

Daytime Long Exposure (DLE) Photography

By Jürgen M Lobert

In most types of photography, we capture short moments in time. In fact, in disciplines like sports, action and portrait photography, it is essential to freeze all motion to create the sharpest possible photos.

Daytime Long Exposure (DLE) photography deviates from that approach and slows down, both the shutter speed, as well as the photographer's actions.

Capturing the element of time adds intrigue, serenity and an otherworldly feeling to photos, because clouds start moving and form broad bands in the sky, water smooths over to a mirror finish and people, cars, boats, airplanes and birds start to disappear, because their presence of a few seconds doesn't register in an exposure of several minutes. Busy streets suddenly appear empty and the rough ocean is tamed into a smooth white mist.

What does "Daytime" mean?

Technically, we call it daytime when the sun is up. In contrast to night photography, however, where civil twilight, the half hour after sunset or before sunrise is excluded, we will include it here, because it has some of

the most beautiful light, a strong orange afterglow from the sun, while the sky is light blue with pink hues.

This is perhaps also one of the few photography types where we can go out and shoot in bright, harsh sunlight, because moving clouds may obscure it partially, and shadows soften from the motion of the sun.

And how long is "Long"?

We all know how to freeze motion with fast shutter speeds. When we slow down, it is often an unsuccessful photo, because it's not "tack sharp". In DLE photography, we will push that to what feels unnatural and unfamiliar for most people, and we will start to purposely record motion.

For practical purposes, anything longer than a few seconds is considered a "long" exposure. One can capture good beach scenes

in a few seconds, but the real fun starts when we expose for 15, 30 seconds and up to 2, 4 and 8 minutes. After that, clouds usually blur into a uniform white canvas. In the 1-4 minute range, there is a lot of texture left that can be enhanced in a very appealing way.

Equipment

In order to record long exposures during bright daylight, we need to diminish the amount of light that reaches the sensor, because even the smallest aperture and lowest ISO settings won't allow more than a fraction of a second exposure time.



Reducing the light is done with neutral density (ND) filters. The *density* portion of the name indicates the darkness of the filter.

The *neutral* portion suggests that they don't change white balance, which, unfortunately, is not quite true in most cases. Many filters create slight blue or green color casts, plastic filters often create stronger pink colors. Most of these can easily be edited out in post processing.



The density is measured three different ways, which is confusing, but all indicate the same filter capability.

The **number of stops** is perhaps the most familiar. Like exposure stops (twice or half the light), ND filters are referred to as, e.g., 3, 6, 10 and 16 stop filters.

The **density number** follows the old ASA rating, one exposure stop is 0.3 density. A 10-stop filter has a density of 3.0 etc.

Finally, some companies also use a **multiplier**, which is the number of stops used as an exponent of 2. A 3-stop filter is $2^3 = 8x$, a 6 stop filter is $2^6 = 64$ and a 10-stop filter is $2^{10} = 1000x$ etc. Be careful to not confuse an 8x filter with an 8-stop filter!

There are three different types of filters available. The most common is the regular, **round screw-on** type shown on left, which needs to fit the lens that you are using. However, you can buy the filter that fits your largest lens, then use step-up rings to use these for smaller lenses.

The second type is a square or **rectangular slide-in** filter, which slides into a filter holder that also is fitted to your lens. The same options as above apply for fitting the filter holder to the lenses.

A special type is a **variable ND** filter, which works similar to a polarizing filter, where a front element rotates for gradually increasing density. These are expensive and often create strong X-patterns at their most dense setting. This type is not recommended.

One limitation you will be facing is super-wide angle lenses, for which adapting ND filters on the bulbous front glass is not easy and usually expensive and unwieldy.



A good starting outfit is owning a 6-stop and a 10-stop filter, both of which can be combined into a 16 stop filter to accommodate all light situations from bright sunlight (16-stop) to civil twilight (6-stop).

A summary with links for specific filter choices can be found on [Jürgen's blog](#).

Aside from filters and a camera capable of manual exposure settings (aperture, exposure time, ISO and white balance), you will need a sturdy tripod as well as an intervalometer or remote control, as exposure times often exceed the digital camera limit of 30 seconds, and hand-holding long exposures is not possible.

Exposure Settings

To capture motion, we force long exposures not only by using ND filters, but also by shooting [at low ISO sensitivity](#) in the 50-400 range. Low ISO also keeps noise to a minimum and dynamic range maximized, which is important to accommodate bright lights and resolve shadows. Aperture can also be varied, but if you shoot with 10-stop filters, you will find yourself shooting mostly at small apertures of 11 to 22.

The exposure goal, as in most types of photography, is to “expose to the right (ETTR)”, to stretch the histogram and include shadows, mid-tones and highlights to utilize the camera’s full dynamic range. Extra attention is needed to avoid clipping the highlights created by the sun, but also avoid black clipping by under-exposing.



Camera Settings

Using ND filters cuts out more than 99% of the light, when auto-exposure, auto-focus or auto-white balance no longer work. The recommendation is to turn all of these off, including Long Exposure Noise Reduction (LENR), which kicks in by default after a few seconds of exposure time.

The general approach is to start with a 10-stop filter, your camera’s lowest ISO setting and a high aperture (16) and see what exposure times can be achieved. Depending on the amount of daylight, compromises may have to be made, or another filter added.

To figure out the correct exposure time, you can use the [High ISO Preview technique](#), which prevents you from wasting a lot of time. Simply set your ISO to 6400 at the desired aperture, then figure out how many seconds you need to get the proper exposure (ETTR, expose to the right). This is done by trial and error: 1s, 2s, 4s...

Once optimized, turn back to ISO 100 and the seconds become minutes. Two seconds at ISO 6400 becomes 2 minutes at ISO 100. If that exposure time is too short, you can lower the ISO or choose a smaller aperture. A four minute exposure in this example can be

achieved with ISO 50 or one stop smaller aperture.

Capturing Motion

Smoothing water is easy with long exposure times: the longer, the smoother. Very long times also make people disappear, in case you are photographing a popular tourist attraction like the *Skógafoss Waterfall*:



For cloud motion, consider both the wind speed as well as the direction of the cloud movement.

Direction is a compositional element: clouds moving sideways make the scenery more serene, shooting with the wind will give you very dynamic looking cloud streaks coming right at you.



So how does wind speed affect the cloud streaks and how long does one need to expose? The example panel on the left shows four different exposure times. At 4s, the clouds are almost unchanged, they are not moving much. At 30s, one can clearly see the blurring from the motion.

The two minute exposure in the third panel shows perhaps the most intriguing streaks with good definition left. The last image is an eight minute exposure, which almost blurs the clouds into a continuous canvas.

Personal taste as to what you want to achieve plays a big role here, which timing do you find most intriguing?

Black & White or Color?

Many of the images created with long exposures are prime candidates for black & white conversion, often because an almost overcast sky doesn't create much color in the scenery. The



series I call *Moody Skies* is built on that very stark B&W appearance.

However, the world is colored and sunsets or sun rises, in particular, can create some of the most spectacular images when the sun is just below the horizon and shines up to illuminate clouds from below.

These bottom-lit clouds glow in a bright orange, an effect that typically only lasts for 10-15 minutes. Timing here is everything, especially if one is limited to 4-minute exposures.



Tips & Tricks

Composition can be done through the ND filter by using LiveView and the brightest screen setting. ISO 50000 or higher can see through a 10-stop filter. If that does not work, short images at extreme ISO can be used to optimize composition. Worst case, the ND filter

needs to be removed for composition and focus, then put back on for the High ISO Preview.

Focusing (manually) through ND filters can also be done with the same techniques.

White balance cannot be set automatically through the filter. It is recommended to set the WB without filter, or manually and try to be close to where it needs to be, that means: your LCD screen image should look like the scenery you are trying to capture. In most cases, though, a daylight sunny or cloudy WB setting should work well. When shooting into the civil twilight, **WB changes dramatically and should be adjusted** for accordingly.

Although less important during day than night time, do not believe the **notion that white balance doesn't matter** if one shoots in RAW file format. You can easily clip individual colors, such as the reds in a sunset. Once clipped, they cannot be recovered, even in RAW format.

Technique: Cloud Stacking

For fairly short exposures, if daylight is too bright, a simple technique to create intriguing imagery is stacking exposures of 5-15 seconds to create a staccato effect in the sky.



Technique: Intentional Camera Motion (ICM)

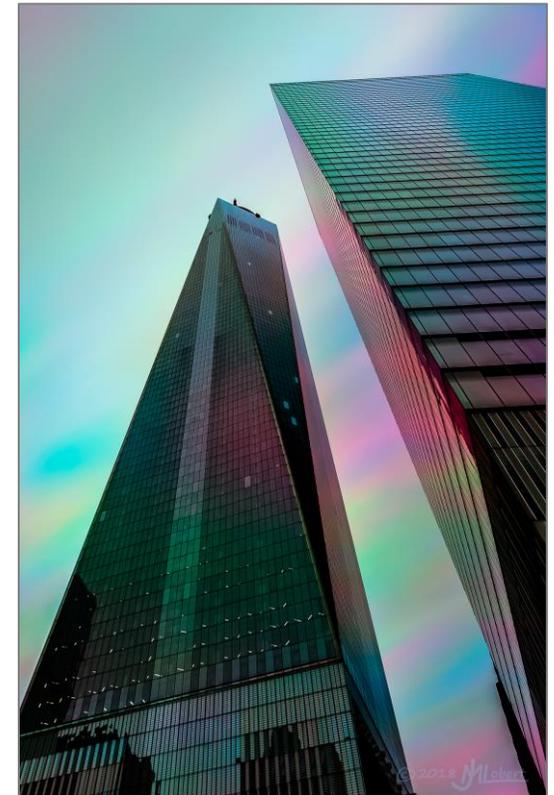
Another fun technique to play with is moving the camera, either on or off the tripod. Set your camera to 10 or 15 s exposure time and slowly move the camera vertically or horizontally. Alternatively, zoom in or out slowly and evenly over that same time period.



Technique: Trichroic Conversions

A processing technique that the author calls *Trichroic Conversions* requires

three identical compositions of equal or different exposure length. In Photoshop, each is assigned only one color channel, red, green or blue, and the blended result creates different colors, as the moving clouds (and reflections) take on a different color from image to image.



Technique: Composites

In fully overcast situations, the sky often becomes one continuous, bland looking background. You can get surreal by layering multiple images and

replacing that sky with something of more interest: *Daytime Milky Way*



Combining DLE with Infrared

Lastly, we will explore the combination of daytime long exposure and infrared photography. The result of this creates dramatic, false colors that can have a wild appearance.



Right: *Afterglow at the Boardwalk, Cape Cod.*
120s, f/16 and ISO 50, 10-stop filter.

Resources & Links

Books and Websites

- There are no known good books covering only this topic
- Video: Matt Kloskowski, *Mastering Long Exposure Photography*, CreativeLive.com
- Lots of good Facebook and Instagram groups to find inspiration. Search for “Long Exposure”



The Author

Jürgen Lobert (Ph.D.) is a scientist and self-taught photographer. He specializes in night and daytime long exposure photography, light painting and astro-landscapes as well as infrared and urban exploration imagery. Jürgen finds profound peace in roaming the nights and capturing the serenity of strange places and the element of time. He is a club officer of the Boston Camera Club, a member of the Stony Brook CC, and the founder and organizer of the Greater Boston Night Photographers Meetup group. Jürgen teaches workshops at the New England School of Photography and he organizes some 50 photo excursions per year. Jürgen is also a lecturer, instructor and judge for regional camera clubs and conferences.



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