setting all the tools.

Here we achieve an extreme degree of efficiency, unique in lighting practice for TV studios. We have produced a video demonstrating a studio simulation, where, with a mere 790 Watt we achieve lighting with lux values, comparable to studio lighting, previously done with 30kW or more.

Two other practices and applications:
Eflect* and **miniature Eflect** systems for table top and photography, which will be explained later on in this brochure (page ref.)

CHOICE OF REFLECTORS

Reflector surfaces

These are reflectors for the application and use in dedolight Lightstream Drama and dedolight Lightstream TV.

The high efficiency of these reflectors within this system derives from reflective values, where approx. 95-98% of the light can be effectively reflected.

At the moment we use four different reflector types, each featuring a different reflecting surfaces.
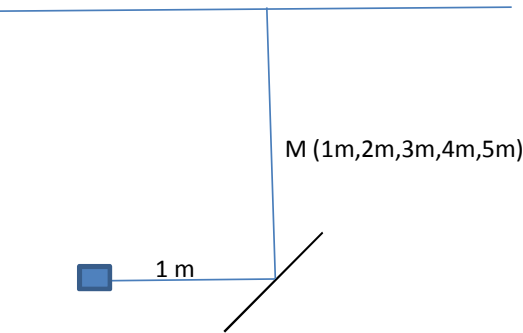
Reflector #1
is the closest to a very hard reflector, but it is not a mirror. A fully functional mirror usually would not work well for this kind of lighting system, it would not redirect the incoming light, the beam with sufficient homogeneity.

reflector #1 serves the purpose of **redirecting** the light without changing the beam size and the beam character. The attempt here is to cause a minimum of stray light and a minimum of diffusion. This surface structure provides reflection with an exit angle of about 4°.

The enclosed measurements were done with a DLH400D metal halide light with the parallel beam adapter, using reflectors 15x15cm.

Reflector	Lux 1m	Lux 2m	Lux 3m	Lux 4m	Lux 5m
No.1	49500	26000	16100	10000	6700
No.2	29000	10700	5800	2700	1930
No.3	12200	3400	1630	890	550
No.4	1890	490	215	125	85
Styrofoam	2000	520	230	132	92

For comparison purposes we have included a styrofoam surface.

M (1m,2m,3m,4m,5m)

1 m
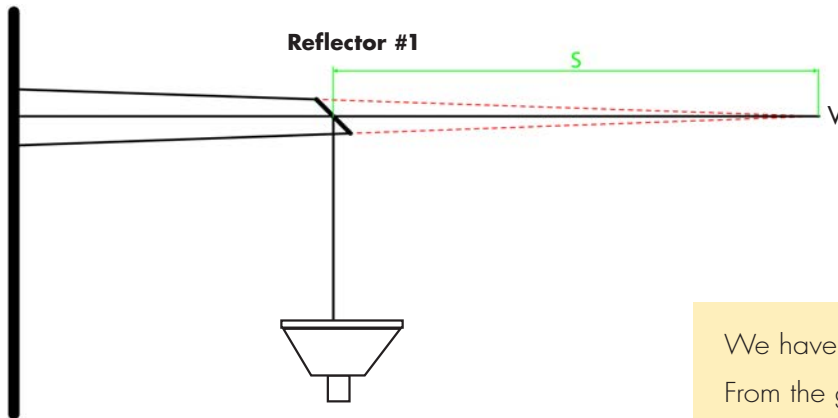
Reflector #1

As you can see, reflector #1 has the highest intensity of reflecting light when measuring in the center of the reflected light

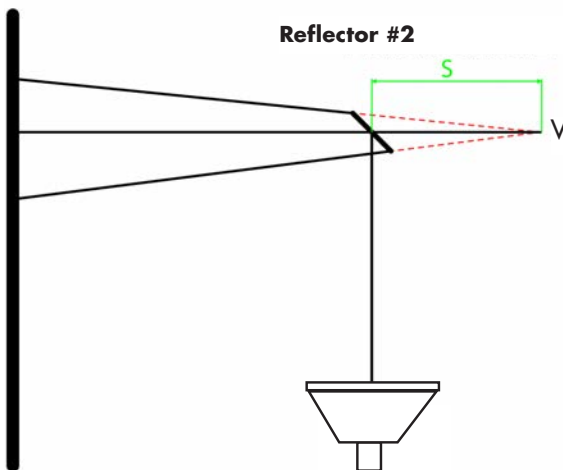We have explained the term ‚virtual lightsource'. * From the graphics you can see that the light used in this example with reflector #1 will provide a virtual light source behind the reflector.

Here, in this example the distance from light fixture to reflector is 1 meter. The virtual light source behind the reflector would be at 150 cm.

Reflector #2

shows less light intensity at the object, although the total amount of reflected light remains pretty much identical with 95-98%, but due to the wider exit angle of 12°, it makes it more suitable when we want to arrive in the next reflection from the secondary reflector with a larger surface.

Here we can see that the virtual light source now is much closer to the reflector. We would now have to assume in the example given, that the virtual light source is only at a distance of 47cm.
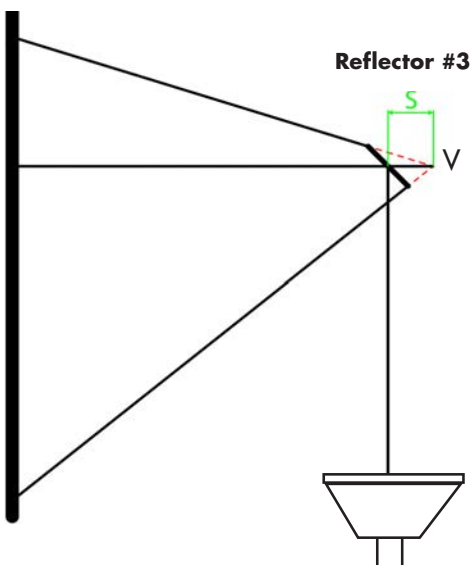
Reflector #3

It appears to be much gentler, although again the same amount of light gets reflected, but spread over an angle of 50°.

* see pages 5, 14 and 15

Reflector #4   o.4

Reflector #4

which produces seemingly the most gentle reflection, covers an angle of 95°, and thus, lower values of light level reaching the object, and the virtual light source now, coming very close to the reflector surface, only 4cm behind the reflector.
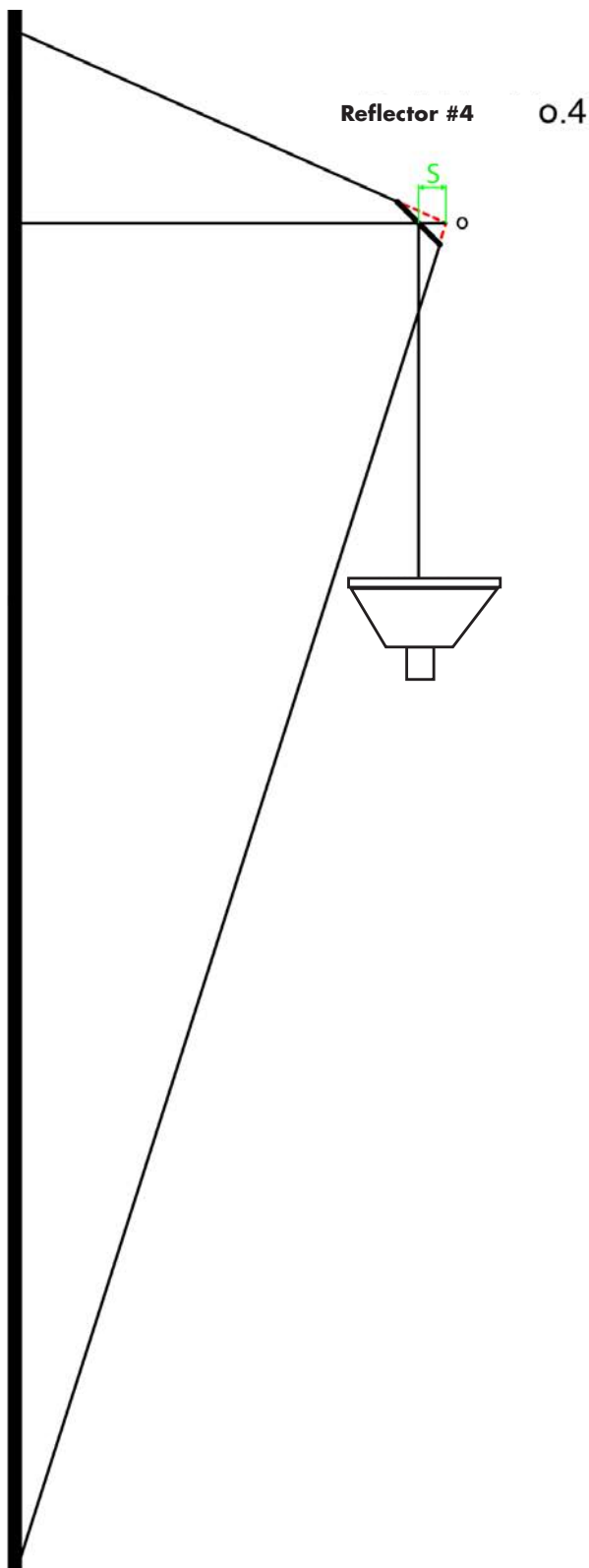
When comparing Lightstream reflector #4 with the commonly used styrofoam, we have comparable values of light intensity reaching the object. Thus, we now have to assume that the theory and practical function of the virtual light source, as generated by reflector type #1, may drastically change the influence of the square law, minimizing the differences in exposure value, when our talent is moving.

This effect is minimized when we use reflectors #3 and #4, or a styrofoam.

Here we are closer to the assumption that the reflector surface itself becomes a light source, and therefore the consideration regarding the effect of the square law is now with the reflector surface as the light source*.
*more information see page 12

The actual size of the reflector in relation to the distance to the lit object determines the perception of hard and soft light* - the light and shadow transitions.
*more see page 12

IV - HARD AND SOFT LIGHT – DIRECT OR REFLECTED

Here we are talking about two different aspects.

On the one hand, the characteristics of the different reflector surfaces play an important role between the hard, narrow exit angle from reflector #1, which I prefer to call the one to ‚re-direct' light, whilst #2, #3 and #4 I call reflectors, because they have a larger exit angle.

The effect of the light, reflected from reflector #1 is hard and selective, it does not change the incoming beam character. It is merely re-directing it.

This reflector can easily be confused with known mirror reflectors. Mirror reflectors don't have the same characteristics, they indeed sometimes produce spotty and uneven light, whilst our reflector #1 re-directs the light without changing its character, without changing much on the beam angle.

Whilst the reflected light from reflector #4 exits in a very wide angle and covers an enormous area, and therefore sometimes is hardly noticeable, it is an ideal tool as a base light and for ambient light.

Again, we have to point out that there is often a misunderstanding, where reflectors with a narrow angle of exit, like #1, are seen as hard reflectors; and it appears to the eye and the camera that a lot of light is reflected, whilst reflectors that have a large exit angle and cover a huge area, are often seen as reflectors that reflect less light and therefore are perceived as softer and gentler, but may still produce identical light and shadow transitions.

In effect, all these reflectors have in common a very high degree of reflectivity (above 95%) but that the reflectors which appear softer and gentler, spread the light over a wider area.

On the other hand, it has to be noted and taken into consideration that the surface area of a reflector that is actually used by the incoming light defines the character modification between hard light and soft light. Even if we take a reflector with a large exit angle, like #3 with 50 degree exit angle, and light only a small part of such a reflector, it will appear as a hard light, and shadow edges will be relatively hard.

If the entire surface area of a larger-sized reflector is lit by incoming light, it will have more the effect of a soft light.

Sometimes, for some of us it is difficult to understand that the seemingly gentler reflector which produces the very large exit angle, like reflector #4, appears to be soft, simply because it is reflecting less light as noticed by the eye of the viewer. But for the characteristics of a soft light it is exclusively the size of the area of light emission, in relation to the distance to the object.

If we have a large area reflecting light, and an object close by, this will be practically shadowless light, or if there is any shadow noticeable, the transition between light and shadow will be a fluent, transparent transition, whilst if the same size of area of light emission is further away, the impression will be that this is a harder light, and it will produce harder shadow edges.

To give an extreme example –
The sun has a huge diameter, but is very far away, thus the huge area of light emission from the sun, by the time it reaches us, will produce very hard shadows; whilst the other way round, a huge surface soft light, like we have with our Panaura5 and Panaura7, when the front diffusor is lit all the way to the edges, defeats the function of the square law.

So shadow transitions are very smooth, if the object is close to the front diffusor or area of light emission.

When thinking about reflected light, we don't necessarily have to think of size and character of a reflector as described in this brochure. We can think of the table cloth on the dinner table, the floor, the ceiling, the wall of a room, as a soft light source.

VIRTUAL LIGHT SOURCE,
CREATING THE ILLUSION OF NATURAL LIGHT *

Example -

1 - We have explained that the virtual light shown, shown here as V1, is way behind the actual light fixture, if it is a parallel beam light or something near parallel beam. The distance of the light fixture to the virtual light source V1 is to be calculated by elongating the rays at the edge of the narrow beam (here assumed at 4°), and V1 will result where those rays meet meet – at 20 meters distance in back of the light fixture. Theroretically, when in full parallel light exit, it would be understandable that V1 would be at an even much further distance – theoretically infinity.

The PB70 is NOT a focusing light fixture.
When changing the lamp, it may be desirable to make absolutely minimal adjustments of the lamp in the longitudinal access to achieve the optimum homogeneity of the beam. Close to the light exit, you may detect darker center because in our design the direct forward light from the lamp is blocked.
Best homogeneity starts at 3 meters and should be measured at 5 meters and further distances.

2 - When using reflector #1, in this example assumed as a 3x3ft reflector (100x100cm), we can redirect the maximum of incoming light, even at a considerable distance. Reflector #1 is not a true mirror, but very close to the effect of an assumed perfect mirror.

It would be extremely difficult and exorbitantly expensive to create such a perfectly flat mirror, thus, many reflectors that look like a mirror at first sight,

reflect incoming light in a way that shows spots and uneven light distribution, because optically they are not perfectly flat.

This is why we use our reflector structure #1, which comes closest in practical life to the function of redirecting the light without changing the beam character

3 - With reflectors #2, #3 and #4, which have a different surface structure, the same effect cannot be reached, and with those, as explained previously, the virtual light source would appear to be much closer to the back of the reflectors, so that it could not have the same effect of redirecting the light, and thus, producing the impression of a natural light coming in.

4 - V2, the assumed virtual light source, in this example is very far away, adding the distance from the light fixture to V1, to the actual physical distance between the light fixture and the reflector.

5 - The effect of the redirected light simulates natural light. This effect and this impression is not achievable with most other methods of simulating incoming sunlight. If several powerful lights are placed outside windows to simulate incoming light, very often there are diverging shadows or the effect of non-parallel light, as would be natural from a far-away light source. Thus, we have a very different light character that will not be easily perceived by the viewer, but the feeling of natural light will still be conveyed in the emotion displayed in the resulting image.

V2

PB70

b

a

a

PB70

b

a = 6,43 m

b = 20 m

V1
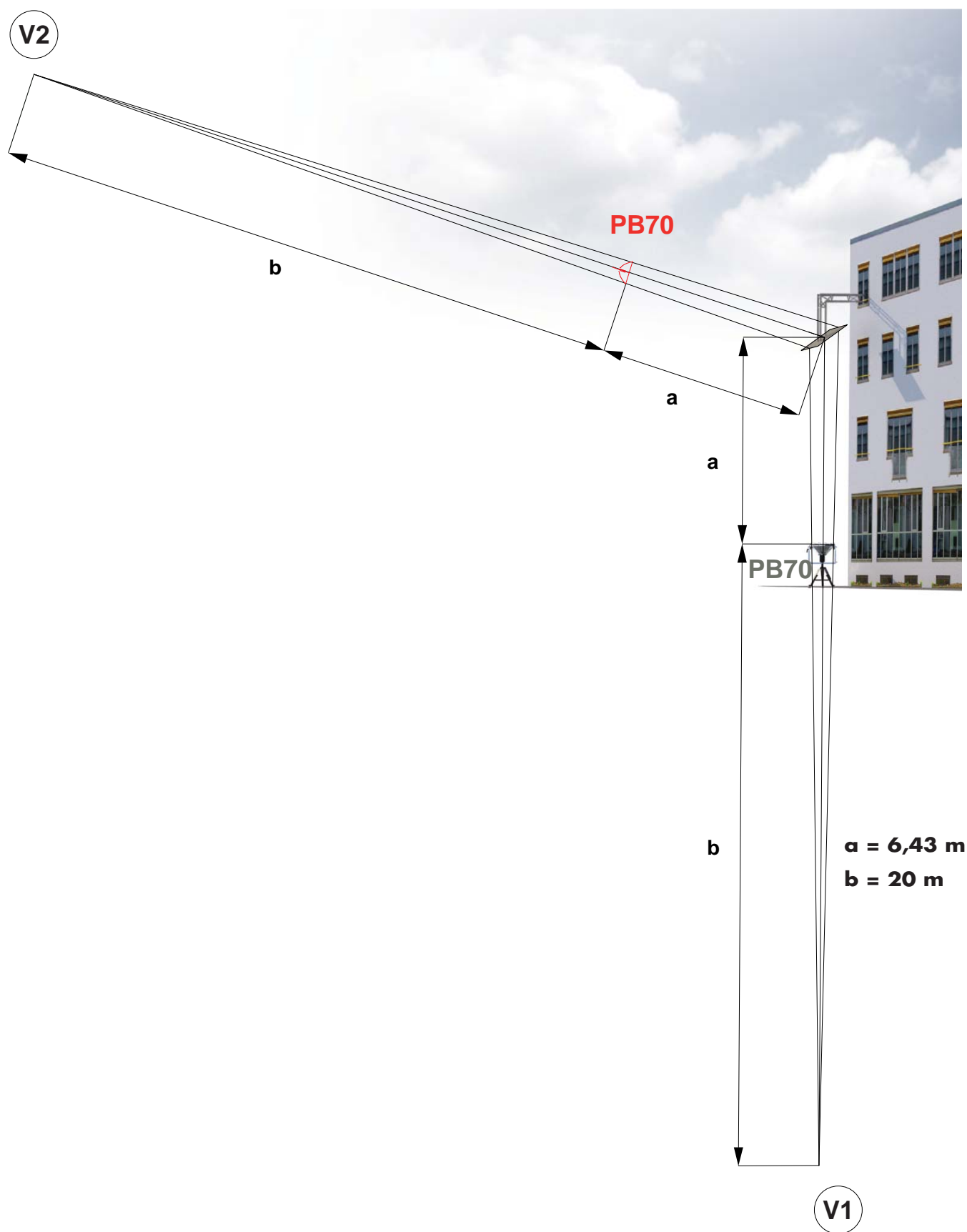
Example

The image shows the light coming from the parallel beam projector PB70, shining onto the hard, big 3x3ft (100x100cm) reflector R1, which is redirecting the light. Redirecting the light does not change the character, nor does it influence much the beam angle of the redirected light.

The redirected light now is used by reflector #R2, which could be a reflector #2, relatively hard, changing the direction of the light towards R4, which would be a softer, gentler reflector, possibly surface #3 or surface #4, spreading the angle of exit, thus, acting as a gentler fill light on the person behind the desk, whilst reflector R3 could be surface #2 or #3, reflecting the light onto the person, possibly acting as a key light.

It might be mentioned that when reflector R1 is placed in an ideal position, redirecting the light coming up from street level, it should possibly be placed in such a way that the view out of the window may remain totally unhindered, adding further possibilities in the creation of a natural light simulation.

Re-reflecting the light several times allows to reach different areas of the set. This makes it possible from a single light source, to have the effect of lighting coming from many different directions.

Being able to vary the depth of insertion of the reflectors, deeper or less deep into the narrow redirected beam of the reflected light, works like an opto-mechanical dimming, where only as much light can be used by the reflector, reaching into the beam as it takes out of the beam, depending on the surface that is hit by the incoming light, and thus, it brings with it a very elegant and convincing method of influencing the amount of light to be used.

As mentioned previously, the effect of harder or softer light is not directly dependent on the angle of light exit from the reflector, but mainly by the surface area of the reflector used. The larger the area used on the reflector is, the softer, the gentler the function of the light, and the shadow edges will appear gentler and more with a soft transition when a larger area of a reflector is used.

This is often confused with the amount of light, but then again the perception of a soft light, as depicted in the final image, is dependent on the size of the actual light-emitting area.
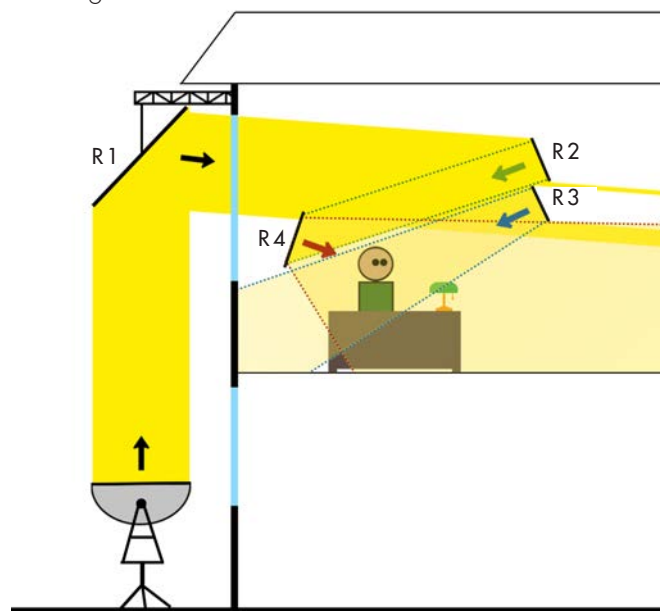
This system's explanation refers to the basic setup as we have shown in the video.

Find on You**Tube**

Here again we see the big 1200W parallel beam light placed at street level, shining into a 100x100cm reflector #1, which redirects the light to the window on the second floor.

This of course can be done in such a way that the view out of the window is perfectly unhindered.

This redirected light then is split into 2 further reflectors 50x50cm, where the upper one re-reflects the light towards the reflector, providing the fill light, whilst the lower one provides the direct key light on the person behind the desk.

In this example we see a DLED7 focusing LED dedolight 90W, combined with a parallel beam adapter, shining straight upward onto the reflector #1, which redirects the light onto reflector #2, where you can see, that here the light is already being spread with a larger exit angle, now reflecting the light onto the third reflector, which could even be the reflector #3, providing from its entirety of the surface a gentle soft light with lower intensity because of its large spread angle.

The next picture shows the same situation, where the focusing dedolight LED light is now replaced with a laser pointer, shining up onto reflector #1, where we can see the laser beam is redirected with very little change of its character onto a reflector #2, which shows a reflection in a much wider angle, pretty much filling reflector #3 at the bottom of the picture for gentler light reflection.

All these examples show how the light character can be influenced by the reflector surfaces, and of course the light- and shadow-shaping of the reflectors does not only depend on the structure on the surface of the reflector, but always on the size of the reflector in relation to the distance of such a reflector to the lit object.
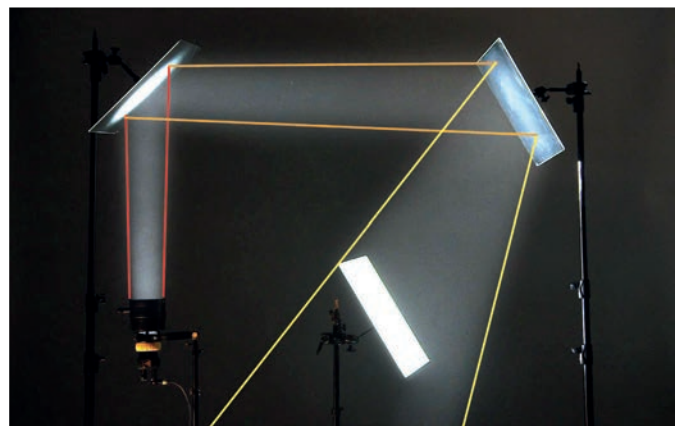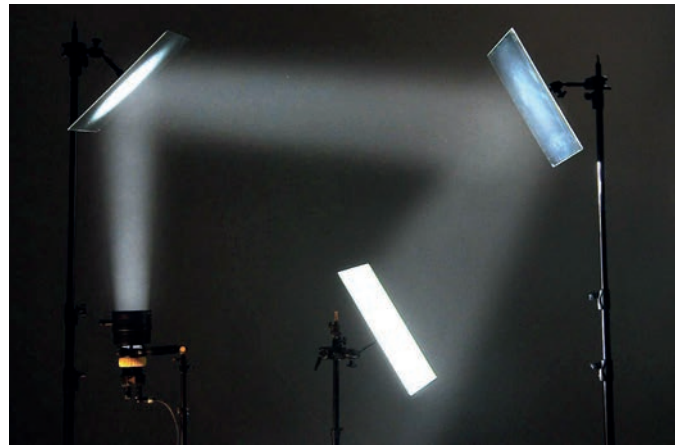
The next picture just clarifies the situation above.
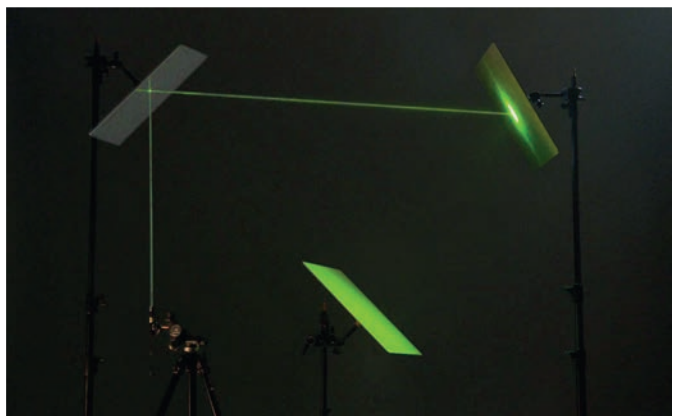
Using a laser pointer to shine up onto reflector #1 we can see that the laser beam is redirected with very little change of character. Reflector #2 already shows in its reflected light a wider angle, pretty much the entire surface area of reflector # 3 on the bottom for gentle light.

LIGHTSTREAM TV

Introduction -

Although Lightstream technology and other practices of lighting with reflected light, like CRLS, the system used for major drama productions, originally by Christian Berger and Jakob Ballinger, were originally intended for major drama productions only and have proven to be very successful in this field, we have, with our more highly developed technology, expanded these practices for the lighting of television studios.

Here we are using our parallel beam adapters and parallel beam lights with our reflector system, not only exclusively, but also in combination with other dedolight light fixtures, to provide a choice and variation of characters.

For the lighting of television studios, Lightstream TV offers unprecedented economy in light efficiency and energy consumption and fixture inventory while extending creative possibilities. It also offers a very interesting choice of easy and quickly installed lighting, which can be set for different positions of persons or sets to be lit, and it is also eminently suitable for multi-camera work.

Many different lighting situations can be preset and prepared with great ease, and can be lit simultaneously, or chosen by simple changes of the control on the DMX boards or other remote control systems.

In the following pages, we are explaining lighting systems and simulations, not actually showing television studios being lit, but simply trying to give an explanation of the instruments and tools, which can be used for such lighting practice. Also proving the functionality of the system.

Expanded choice of tools -

In addition to our parallel beam light fixtures and the tremendous choice of super effective parallel beam adapter, we have now also added motorized reflectors, which can be controlled by cable and DMX, and in future also by wireless control, adding to the ease of changes of lighting setups, if it is not practical to pre-light many different lighting situations from the beginning (which is also possible with these tools in very simple practice).
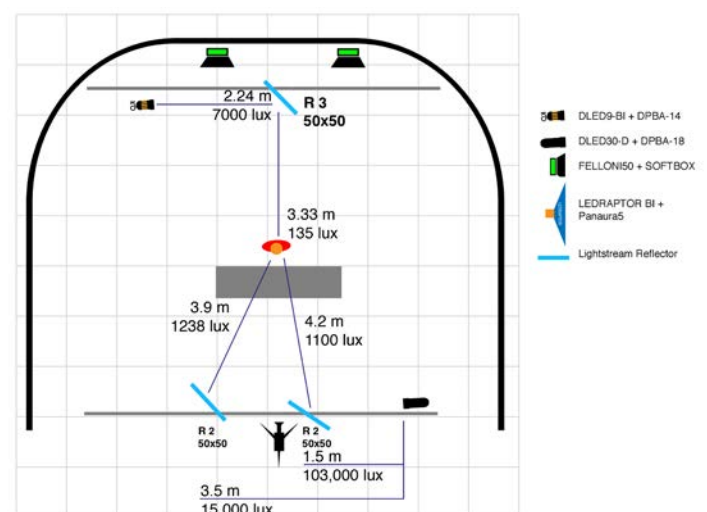
In the photo bottom left, we see that the frontal lighting is done with one DLED30D with DPBA18 parallel beam adapter and two reflectors 50x50cm.

The distance from the light fixture to the first reflector is 1.5m, to the second reflector 3.5m.

The lux values on the person, measured in front, can be set at 1200 lux and 1100 lux, at a distance between 3.9 and 4.2 meters.

In the back we have light shining in the other direction, a DLED9 bicolor fixture with parallel beam adapter DPBA14 onto a single reflector 50x50cm, providing a back light of 135 lux.

Further in the background, pointing downward, are 2 Felloni standard lights 50° with soft box.

In the long shots of these pictures you will see several other lighting fixtures on the ceiling, which happen to be in the studio. We left them, but they were turned off.

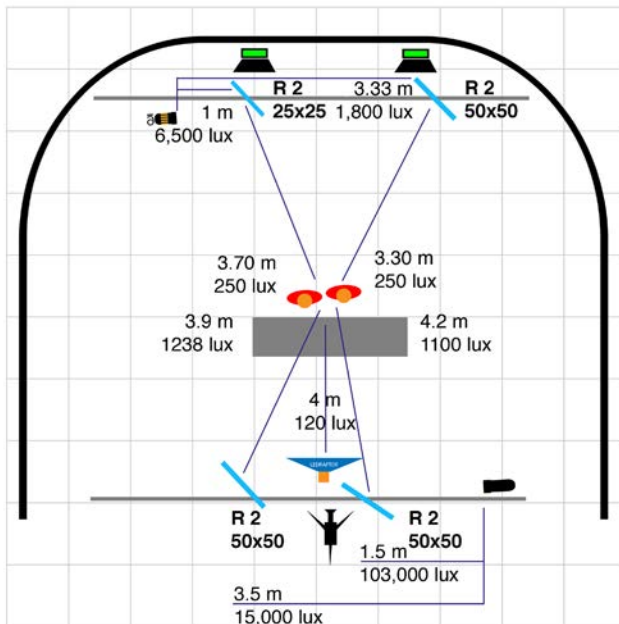In the photo bottom right, the setup is similar to the one described above, except that this time the DLED9, 90W LED light is lighting 2 separate reflectors to give more sculpturing to the person from the back lights.

Now we have 250 lux on both back-lighting reflectors.

In the background you also see a gobo projection which is easily interchangeable.

Lighting a single person / announcer
with 2 back lights

Left diagram labels:

- R 2 3.33 m R 2
- 25x25 1,800 lux 50x50
- 1 m
- 6,500 lux
- 3.70 m 3.30 m
- 250 lux 250 lux
- 3.9 m 4.2 m
- 1238 lux 1100 lux
- 4 m
- 120 lux
- R 2 R 2
- 50x50 50x50
- 1.5 m
- 103,000 lux
- 3.5 m
- 15,000 lux

Left legend:

- DLED9-BI + DPBA-14
- DLED30-D + DPBA-18
- FELLONI50 + SOFTBOX
- LEDRAPTOR BI + Panaura5
- Lightstream Reflector

Right diagram labels:

- 1 m 3.33 m
- 6,500 lux R 2 1,800 lux R 2
- 25x25 50x50
- 3.70 m 3.30 m
- 250 lux 250 lux
- 3.9 m 4.2 m
- 1238 lux 1100 lux
- 4.1 M 1.6 M
- 300 LUX 6,800 LUX
- 4 m
- 120 lux
- R 2 R 2
- 50x50 50x50
- 1.5 m
- 103,000 lux
- 3.5 m
- 15,000 lux

Right legend:
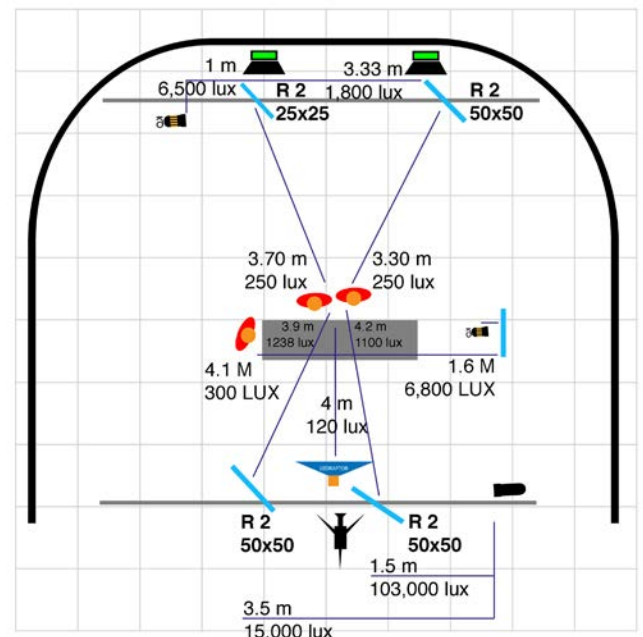
- DLED4-BI + DPBA
- DLED9-BI + DPBA-14
- DLED30-D + DPBA-18
- FELLONI50 + SOFTBOX
- LEDRAPTOR BI + Panaura5
- Lightstream Reflector

Same news room simulation with 2 people, but this time with the addition of a tunable Ledraptor dedolight soft light in bicolor version with 1.5m diameter of the diffusor. Allowing fine-tuning of a gentler lighting approach. Mixing structured reflected light and Dedolight softlight. Adding the option of warmer hues (bicolor) or cooler look.

Same news room simulation with 3 people, adding one extra dedolight and a reflector for the third person.

Example of a challenging task for Lightstream TV

About one year ago we lit three news studios in record time. From the beginning to going on the air, everything was achieved for all three studios within four working days.

We did not use the Lightstream TV reflected light system exclusively. We used it in combination with several other dedolight lighting instruments. In this this case, the difficulty was that an entire side of the studios is a window, looking out to a full daylight situation (the open sea). In addition, we had to take care of varying positions (directions) of the anchorman and his guests, and had to take care of the varying lighting situations of the exterior background, from full sunlight to night.

We didn't have much time to document all of this, but here is a first video, explaining what was done and how it was done under the following link.

Find on You Tube

Lightstream TV system advantages

For the lighting of television studios, the Lightstream approach offers very attractive solutions. For some of these installations we have not applied the reflected light practice with total exclusivity, we mixed it intelligently with other light fixtures and solutions from our LED range. Still, the overwhelming majority of lighting was created by the Lightstream reflected light system.

• **Perception of gentleness**

The impression of the talent being lit is described as very pleasant and gentle in opposition to many of the traditional direct light sources used, even fitted with diffusion material, and also in comparison with many multi-LED light sources lighting the talent directly.

The gentleness of the light, arriving at the talent from the reflector, is appreciated without compromising the light quality and the light character.

• **Incredible savings of energy**

Although in some countries the ‚green approach' still doesn't seem to play a major role, the effect of savings of energy with our reflected light system supercedes the already well-known savings that can be achieved by switching from halogen light to LED light.

• Our already efficient parallel beam lighting system, combined with careful use of different reflector surfaces, achieves maximum efficiency. At the same time, it provides a very tunable light character which is perceived as very pleasant.

𝄪	DLED4-BI + DPBA
𝄪	DLED9-BI + DPBA-14
	DLED30-D + DPBA-18
	FELLONI50 + SOFTBOX
	LEDRAPTOR BI + Panaura5
	Lightstream Reflector
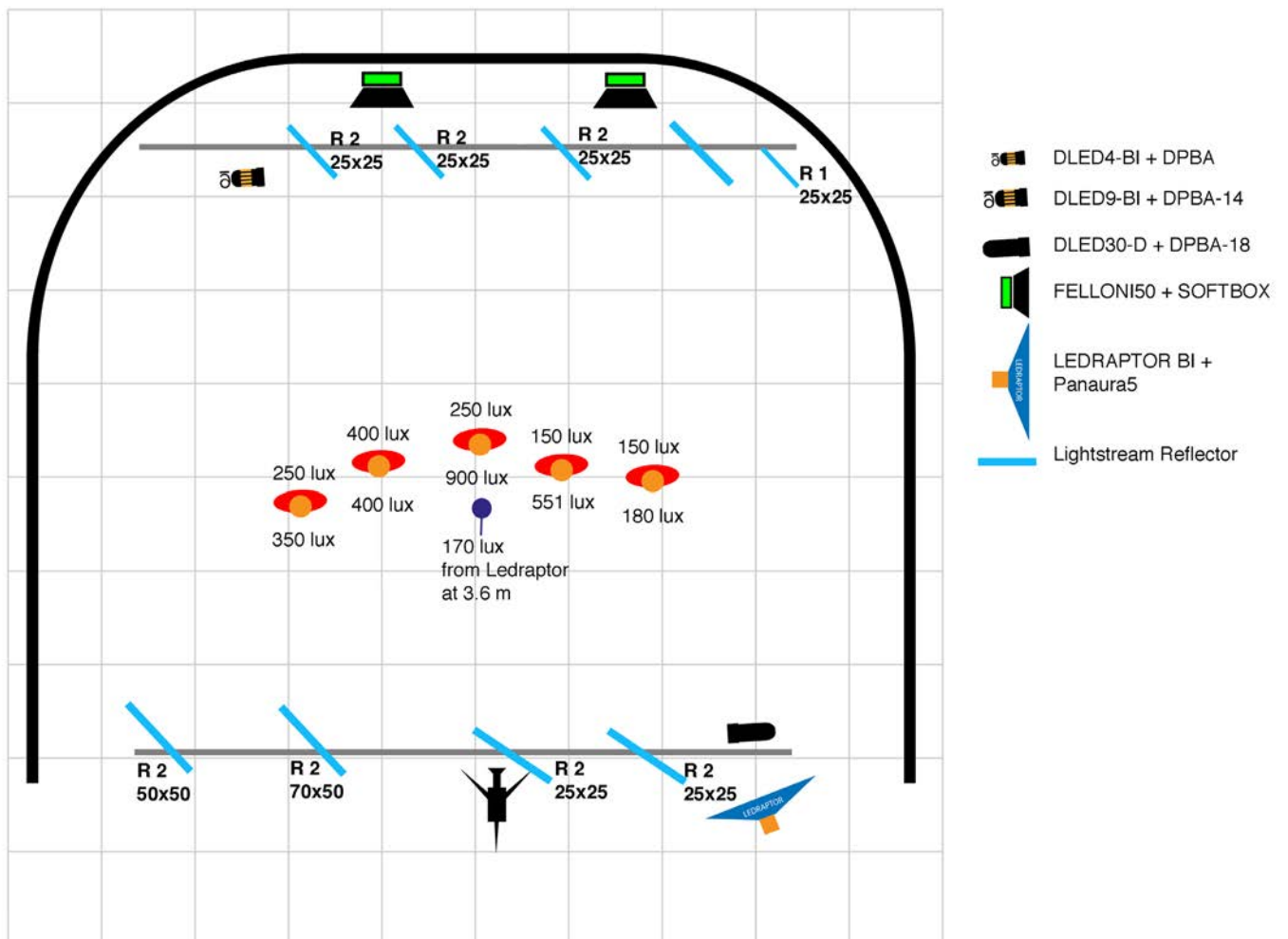
The setup on the prior page, lighting the talk group, is quite interesting, since all the people-lighting is done with simply 2 LED light fixtures. Again, the DLED30, a 300W dedolight LED light, fitted with parallel beam adapter DPBA18, lights from right to left 4 different reflectors, whilst a single 90W DLED9 bicolor with parallel beam adapter (DPBA14) lights 5 reflectors for the back light.

In the background there are two simple Felloni lights with soft boxes pointed downward.

A dedolight LED Ledraptor soft light was gently filling in like melting together in a very subtle way the effects of the reflectors.

The individual people show front light between 180 to 900 lux and back light values between 150 and 400 lux. The Ledraptor adds 170 lux from a distance of 3.6m.

The back wall shows lighting with 2 DLED7 light fixtures, directed at Eflect background effect reflectors for the irregular spotty, and to some extent color-changeable background.

You can see a dedolight logo projected on the back wall from a DLED7 light with DP1 projection attachment.

The interesting fact is that by simple control of one light in front, the DLED30, shining at the 4 reflectors, and the DLED9, 90W light, shining at the 5 reflectors in the background, a total change of mood and lighting effect can be achieved. From moody silhouette lighting to more gentle lighting. Balancing between the reflected lights and the Ledraptor further allows gentler or more dramatic lighting situations, just by moving one slider on the control panel.

All of these simulations are just meant to show the potential of using reflected light for TV studios with great efficiency and very interesting creative potential, perfectly suitable for multi-camera shooting.

This is just a presentation of our system's approach which can be modified and tuned for many different styles and moods, and situations in television studios.

• No heat

It is expected from LED fixtures that they emit very little ‚forward heat'. In the reflected light system the perceived heat is even less, mainly due to the gentleness of the light character achieved.

• Versatility

The Lightstream reflected light system enables to easily light several positions equally and simultaneously in news studios or talkshows when the talents and guests may change places, as long as these places are pre-identified without the need to re-light.

We cannot only light for different pre-planned situations, but we can also adjust on the fly.

• Multitasking

With one light source and the use of several first stage reflectors and re-reflectors it is possible to light a studio with a minimum number of light fixtures and effortless installation. We have a video of the 3 studios which were installed successfully.

• Very soon, we will create some new tutorial videos, explaining the practice, the use and the effect of reflective light in television studios, including the light level efficiency, as well as the variations in light character.
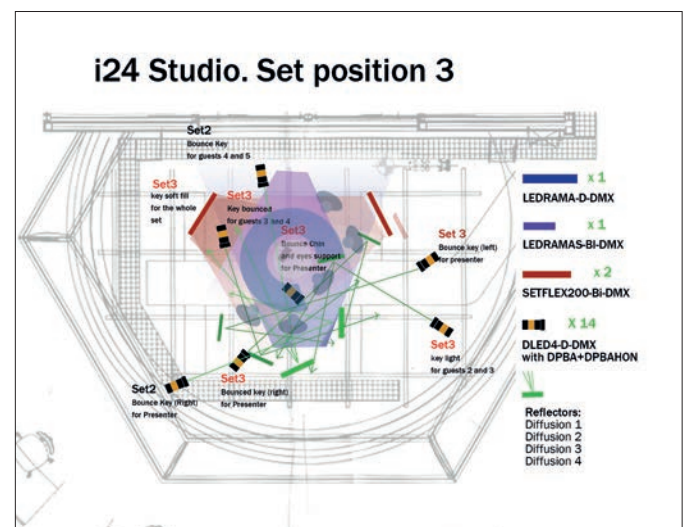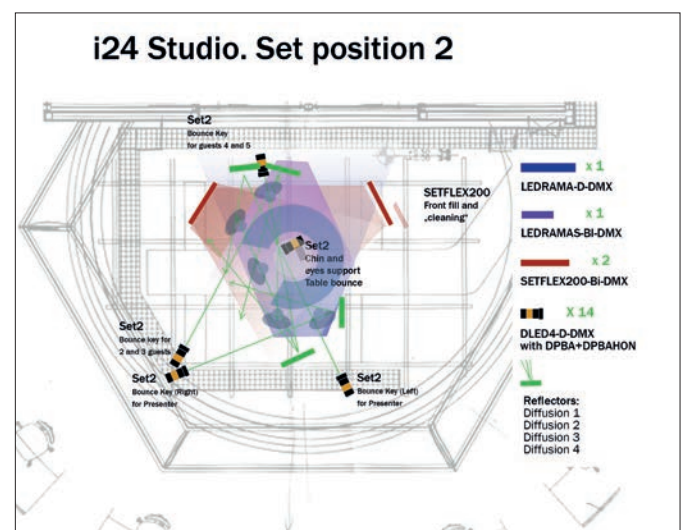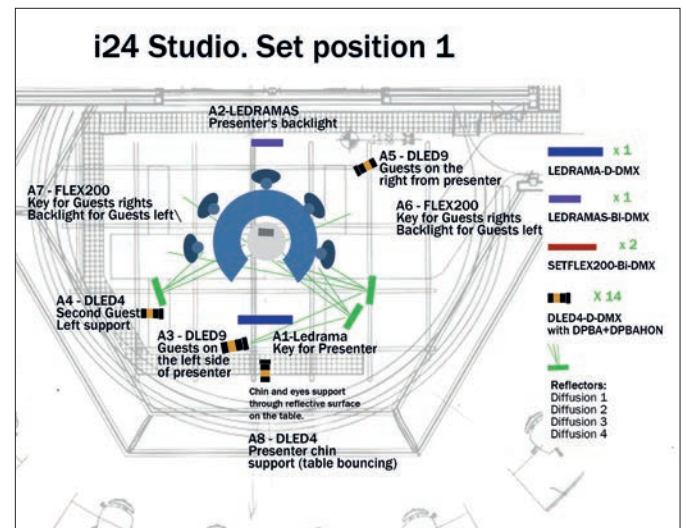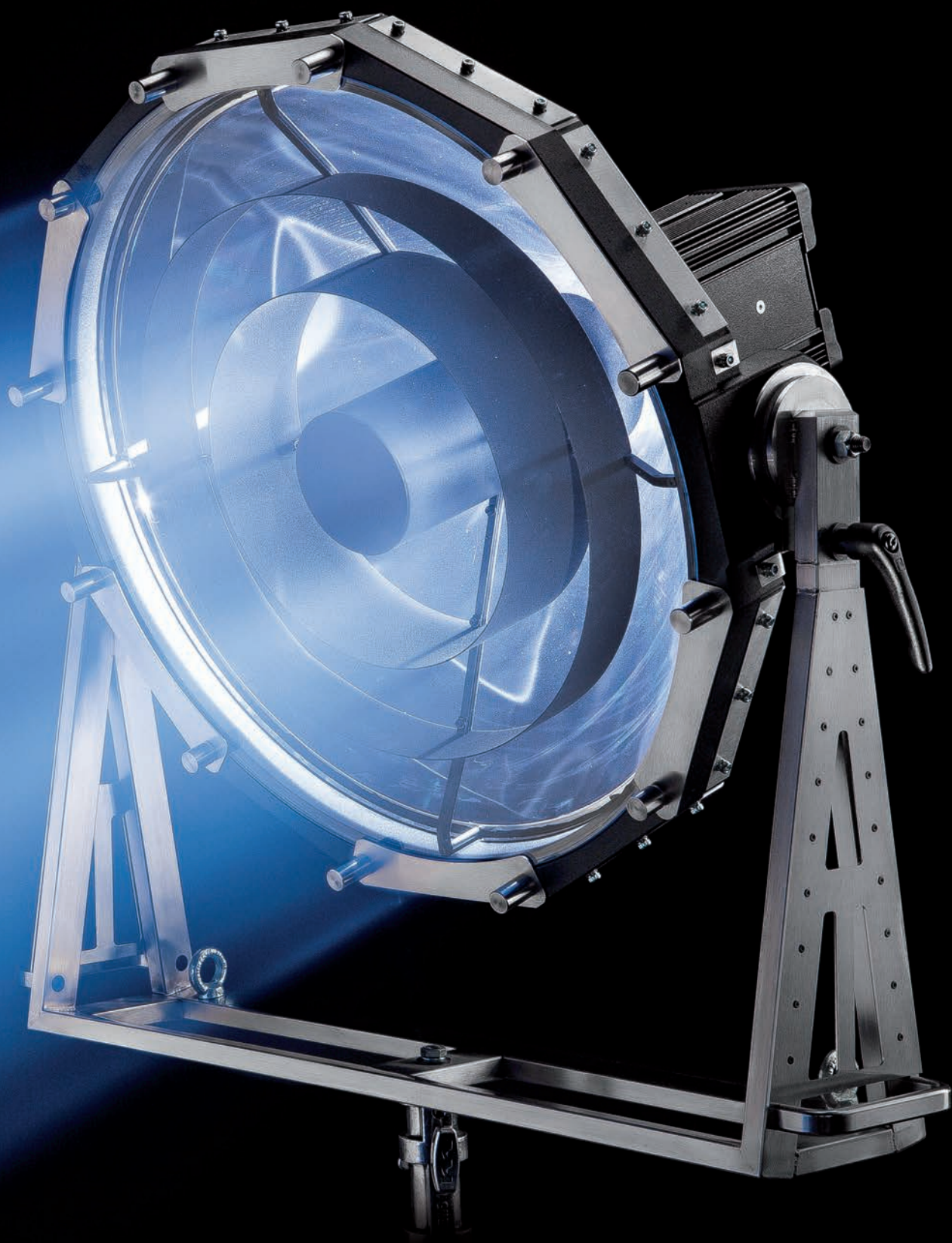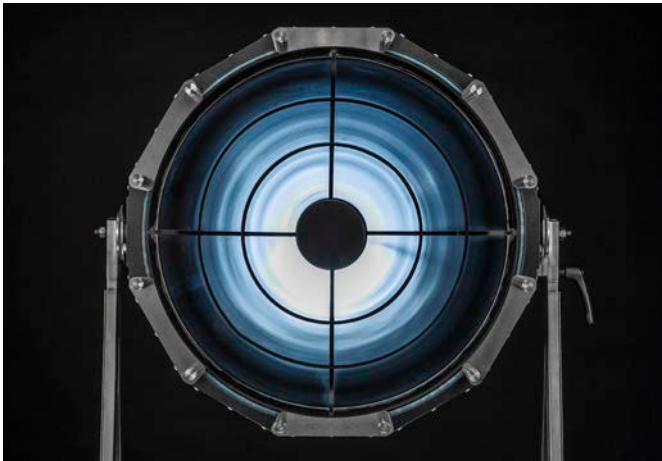
The PB70 is the largest and most powerful of the parallel beam lights, mainly directed at the use in Lightstream Drama applications. Beam projectors have been known in our industry, but this one is different, as much as it offers a very defined beam, and at the same time a homogenous light distribution all across the beam.

The beam has an exit diameter of 70cm, 27.5 inches. This parallel beam light fixture can be used for the appearance of a natural light source, being far away by virtue of its character, and its over-ruling of the square law. For this reason, this light fixture has already been chosen for some major film projects to simulate sunlight because of its natural and unique character.

When operating this light fixture with reflectors, there is a choice of the largest reflector that we currently provide, using a 100 x 100 cm reflector surface (usually the # 1 type) to redirect the light in an opportune direction, without much change to the beam diameter and the beam character, and without causing much noticeable stray light. Especially, when such a large reflector, redirecting the entirety of the beam, is

used, the result is a virtual light source at considerable distance. Thus, talent/actors are able to move in the reflected light, without diminishing light intensity when changing position.

This lighting instrument can therefore be used with a large reflector to redirect the light beam in its entirety, or can be used with a multitude of smaller reflectors, to direct parts of the beam in different angles and directions.

Often, a multitude of reflectors is used for secondary and third reflectors, to change the direction of the light, to change the character of the reflected light, and thus, lighting entire scenes from a single light source. The side effect of such lighting practice is to eliminate a lot of lighting paraphernalia from the set without cluttering the set with many fixtures, lighting stands, flags and other instruments.

Sometimes the entire diameter of the parallel beam gets redirected by a large reflector (1x1 meter), no. 1 type.

Other times, several smaller reflectors share the beam to redirect the light simultaneously to several directions and further reflectors.

The deeper you insert the reflector into the beam, the more light becomes active. Thus, you choose a level of intensity without changing color or character. (You could call this: opto-mechanical dimming)

The Lightstream beam light and reflector systems' great achievement consists in the fact that we achieve all this without altering the color quality or character of the initial light.

DPB70 TECHNICAL DATA

Overall outer dimensions:	92 x 100 x 62 cm
Weight:	49.8 kg (109.8 lb)
Light source:	special design, 1200W metal halide lamp with G22 socket specially adapted for function within the DPB70 light fixture
Power consumption:	1200 W

39.63 " (1,006.65 mm)

36.30" (921.97 mm)

24.46 " (621.19 mm)
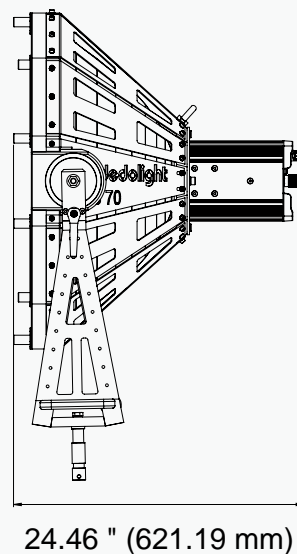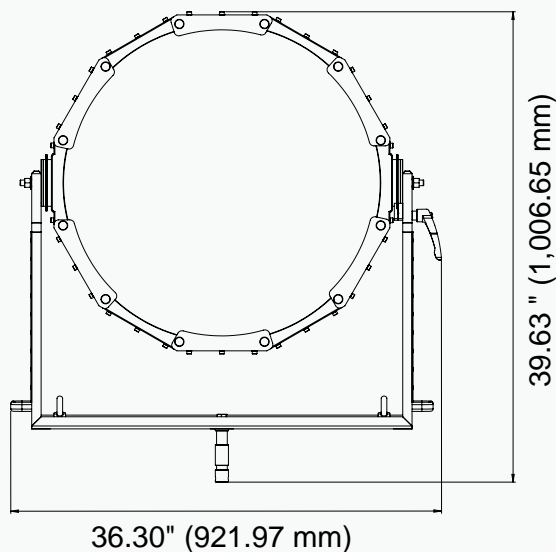
The PB70 light is powered by the dedolight DEB1200D flicker-free ballast, which also allows dimming of the light source up to 40% and operates quietly and can be controlled by DMX signals.

The PB70 is rainproof and therefore suitable for lighting setups in exterior and continuous use, even under adverse conditions.

The beam can further be cleaned from remaining parasitic light by adding a honeycomb, which reduces the light output only minimally.

A filter holder can be added for total or partial filtering with gel filters.

A transport case is available (Code: DCHD70, Euro 930) to receive the light head, as well as the ballast or necessary cabling, and three sets of reflectors, as well as a choice of mounting/grip equipment.

SETDPB70
Complete parallel beam light head with ballast, cable and lamp

DPB70
Parallel beam light head (no lamp)

DL1200DHR-PB
1200 W daylight discharge lamp

DPB70HON
Honeycomb

DPB70FH
Filter holder

DCHD70
Transport case

DEB1200D THE ELECTRONIC BALLAST

DEB1200D Electronic Ballast

- Leading edge technology
- Low heat dissipation
- Silent ventilator remains off during normal operation and operates under high heat conditions only
- Active power factor correction (PFC)
- Funktional range from 90-264 V AC
- Overload protection
- Surge protection
- Short circuit protection
- Auto start function
- DMX control is included
- Rainproof construction
- The ballast can be opened within 30 seconds – like a book
- Full access to all elements and electronics

DPOW1200D Cable
Connection cable between light head and ballast

Technical Data: DEB1200D Electronic Ballast

The frequency to operate the lamp is switchable from normal flicker-free function to 1000Hz for high-speed recordings

Weight:
11.4 kg
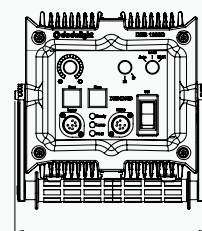
Output Power:
1200 W

Input Voltage:
90-264 V AC *
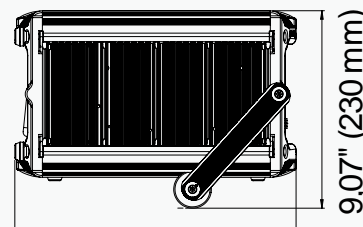
Indicators:
3 Status-LEDs (Ready, Lamp, Heat)

Dimming range:
100 – 60%

DMX-Control
DMX control and auto start mode can be chosen.

9" (225 mm)

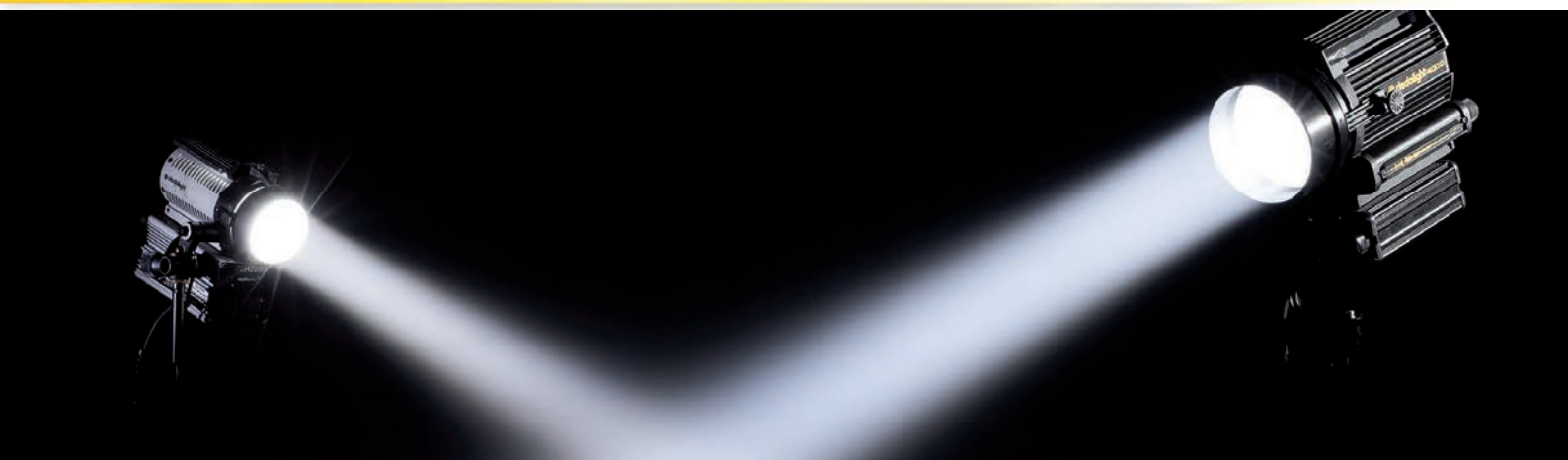9,07" (230 mm)

12,95" (328 mm)

Stand mounting optional with double-holding clamp: DEB1200H
*) functional range including tolerances

Known dedolight facts

Focusing dedolights work with top quality, precisely calculated, non-spherical optics. They were awarded twice by the Oscar Committee of the Academy of Motion Picture Arts and Sciences, and also received an Emmy and further awards for the optical achievements.

dedolights offer a wider focus range than any other professional light (bigger variation between flood and spot angle).

The computer-calculated design of the non-spherical optics allows for perfect light distribution within the beam, whether flood or spot. Within the beam there is absolutely no variation of intensity, no hotspot.

Outside the beam nothing (the ‚clean-beam concept').

Also in light efficiency dedolight surpasses any equivalent traditional studio lighting system (Fresnel systems).

The optics of the basic dedolight light head provide triple the light output in the spot position over the function of traditional Fresnel systems.

Thus, already the original dedolights in spot have a very narrow exit angle and a very far reach, and extremely high efficiency.

For example, the DLH400, our metal halide light has an exit angle in spot of only 4°.

Parallel Beam Attachments

We have now designed additional optics to be placed in front of our focusing dedolights. They are computer-designed, based on our many years of experience in optical design for focusing lights.

Such parallel beam adapters are now available for each and every one of the focusing dedolights.

Our parallel beam adapters have been very carefully calculated to match the performance of the optical system and each of our focusing dedolights. Thus, some of those may have the same appearance and same diameter, but you have to watch out, which parallel beam adapter performs best with each light.
(application table see pages 35-38)

Also, on some of the lights with the smaller exit, you can use parallel beam adapters with a larger diameter (special version). Some of those give more than three times the light output over the maximum performance in spot position.

All in all, the great choice of our parallel beam attachments, suitable for each and every one of our focusing dedolights, enhances the use of reflected light systems in an unprecedented way, unequalled and not to be matched by any optics that may be designed some day for existing traditional light fixtures.

Example

On the DLH400, our metal halide 400W light, which can be run at 575W, without any detrimental effect on the lifetime of the lamp, we have a super high efficiency spot, with an exit angle of 4°.

If we now add to this light our newly designed parallel beam adapter, we again create an exit angle of 4°. So seemingly there is no real difference. The beam is just one tiny bit cleaner and more concentrated, but basically has the same exit angle.

But amazingly, the intensity of the light output now is more than double.
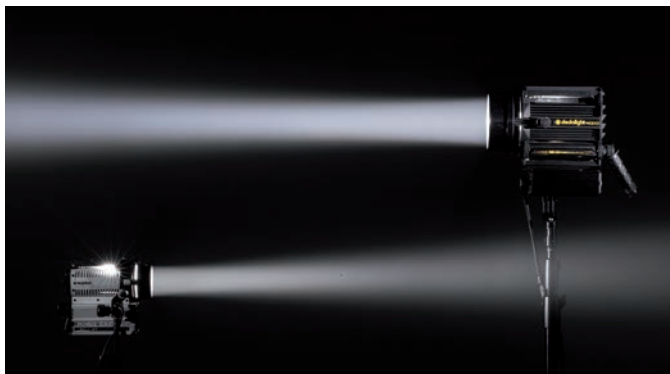
How come? Isn't this unbelievable?

The secret behind all this is that the parallel beam adapters (the additional optics) are calculated in such a way that they function when the light head is in its flood position. Therefore we lose less light, which otherwise, even with the highly developed excellent dedolight optics, to some extent is unavoidable.

DLH400DT	Lux @ 2m	Lux @ 4m	
Flood position	3.240	861	
Medium position (30°)	6.868	1.862	
Spot position	27.565	8.774	2x
Parallel beam attachment (flood)	59.530	17.010	

It may be worthwhile to mention here that conventional studio Fresnel lights in their spot function only provide an efficiency of 6%, as opposed to the original dedolight dual-lens concept, which, from its original optics already achieves 18%. Based on this, the further step of now doubling or multiplying even up to 3 times the light output with our focusing lights provides a parallel beam with unprecedented intensity and perfection which cannot be achieved by using any replica of our system on any Fresnel light with the hope of gaining any efficiency that comes even close. We now have parallel beam adapters for each and every one of the focusing dedolights, from the smallest 20W LED light to the DLED3 (same light exit diameter) but with double the power consumption as LED light, even in bicolor.

Our classic low-voltage halogen light (DLH4) performs extremely well with our larger parallel beam adapter (DPBA714), pushing the light output to 413%! Remarkable, when without parallel beam adapter, the same light in spot position already outperforms traditional Fresnel lights multiple times. From our other focusing LED lights we also achieve a serious increase in output with parallel beam adapters. The 300W DLED30 light with parallel beam adapter is perfectly suitable to work in TV studios, lighting 4 or 5 reflectors in a row simultaneously. *(More details about parallel beam adapters see page 35 and following.)*

The most powerful version that we can offer from our focusing lights is the DLH1200, the HMI (metal halide lighting system) that gives an astounding performance and functions perfectly well with the parallel beam adapter, providing a much smaller and more manageable size than you can have from the large diameter of the PB70 mighty parallel beam light.

DPBA-7

Parallel beam attachment for classic dedolight low-voltage halogen (DLH4), as well as 200 W metal halide (DLH200DT)

DPBA-7HON

Honeycomb for DPBA-7 attachment

DPBA-18

Parallel beam attachment for DLH1200D, DLH1000T

DPBA-18HON

Honeycomb fits DPBA-18

DPBA-L18

Parallel beam attachment for DLED12-D, DLED12-BI, DLED30-D

DPBA-18HON

Honeycomb fits DPBA-L18

for our PARALLEL BEAM ADAPTERS, suitable for use with dedolight focusing light heads

The following tables provide information on all dedolight focusing light heads, with original flood/ spot angle, lux and foot-candle values for spot position of these light heads at 2m and 4m distances.

In the next column you find the same light head performing in flood position, but this time, after the parallel beam attachment has been included.

The column before last shows the increase in light output (over the mere output in spot position) in percentage figures, after inclusion of the parallel beam attachment.

The last column gives codes for the different parallel beam attachments, performing with those particular light heads.

Please note:
Several of these parallel beam attachments by dimension may fit several different types of focusing dedolights, but may not perform as designed.

This table gives you a detailed analysis, which parallel beam adapter matches which light head for optimum performance.

For example, the DLED7D will fit two different parallel beam adapters, one with small diameter L7, increasing the light output between 160%-190%, whilst the other one with larger diameter, the DPBA714 gives nearly three times the light output.

In the third table you also find the photometric data with the large DPB70 light in optimum adjustment, for parallel beam use and long throw.

The position of the light source in the DPB70 can be minimally adjusted, and thus, at certain distances the characteristics can be changed to achieve much higher light concentration for smaller areas. What is shown in this table for 2° spot angle, presents the optimum for homogeneity and long throw, an adjustment that should not be changed.

Product	Type		Flood - Spot angle	spot position of light head 2m distance	flood position 2m + parallel beam attachment	spot position of light head 4m distance	flood position 4m + parallel beam attachment	+% in comparison to spot position	Product code of parallel beam attachment
DLED2-D	daylight	lux	50° - 5°	3075	8750	769	2188	184%	DPBA-L6
		fc		286	813	71	203		
DLED2-BI	daylight	lux	50° - 5°	562,5	3100	141	775	450%	DPBA-B16
		fc		52	288	13	72		
	tungsten	lux	50° - 5°	405	2150	101	538	430%	
		fc		38	200	9	50		
DLED3-D	daylight	lux	50° - 6°	4800	11125	1200	2781	232%	DPBA-B16
		fc		446	1034	111	258		
DLED3-BI	daylight	lux	50° - 8°	1137,5	4550	284	1138	300%	DPBA-B16
		fc		106	423	26	106		
	tungsten	lux	50° - 8°	837,5	3275	209	819	290%	
		fc		78	304	19	76		
DLED4-D	daylight	lux	60° - 4°	5150	17600	1288	4400	342%	DPBA-714
		fc		478	1635	120	409		
DLED4-T	tungsten	lux	60° - 4°	4050	15500	1013	3875	383%	DPBA-714
		fc		376	1440	94	360		
DLED4-BI	daylight	lux	60° - 4°	2900	9500	725	2375	327%	DPBA-714
		fc		269	883	67	221		
	tungsten	lux	60° - 4°	2300	7550	575	1888	328%	
		fc		214	701	53	175		
DLED7-D	daylight	lux	60° - 6°	8500	13800	2125	3450	162%	DPBA-L7
		fc		790	1282	197	321		
DLED7-T	tungsten	lux	60° - 6°	6100	11800	1525	2950	193%	DPBA-L7
		fc		567	1096	142	274		
DLED7-BI (from SN: 1650)	daylight	lux	60° - 8°	6300	18800	1575	4700	298%	DPBA-714 (from SN: 1650)
		fc		585	1747	146	437		
	tungsten	lux	60° - 8°	5400	15000	1350	3750	278%	
		fc		502	1394	125	348		

Model	Light	Flood - Spot angle		spot position of light head 2m distance	flood position 2m + parallel beam attachment	spot position of light head 4m distance	flood position 4m + parallel beam attachment	+% in comparison to spot position	Product code of parallel beam attachment
DLED9-D	daylight	50° - 4°	lux	14200	37500	3550	9375	264%	DPBA-14
			fc	1319	3484	330	871		
DLED9-T	tungsten	50° - 4°	lux	8600	27000	2150	6750	313%	DPBA-14
			fc	799	2508	200	627		
DLED9-BI	daylight	50° - 4°	lux	9250	17300	2313	4325	187%	DPBA-14
			fc	859	1607	215	402		
	tungsten	50° - 4°	lux	7500	13500	1875	3375	180%	
			fc	697	1254	174	314		
DLED10-D	daylight	50° - 5°	lux	28575	50625	7144	12656	177%	DPBA-14
			fc	2656	4705	664	1176		
DLED10-BI	daylight	50° - 5°	lux	14400	23625	3600	5906	164%	DPBA-14
			fc	1338	2196	335	549		
	tungsten	50° - 5°	lux	11664	19136	2916	4784	164%	
			fc	1084	1778	271	445		
DLED12-D	daylight	65° - 8°	lux	23063	33211	5766	8303	144%	DPBA-L18
			fc	2143	3087	536	772		
DLED12-T	tungsten	65° - 8°	lux	18681	26901	4671	6425	144%	DPBA-L18
			fc	1736	2500	434	597		
DLED12-Bi	daylight	65° - 6°	lux	22725	30991	5681	7748	134%	DPBA-L18
			fc	2112	2880	528	720		
	tungsten	65° - 6°	lux	18407	25103	4602	6276	134%	
			fc	1711	2333	428	583		
DLED30-D	daylight	65° - 6°	lux	41625	59625	10406	14906	143%	DPBA-L18
			fc	3869	1338	967	1385		

Flood - Spot angle		spot position of light head 2m distance		flood position 2m + parallel beam attachment		spot position of light head 4m distance		flood position 4m + parallel beam attachment		+% in comparison to spot position	Product code of parallel beam attachment
		lux	fc	lux	fc	lux	fc	lux	fc		
DLH4 tungsten	48° - 4,5°	8700	808	36000	3345	2175	202	9000	836	413%	DPBA-714
DLH200DT daylight	48° - 4,5°	15100	1403	55000	5110	3775	351	13750	1277	364%	DPBA-714
DLH200DT tungsten	48° - 4,5°	14345	1333	49500	4600	3586	333	12375	1150	345%	DPBA-714
DLH400DT daylight	50° - 4,5°	28000	2601	56250	5226	7000	650	14063	1306	201%	DPBA-14
DLH400DT tungsten	50° - 4,5°	26600	2472	50625	4704	6650	618	12657	1176	190%	DPBA-14
DLH652T tungsten	56° - 8°	21304	1980	35152	3267	5326	495	8788	817	165%	DPBA-14
DLH1200D daylight	56° - 5°	84000	7807	178000	16636	21000	1952	44500	4136	212%	DPBA-18
DLH1000T tungsten	56° - 5°	30000	2788	59560	5535	7500	697	14890	1392	198%	DPBA-18

	Spot angle		5m	7m	10m	15m	20m	Product code of complete fixture
DPB70 daylight	2°	lux	106000	54082	26500	11778	6625	SETDPB70
		fc	9851	5026	2462	1095	616	

small attachments - optional for EFLECT

		Flood - Spot angle		spot position of light head 2m distance	flood position 2m + parallel beam attachment	spot position of light head 4m distance	flood position 4m + parallel beam attachment	+% in comparison to spot position	Product code of parallel beam attachment
DLED4-D	daylight	60° - 4°	lux	5150	12600	1288	3150	245%	DPBA-L7
			fc	478	1171	120	293		
DLED4-T	tungsten	60° - 4°	lux	4050	7250	1013	1813	179%	DPBA-L7
			fc	376	674	94	168		
DLED4-BI	daylight	60° - 4°	lux	2900	5250	725	1313	181%	DPBA-BI7
			fc	269	488	67	122		
	tungsten	60° - 4°	lux	2300	4300	575	1075	187%	
			fc	214	399	53	100		
DLED7-D	daylight	60° - 6°	lux	8500	13800	2125	3450	162%	DPBA-L7
			fc	790	1282	197	321		
DLED7-T	tungsten	60° - 6°	lux	6100	11800	1525	2950	193%	DPBA-L7
			fc	567	1096	142	274		
DLH4	tungsten	48° - 4,5°	lux	8700	14500	2175	3625	167%	DPBA-7
			fc	808	1347	202	337		
DLH200DT	daylight	48° - 4,5°	lux	15100	27000	3775	6750	179%	DPBA-7
			fc	1403	2508	351	627		
	tungsten	48° - 4,5°	lux	14345	24300	3586	6075	169%	
			fc	1333	2258	333	564		

THE BRAND-NAME EFLECT DESCRIBES REFLECTED LIGHT FOR CREATIVE ELEMENTS AND BACKGROUNDS

WHO CAN USE EFLECT?

Even the single image creator who travels has to use lighting on the move but still wants to have access to all the creative choices.

- Eflect can also be used for major effect in studios, theatres, shows as an infinite choice of creative effect.
- Table top – we are working on a miniature version of Eflect for the use of table top shooting, suitable for both still photography and moving images

For the smallest crew, the Eflect system can be used to complement our smallest kits of focusing LED lights. You simply add a gooseneck arm with a magnet to attach Eflect reflectors.
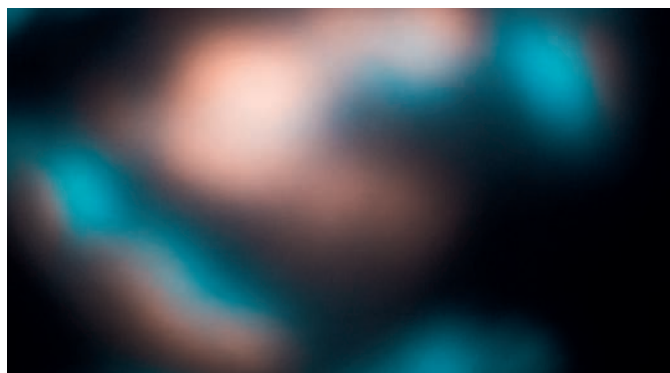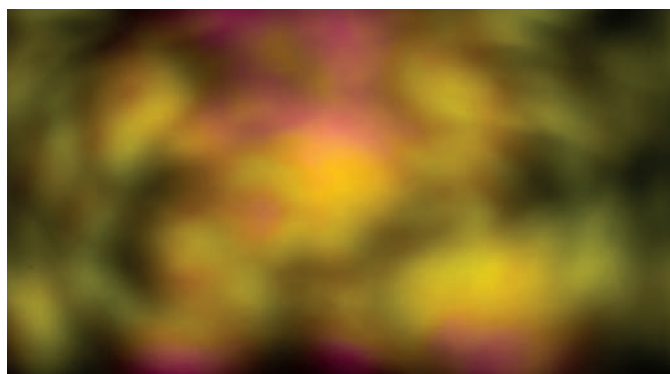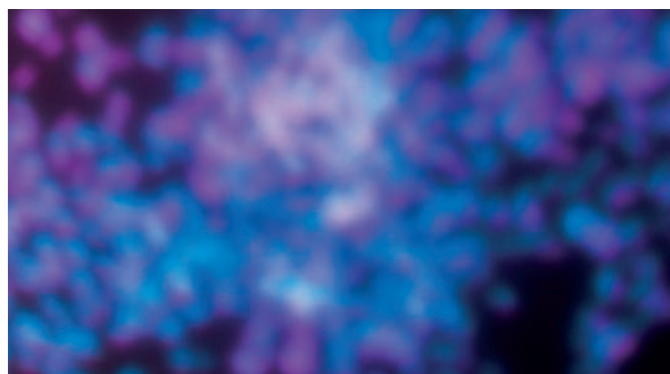
The multi-mirror reflectors exist in different structures and different surfaces, even different surface colors. They can be bent and shaped for a multitude of light effects for projection, not only for the creation of backgrounds, but also for lighting of talents.

Neutral effects can simulate light spots and speckles, reminiscent of sunlight or moonlight, shining through leaf structures of trees and bushes.

Focusing the light head with or without a parallel beam attachment give an incredible diversity of effects. In combination with the parallel beam adapter, the output power is increased and can be controlled as necessary with our reflectors.

There is also a selection of different laminated color filters. These color filters at first appear simple or unusual, but once you play with them, you will find out that you have an enhanced choice of effects that you would have never thought of or have seen before.

Upon the suggestions of several directors of photography we are also preparing another family of very gentle filters to create subtle moonlight effects, sunset effects and such.

One small lightweight pouch contains the lighting stand adapter, the gooseneck as well as a choice of three different multi-mirror reflectors plus a number of effect filters, which can be inserted directly on the light fixture.

All this is just the beginning. More effects, more structures are being experimented with and are in pre-production, but already the existing variety of creative effects is amazing. Everybody who has seen them so far, quickly became enthused because of the ease of use and wonderful results for a small investment.

Without budget restrictions or time constraints to setup, Eflect unleashes your creativity. Your imagination is the only limit.

EFLECT – Major Effects
Several directors of photography and lighting designers have asked us to build the Eflect reflectors in a larger size. Those will then be used with some of our more powerful LED focusing lights, and possibly also with the suitable parallel beam adapter. In principle, it will offer the same creative possibilities but with a greater output power to work on larger sets.

Mini EFLECT for Table Top
This system is still in preparation and my also use a number of reflectors with surfaces similar to the Lightstream Drama reflectors, but in miniature size, including all the flexible multi-mirror effects form the regular Eflect system. As always, we welcome user's feedback and suggestion to expand the system in various directions.

Lightstream Drama and Lightstream TV advantageously replace traditional concepts of complete sets, people and groups of people and are easily adapted to the needs of single or multi-camera work. They are not mere replacements of all the technology. They propose a new and unique way to setup lighting including smooth and gentle touches.

Eflect, on the other hand, as the name indicates, combines reflected light systems with effect lighting into an incredible new variety of effects that can be rolled out by the smallest single-person team with an absolute minimum of additional tools, pulled from a little pouch, all the way to the demanding effects on larger sets.

Eflect works with the selection of newly conceived reflectors, which can be shaped, bent, and most of them work with multi-mirror surfaces.

The system is enhanced by a selection of laminated special filters, which at first sight do not seem to make any sense, but as soon as you apply them, focus the light, change the distance, change the shape of the reflector, you would discover an absolutely astounding variety of new effects that can be very attractive as background creation, even for lighting people.

Many combinations of choices and filters are possible to provide gentle, smooth and subtle effects for an exciting and infinite choice of creative elements.

Basic Kit

as shown in the picture with:
- Gooseneck holding arm
- 3 multi-mirror reflectors
- 5 laminated color filters
- Transport pouch

EFLECT Table Top

The Table Top Eflect line will consist of very small reflectors, specific tools and mounting devices to answer the requirements of very limited space. Additional effects required only for table top are in research & development.

All of these different tools, practices and applications will be described in the following chapters. We are also offering a selection of tutorial videos, explaining the tools and various practices.

REFLECTORS AND ACCESSORIES

SLR25-4   Lightstream Reflector Kit - 25x25 cm

1 blue bag for mounting accessories

1 carrying bag for four reflectors

2 reflector locks

2 articulating arms

2 D-clamps

SLR50-4   Lightstream Reflektoren Kit - 50x50 cm

1 blue bag for mounting accessories

1 carrying bag for four reflectors

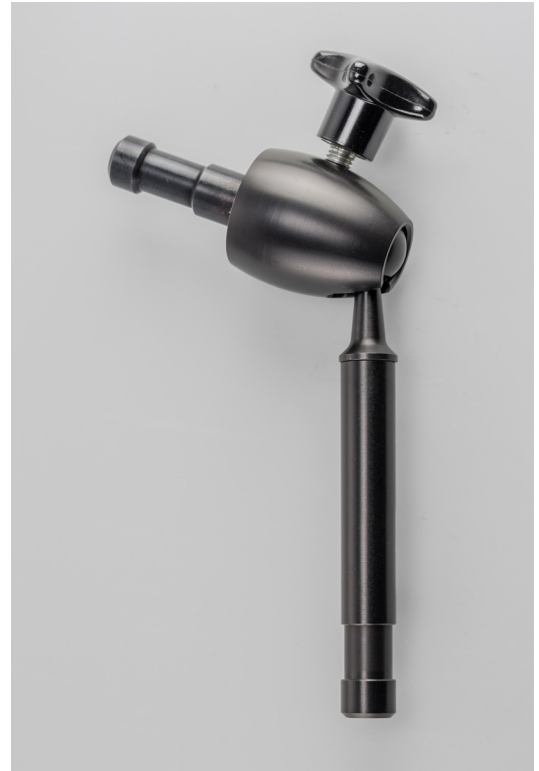2 reflector locks

2 articulating arms

2 D-clamps

Front surface: Reflector #1

Rear surface: Reflector #4

Motorized/DMX controlled versions in preparation

MOUNTING DEVICES AND MOUNTING ACCESSORIES

DLGA160

Articulating arm with 16mm stud on each end.

DLR-LOCK

Sliding lock, to attach and lock Lightstream reflectors. Works with DLGA160 arm.

CLAMP-D

Clamp with 1/4" internal thread and hex. receptacle, fits diameter from 25 mm (0,98") to 52 mm (2")

MOTORIZED CONTROL

Motor: 2 axis

WG-FW-AA6

Double articulated
arm 3 section

DLR-MCB

Control box for motorized sliding locks.
2 outputs. Comes with DLBCA2-V belt clip,
DDCC-DTAPS cable and DLPS-12.

WG-FW-CC11

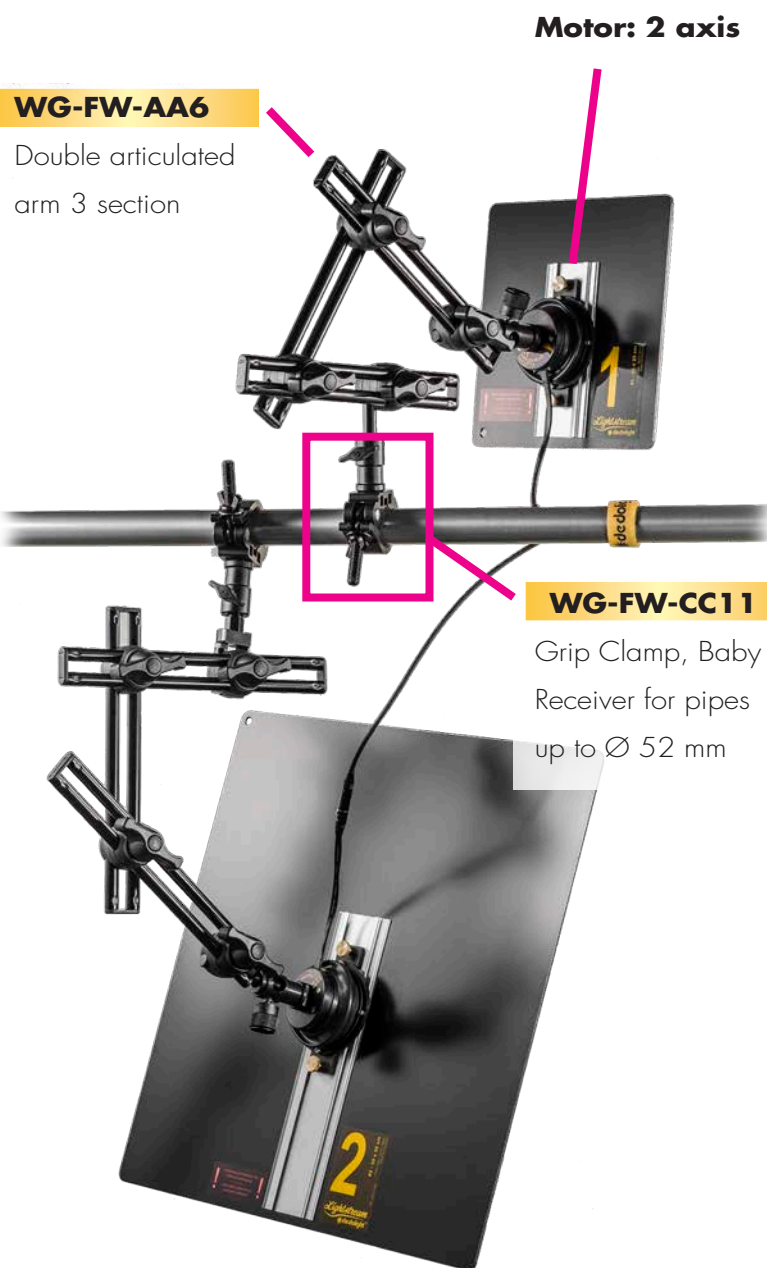Grip Clamp, Baby
Receiver for pipes
up to Ø 52 mm

DLR-MLOCK

Motor controll attachment for
reflectors: 50x50 cm, 25x25 cm,
7x10 cm - controller for 2 motors

DCAB4MINI-3

cable long - 10m

DCAB4MINI-10

cable short - 3m

SOFTBAGS FOR THE REFLECTORS

DLRP50 1.

Pouch for 50x50cm reflectors

DLRP25 2.

Pouch for 25x25cm reflectors

DLRP10 3.
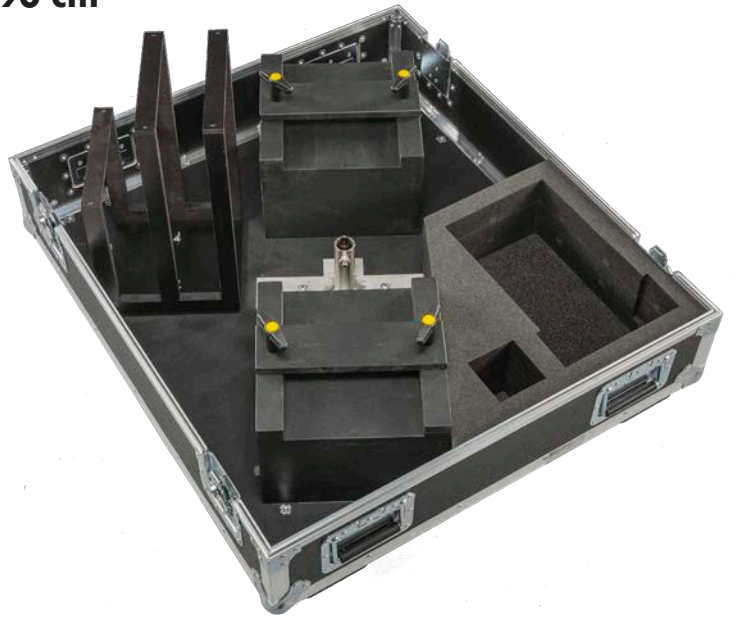
Pouch for 7x10cm reflectors

The Hard Case for the PB70
width: 80 cm x height: 104 cm x depth: 90 cm

for PB70 light head, 3 soft bags for
reflector sets, Ballast DEB1200,
head to ballast cable, spare lamp

IAN MURRAY

British DOP
His views on Lightstream

Ian Murray is a professional cinematographer; he has worked in the TV and film industry for over 22 years and has carved a distinguished career in commercial advertising production over the last 20 years.

Ian suffered with dyslexia and truly found his forte when he enrolled with the London College of Printing and studied and passed the BA in Film and Video with the only Distinction in his year.

He is best known for the 250+ commercials short films and music videos that he has shot over his commercial career. During this time he has become an industry expert on film and photography lighting and has taught these subjects in different seminars and workshops for both students and professionals.

Of the hundreds of commercials, short films and music videos he has shot many have earned special recognition and he has become a sought after Director of Photography for a broad scale of productions. From large-scale, multi-camera, multi-unit global campaigns to the precision of table-top model animation, Ian is sought after and constantly in demand. He manages not only to develop his general work but has also gained access to the exclusive areas of hair and beauty, food and drink and sports photography and filming. He is an industry approved hair and beauty specialist and an approved food and drink specialist.

More recently He has begun mentoring and training individuals within the industry. He has taught film lighting techniques and has given lighting seminars and workshops for both students and professionals.

Dedolight LIGHTSTREAM, a reflected light system.

Creating a virtual environment of reflected light to reproduce nature in all its complexity and beauty.

Reflected light

In day to day life we visually experience the world through waves and particles of light. Originally emitted from a source, the sun for instance, and then cascading out in a multitude of reflections illuminating as they go. We see light reflected everywhere, from every object we perceive, to every environment we experience. In essence, light is reflecting back at us, constantly shaping our experience and consciousness.

Therefore, when you see such as a beautifully lit day time room, you are seeing the playing out of a combination of reflected light, sometimes with the addition of the direct or diffused sun rays, sometimes just reflected light in all its varieties.

A chorus of light - First analyse the light

You can evolve your awareness to light by understanding the subtleties of the multitudes of this reflected light.
I find it a useful tool to dissect the different characteristics of light in the following ways:

First notice the direction of the light and its primary ‚character' in terms of hardness/softness. Unless you are in a black studio with a single light source you will always be dealing with a primary illuminating source and a multitude of reflected light waves, all with their individual character. These make up the overall ‚chorus' of the light. You will

need to be able to ‚detect, dissect and consider' all the individual influences of the light, it's like being a detective. (On the human face look at the nose shadow and the eyes for clues.)

Once you have determined the direction and primary character, go deeper and become aware of the following.

• What are the colours present in the light, how do these colours shift and relate to each other.
• Become sensitive of the ‚personality of reflection'. In other words, how the image of the source, in this case the reflector used, is cast onto the object/subject. For instance, a silver reflector creates a silver cast on the skin of the subject.
• How parallel are the shadows - if there is sunlight, then they will be parallel, if a closer source is used, then they will become divergent.
• What are the additional textures and movements, if any, of the light? For example tree branches or curtains creating a breaking-up and colouring of the light rays.

All of these characteristics contribute to the story that the lights convey, or, as I like to think of it the ‚narrative of the light'.

For instance, by studying the way a certain landscape at a certain time of day would affect the light reflecting into the window of a room, we deepen our understanding of how light plays out. In turn, this fuels our ability to produce images that have a richer atmosphere, subtly communicating the time of day, location and intended mood, thus adding to the storytelling of a given scene.

A virtual landscape of light

We often need to recreate the light that would exist in nature, at a certain location, during a certain time of day. We can imagine, in effect a ‚virtual landscape of light'. We can ask ourselves, where is the sky the brightest, how does it graduate from light to dark and with what color shifts. What buildings and trees are around and how are they reflecting light, what are the buildings made of. For instance, a red brick housing estate with large windows reflecting the sun or a single aged concrete tower block hanging in the cityscape of a cloudy sky… will produce their own signature of colours, textures and characteristics.

How to re-create a chorus of light: The cinema and photographic reflected light system: LIGHTSTREAM

Now we have discussed the richness and depth of reflected light that exists all around us. Our job as filmmakers and photographers is to try and recreate its subtle beauty and texture in order to tell stories and create striking photography.

In the following text I will explore the LIGHTSTREAM and how it compares to the more traditional ways of lighting. Of course all cinematographers are using reflected light every time they place a light, sometimes more explicitly when ‚bouncing' light, sometimes just by the physics of the light reflecting around the environment.

I have been a fan of the quality of reflected light for most of my career, experimenting with different reflective surfaces, silvers, pearls and white.

I have not, however, been able to improve it more than the standard film practices of bouncing light onto crude surfaces using traditional lights.

LIGHTSTREAM, however, is a full system of reflected light application and it's going to change the way you view film/photographic lighting, deepen your awareness of light and aid greatly in the way you approach the task of film lighting.

The tools

With LIGHTSTREAM the light is channelled from controlled parallel beams onto a sequence of specifically designed reflective surfaces. This system fully integrates and enables a mastery and efficiency of lighting never imagined before. Dedolight have custom built and adapted a whole range of lights and reflectors that are specifically designed for this system. They can be used to light everything from the largest film set to the smallest product shot. This greatly facilitates your ability to beautifully light a subject with precision and speed.

Before moving onto the actual tools of LIGHTSTREAM it is important to understand a couple of key concepts of light that relate to the Dedo parallel beam light, namely: ‚the inverse square law'[**] and ‚virtual light distance'[***].

It must be understood that a parallel light source produces a virtual light distance far greater than the actual distance the light is from the subject. As mentioned, when you evaluate shadows, you look at how parallel they are to determine the distance of a light. Therefore, if you analyse the exit angle of the parallel source and plot it back until it converges, that is its virtual light distance. This is a key component to producing convincing sun rays and a naturalistic light.[****]

So let's have a look at the tools: The central lights of the system are the PB70 (parallel beam 70cm) and the PB30 (parallel beam 30cm, its little brother).

PB70

PB70 allows for the purest approach to the LIGHTSTREAM system. It produces a very powerful, broad, parallel beam of light, powerful enough to mimic the sun and broad enough to allow multiple reflectors into its path.
It is manufactured to the highest standards, producing a highly efficient output of light*. With consistent light across the beam, free from stray light and only producing moderate heat, even when switched on for several hours. There is no other light fixture currently made that can outperform the PB70. As a traditional film light, it is simply state-of-the-art. However, it has been designed as the centrepiece of the LIGHTSTREAM system, and as you will see, its features support a whole new way of lighting.

Only 1.2kw of power, but a far higher light output

PB30

The PB30 is a smaller version of the PB70. It has a 30cm reflector as opposed to the 70cm reflector of the PB70. It maintains the same power output with its 1.2k bulb; therefore, it's fantastically powerful for its size. The only drawback is, that due to the smaller beam size you cannot fit as many reflectors in its path as with the PB70.

Dedolight 400 and 200 range

For supplementing the PB70 and PB30, or for minor setups the smaller lights in the range can be used.
By modifying these lights with a ‚parallel beam adapter', the light beam is channelled onto a reflector more efficiently with more precision and intensity. These adapters almost

defy physics by producing up to 3 times more intensity of the light you would get if you simply ‚spotted' the light into the reflector. This is due to its lens design.

The Parallel beam adapters are currently made for the following Dedolight lights:
400 Series
200 Series
Classic Series
LED Series

This produces a comprehensive range of smaller lighting fixtures, that will fit into the most cramped location or compromised situations.

Which method you choose for the most part will be determined by the application.
For example, when dealing with lighting through set or location window, you will probably want to start with the PB70/30 outside the window. In most cases you will be able to light the whole room from just this one light. Sometimes the need to supplement the light may arise, this can be done by channelling the light onto another reflector from the PB70/30, or using a smaller fixture in the room and channelling that onto its own reflector.

Therefore there are 3 approaches to using LIGHTSTREAM:

1. Using the PB70/30 with a multitude of reflectors.
2. Using smaller individual lights, the 400 Series, the 200 Series, or LED series with their parallel beam and respective reflectors.
3. A combination of the two.

Now let's move onto the reflectors

Reflectors are the light producing, redirecting and sculpting elements of the system. They can precisely define the quality of light and adjust the distribution and intensity of light.

The reflectors are precisely measured reflection mediums, constructed from aluminium panels with reflection-enhancing hi-tech coatings. This ensures reflection values between 78% and 96%.

They have been designed to define the light distribution and the light modulation precisely.

The characteristics of the reflectors are consistent. Independent to the surface area illuminated.

Currently the reflectors come in 4 grades from soft to hard, and in 4 sizes; 1 metre square, 50cm square, 25cm square and 10cm x 7cm. They are mounted onto a slide and lock bracket that allows precise positioning into the beam of light. Once the position is found, they lock with a twist clamp.

The four grades range from soft reflectors, producing diffused yet structured light, to hard reflectors, redirecting the light precisely, without changing its shape or diffusing it, with only 3% loss of intensity.

To fully understand the versatility of these reflectors, you need to also define them in terms of the exit angle of the light. Hard reflectors, having a narrow exit, concentrating the light within the beam, and soft reflectors with a wider exit, scattering the light and widening its influence. The soft reflectors have an extraordinarily high reflectivity, however, since the light is spread over a larger area, the intensity will be reduced.

Reflector No.1 is the light redirecting reflector, it has a narrow light exit, maintaining the parallel beam. Light can be channelled around the set with minimum fall-off or scattering.

The No.1 reflector produces a convincing sun light with clear, hard, parallel shadows and no colour fringing.

It should be noted that the No.1 reflector is not a mirror. A mirror changes the reflection of the source, influenced by reflecting directly the surface flaws of the mirror, whereas the No.1 reflector maintains the homogeneity and character of the source, just redirecting it, not changing it.

Reflector No.2 has a wider exit angle, 12 degree. However, the reflected intensity remains at 95-98%. It is a very useful reflector for redirecting the light onto another reflector with a larger surface area.

Reflector No.3 has an exit angle of 50 degree. This reflector is gentler, with the same amount of light reflected, but disperse over a larger area.

Reflector No.4 is the gentlest reflection with an angle of 95 degree. Close to styrofoam in softness, but more structured.

It is worth noting that the virtual distance is fully in effect with reflector No.1, but when the next reflectors with subsequent reflections are of the type No.2, No.3 or even No.4, they seemingly soften and have a larger angle of light exit, and the effect of the virtual light source is quickly diminished; the light is not being redirected, but scattered with the reflecting surface, and the reflecting surface becomes the light source. By the time you get to reflector No.4, there is not really any noticeable difference between the virtual light source and the front surface of the reflector.

The intensity of light is determined by merging the reflector into the light beam. If you put the reflector all the way into the light beam, the entire reflector works with maximum light, whereas, if you insert only part of the reflector into the light beam, less light will be reflected.

Regardless of how much light hits the reflector, the colour, direction and spread derived from the surface remain the same. The shadow appearance (with regard to the hardness/softness) proportionally changes, depending on the size of the source, or, in this case how much of the reflector is illuminated.

When the LIGHTSTREAM reflectors are used in sequence, another dimension of possibilities opens up.
By selecting a source reflector by its exit angle, you can manipulate the amount of the target reflector that is illuminated. By adjusting the portion of the target reflector illuminated, you are determining how hard or soft the light produced is.

Therefore, your choice of reflector and the amount of light you allow onto it, determines the quality of the light. Allowing precise control and fine adjustment.

Light distribution and modulation can be adjusted precisely. Merging into the light beam and locking off precisely. You have never had so much control, speed and precision in placing lights, allowing for quick switching between soft and hard light reflectors. You have a full range of lighting

textures at your fingertips. You simply select a reflector and determine how far to merge it into the beam, and where to channel its light into the set.

Moving away from the artifice of film lights

When we view an object, we see light reflected back at us. Therefore, you could say that light does not come from the light fixture, light comes from the object. The light fixture is something the audience should not be aware of.

Therefore, as filmmakers, we want the audience of our work to feel the emotions of the light without being aware of the equipment we use to shape it.

Film lighting fixtures usually require further manipulation in order to recreate natural looking light.

As a result, we usually have to substantially modify the light. It is this modification or ‚shaping of the light' that is the essence of film lighting. However, traditionally it requires the use of a wide variety of additional equipment. It is time-consuming, expensive and restricting to both the director and actors.

The PB70/30 produce an exceptionally clean parallel beam of light. This has many advantages over traditional film lights.

To start to understand the benefits of this system, let's look at one of the most difficult tasks of a film light; to imitate the qualities of sunlight.

By virtue of the sun, being a far-away incandescent ball of hot gases, it produces a certain quality of light. By the time it reaches the Earth it's relatively small in size and thus becomes a specular point source of light. It produces hard, clean, parallel shadows and is consistent in light intensity due to the inverse square law*, with no reduction or ‚fall-off' of light intensity over the distance on the Earth it illuminates.

To create natural looking sun light, a film light needs to imitate these qualities. DOPs will traditionally use a very large powerful light** far away from the film set. The further away the light is placed from the subject, the harder, cleaner, more parallel the shadows and the less ‚fall-off' of light intensity.

This comes at a cost, a powerful light set back requires a large noisy generator, cherry pickers or heavy stands and additional crew. All of this takes time and money; however, the biggest drawback from a lighting perspective is that it will not allow for lighting precision. It is very hard and time-consuming to get this light positioned and shaped.

The LIGHTSTREAM is a completely unique approach to creating natural looking light, it overcomes these problems is a beautiful and elegant way.

The PB70/30 generate a clean parallel beam of light at its source, producing crisp, clean parallel shadows.
This light beam defies the inverse square law, and its fall-off is far less than a traditional film light. This, along with its virtual distance means that it can be used a lot closer than a traditional film light. it does not have to be so big and powerful to produce convincing sunlight with minimal light fall-off.

This beam is projected into a series of reflectors, modifying the beam further and creating even cleaner more natural-looking light rays.

Furthermore, this effect of natural sunlight is further enhanced by the added ‚virtual distance' *** created by reflecting the light.

The PB70/30 are very quick and easy to set up, both lights can be used facing directly up from their flight case, you just wheel it in, take the lid off and power it up from a domestic wall socket.

The light is far easier to move and shape than the traditional method. After all, a reflector in someone's hand is far easier to move than a larger, heavy light far away.

In essence, the PB70/30 produce the most efficient, precise, natural looking light I have seen from a ‚film light', producing a purity of light that the best lighting tools currently available struggle to imitate.

Less equipment, more lighting precision
To get the most effect from the LIGHTSTREAM system, and for the majority of sets or location lighting applications you would usually want to start with either the PB70 or PB30 light. And then supplement it with the smaller lights if needed.

Often times placing them outside the window, firing it directly up into the reflectors. Using multiple reflectors to channel all the different qualities of light through the window into the room.

The control of the beam and the shaping of the light is happening at the source, with the selection of the reflector and its position in the beam of light. This is a really important point. And it makes a huge philosophical and practical difference to the approach of lighting a film set. Therefore, all the equipment traditionally associated with modifying the light, stands, flags, nets, floppies, sand bags etc. is not needed. In fact, very little equipment is needed in

the room at all, just maybe additional reflectors to redirect the light, thus, creating great freedom for the director and actors.

Zoning the light

The LIGHTSTREAM is a simpler way of lighting, producing a more complex textured result. Resulting in motivated light with more complexity and shape, but delivered in an effortless simple and natural way.

The light can be built up in stages with unprecedented precision. By virtue of the control and ease with which the light is directed without spill and mess, you can zone the light, creating more depth and texture, from hard, naturalistic sun rays to soft, yet structured light. You are able to produce the most intimate touches of light, from broad strokes to fine detail. You can build up the light in layers or ‚zones', defining individual areas of the set.

You are only dealing with a single beam of light, the multiple reflectors do not produce double shadows, as would happen with multiple lights, and a rich tapestry of light textures is created, individually structured and zoned into the film set.

The LIGHTSTREAM, when used with the PB70/30, is particularly suited for recreating convincing sun and consecutively a multitude of additional lighting textures with just the one source of light. The characteristics are so striking - when you first see the LIGHTSTREAM at work it is how unlit yet 3 dimensional the set looks. It is effortlessly naturalistic with shape and structure to convey the three-dimensional reality onto a two-dimensional screen, you can really feel the presence of the light without feeling the presence of ‚film lights'.

Dynamic light

When assessing a hi-fi speaker's ability to reproduce sound, the term ‚dynamic' is used to assess the ability of the speaker to switch from loud to quiet with a minimum of distortion. We could borrow this term and apply it to the ability of a lighting fixture to blend from hard light to soft with a minimum of distortion. For instance, unwanted or double shadows, colour fringing, in fact any mechanical artifice that give away its film lights being used to illuminate.

Controlling the degree of hardness and softness in lighting a scene, and how they interplay is fundamental to the success in creating depth shape and atmosphere. What is unique about the Dedolight LIGHTSTREAM system is its ability to produce this type of dynamic light effortlessly and in the most natural way.

The sophistication of combining the light and building it in layers, allows a multitude of different lighting textures. Rather than a soft light as sky and a hard light as sun, the hard shaft can literally be placed within the soft shaft. A single source with a rich texture variation of soft and hard.

From the polarised light of a hard reflector with a mirror to the broad beam of the PB70, producing an even spread of light over the surface of a soft white reflector. This subtlety and control of the dynamics of the light is unique to this system of lighting.

Time spent lighting not rigging

The great satisfaction with this system is that the vast majority of the time is spent actually lighting. Moving and shaping light around the set. Not running cables, placing stands and flags. Traditionally, a Director of Photography will spend 80% of his time waiting for lights to be powered and placed, only then can a decision be made on the aesthetics, usually with traditional methods. It is the last 10

minutes that the finessing and actual shaping of the light happens, and it is the most pressured 10 minutes, often with the director and producer wanting to start shooting.

With this method, you are finessing the light as soon as you place your first reflector, often only having to place a single light.

Light channels: rather that cables

By projecting the light across the room and catching it in a secondary reflector. You are in essence creating channels of light, dispensing with the need to place additional light fixtures and run cables. You simply channel the light to where you want it. Spend your time finessing the light, not running cables and placing stands.

Colour: Quicker colour control

These benefits of control speed and precision can also be applied to the colouring of the light. Because of the cool running of the light, the gels can be placed directly on the front glass. In most cases you will be firing the light straight up, therefore, the gels can quickly be placed on the glass and moved around with ease.

Control colour with simple gel placement:
Simply by placing small pieces of effect gels onto the glass of the PB70/30 to get the right graduation and offsetting the reflectors we can go from an iridescent tropical summer morning light to a northern autumn twilight. It has never been quicker to make colour changes, with dramatic shifts of time of day and overall mood.

This is revolutionary, being able to colour the lights quickly is a huge benefit. In traditional methods, with a light of this power you would need to have a separate frame and stand to place the gel away from the heat of the light, even then the gels burn through and discolour. The frame takes time to make up and used a lot of gel. The DOP needs to be sure he/she will use it to commit to such expense and work. However, with LIGHTSTREAM you simply take small pieces of gel and move that around the surface of the light until you have the colour composition you want. This method works best with either Polyester or even better Polycarbonate (for instance the Rosco Super Gel). The Acetate gels being the least resistant to heat. Dedo is in the process of conducting tests to clarify the amount of time they will withstand the heat.

Because of the method of placing the gels on the area of light that covers a certain reflector, there is nothing stopping you from offsetting the gels to only cover a proportion of a certain reflector or covering several reflectors at the same time. It is just down to the size of the piece of gel cut and where on the glass it is placed.

You can therefore select and ‚zone' the individual reflector into different colour temperatures and effect colours. This speed and ease of colouring light generates a playfulness that allows the DOP to try things out and take more risks with perhaps bolder colours or unique colour combinations. I believe, part of the new wave of cinematography is a more sophisticated use of color, and this system supports that development also.

In Summary

For a creative individual, you can now understand that the control and freedom that is afforded by LIGHTSTREAM is unprecedented. dedolight have devised a system that brings a purity and immediacy to lighting, stripping away fixtures and placing the light literally in the palm of your hand, removing obstacles and offering a higher level of intimacy to produce a more naturalistic light.

An intimate relationship with light is essential in crafting nuanced stories. It is my belief that a small commitment to learning this system will empower the filmmaker and photographer, unlocking a set of tools with limitless possibilities.

Foot notes:

**The inverse square law (a physical law that states that light falls off in intensity, disproportionately to the distance of the light to the subject.)

***Virtual light distance is the distance a traditional light would need to be from the subject to match the fall-off and shadow characteristics of a dedolight parallel beam light. This is calculated by tracing the angle lines of the beam back to a point where they converge.

It should also be noted that the virtual light source is further increased when the light is redirected with the hard reflectors. This can be measured by the sum of the light passing from the fixture to the reflector, then onto the subject. In other words if the reflector is 10 feet from the source and the subject another 10 feet from the reflector then the ‚relative light' travel is 20 feet, thus reducing the effects of the inverse square law.

However, this effect depends on the surface of the reflector. The harder the reflector, the more the virtual distance is in effect. With the soft reflectors the virtual light source is not relevant, the surface becomes the source with no indication of the distance it travels to get there.

****The traditional hard light used is either an open face light, PAR or Fresnel lens light, although all these lights have their place and are very useful in terms of control and function. They are often too hard to look completely natural in most situations and too soft to look like convincing sun rays.

The closest I ever got to convincing sun rays with artificial light was the old carbon arcs. However, since they are not available anymore, the next best thing I have found are the Mole Richardson's mole beams, producing a parallel beam of hard light, similar to the PB70. They use a massive parabolic mirror to focus the light into a parallel beam. However, the optics and efficiency are nowhere near the **dedolight** PB70/30 and colour fringe appears quite badly on the edge of the beam, and the homogeneity of the beam is very inconsistent.

SQUARE LAW

The inverse square law applies to point light sources or Fresnel lights and focusing lights:

Double the distance – one quarter of the light.

When the light source is close to the talent, this will produce the effect of changing light intensity as soon as the talent moves closer to the light source or further away.

In order to overcome these effects, we have several ways and thoughts:

1 – Place the light source far away from the talent, thus minimizing the relation between the actual distance covered by movement of talent and the change of light intensity.

When lighting indoors, there may be limitations, as to how far away you can place the light source.

2 – Indoors, with space limitations, you can use a hard reflector on the ceiling to create a larger distance between light source and your talent.

Please be aware, that with soft reflectors this effect cannot be achieved.

3 – The narrower you can spot your focusing light, the more you are creating a virtual light source, which is behind the actual light fixture, thus increasing the active distance between the virtual light source and your talent, which also minimizes the effect of intensity change caused by talent movements.

4 – Using a parallel light, the virtual light source is effective very far behind the actual light fixture – see pages 14-15, overcoming most of the ill effects of the square law.

5 – For focusing lights, Fresnel lights and such, you can use half scrims or graduated scrims to minimize the unwanted effect of the square law.

6 – We are the only ones who offer graduated grey filters for light fixtures, which also work wonders to eliminate the ill effects of the square law.

7 – For large areas of light emission, be it soft lights or large light-reflecting surfaces, the square law becomes less active at close proximity.
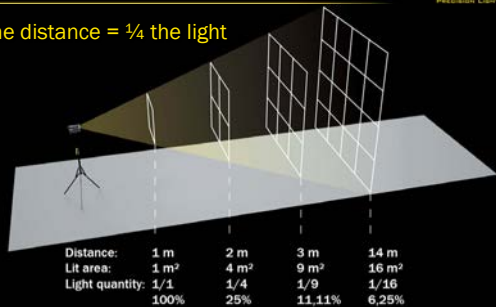
The lower effect of the square law may hold true, until the object or the person being lit is further away than two or three times the diameter of the light-emitting area.
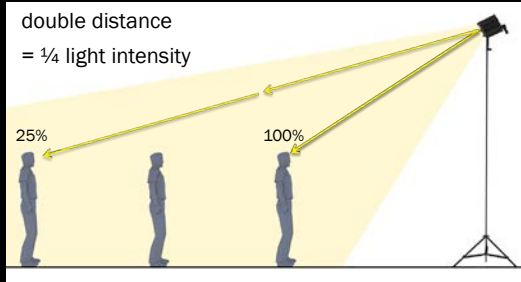
Square Law – The Basics: point light source

Twice the distance = ¼ the light

Distance:	1 m	2 m	3 m	14 m
Lit area:	1 m²	4 m²	9 m²	16 m²
Light quantity:	1/1	1/4	1/9	1/16
	100%	25%	11,11%	6,25%

Square Law – The Basics

double distance
= ¼ light intensity

25%   100%

Unique Control – Graduated ND Filters

DGRADF Set

Equal illumination levels, even when object is lit from an acute angle.

Transmission:
    0.3ND = 50%
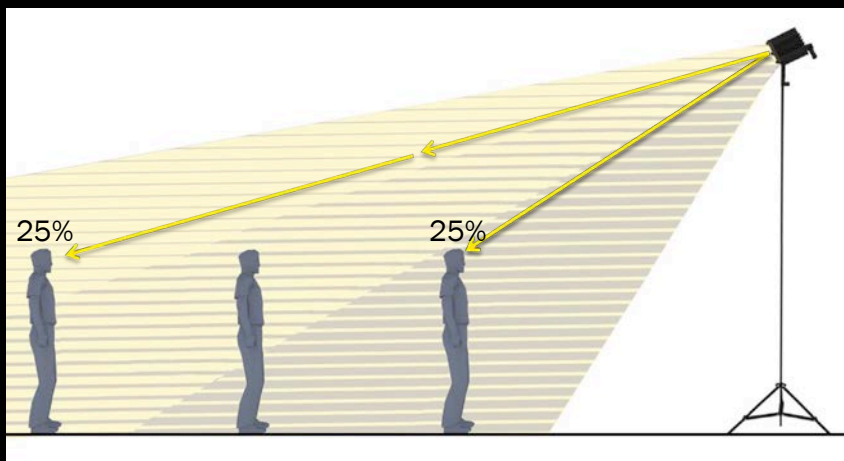   0.6ND = 25%
    0.9ND = 12,5%
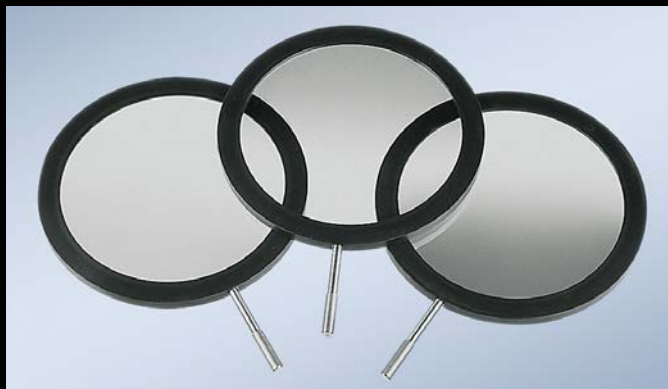
Unique Control – Graduated ND Filters

with graduated gray glass filters (horizontal)
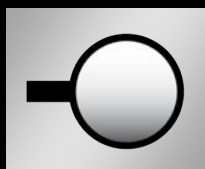
double distance = same intensity

25%   25%