

What defines a high quality UV Lamp Driver?

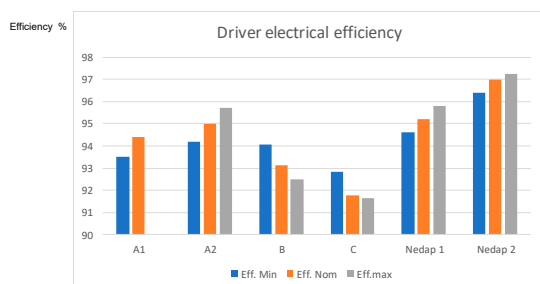
UV applications offer optimal solutions for water treatment, air and surface disinfection, and curing. To operate UV lamps, lamp drivers, also called electronic ballasts are commonly used. Depending on lamp type, the drivers take care of pre-heat, ignition, and warm-up of the UV lamps. Selecting the right UV lamp driver can optimize efficiency, prevent mains power supply problems, and improve ease of installation. Far from simply acting as a lamp driver, it improves the total cost of ownership and sustainability of your application, and, as a result, its viable use cases.

What are the 7 most important quality features of an UV driver?

When selecting a high-quality UV lamp driver, there are several aspects which must be considered. In many cases, these aspects may only become apparent after the lamp driver has been in use for some time - the difference between a high-quality UV lamp driver and a poor one is not immediately obvious. We've listed some important criteria below:

1. Efficiency

Of course, the initial cost is a crucial consideration, but businesses must factor in the total cost of ownership - not simply the upfront cost of a lamp driver. The energy and maintenance costs need to be considered - longevity is key here.



Comparing Nedap technology with other available designs
Source: IUVA 2019 Sydney Nedap – Powering UV sources

2. Reliability

Due to the importance of some of the use cases of UV applications, the reliability of lamps and their drivers is paramount. Poor reliability can affect the integrity of the UV system and the entire facility it is being used in.

3. Design

A well-designed lamp driver will generate lower temperatures, which will reduce the failure rate of the driver. As a rule of thumb, every 10-degree temperature decrease doubles the lifetime of the driver.

4. Harmonic distortion

Lamp drivers can introduce higher frequencies into the mains power line, disrupting the mains power. The higher frequencies can cause additional power losses by only generating unwanted heat in the power grid. Nedap drivers have special filters built into the UV driver to minimize the total harmonic distortion (THD).

5. Power factor

This is determined by the “real power” you receive from the mains as opposed to the “apparent power”. For lamp drivers, or indeed any electronic device, businesses should look for a factor that is as close to one as possible. Nedap UV lamp drivers deliver a Power Factor of 0.99, while other designs may be as low as 0.7.

6. Components

Lamp drivers are needed to regulate the power delivered to UV lamps so they can achieve the optimal UV level. Using the highest grade critical components will deliver higher levels of reliability. All Nedap drivers are CE and UL/cUL approved.

7. Sustainability

First, if your UV systems wastes less energy, due to better efficiency, it will have a smaller carbon footprint. Secondly, the Nedap high-quality UV lamp driver increases the lifespan of UV lamps significantly - an important reason for all major lamp manufacturers to recommend Nedaps lamp driver technology. Both features lead to a more sustainable operation.

The quality of UV lamp drivers is so important because of the critical nature of UV applications for various use cases. These include water treatment, air and surface disinfection, and UV curing.

Use cases of UV lamp drivers

UV light can be used to treat water by attacking the genetic material of any bacteria and virus present. By focusing on quality and efficiency, intelligent UV lamp drivers can be used with minimum environmental impact in various applications. UV and advanced oxidation technology are very suitable if you want to develop a sustainable water treatment solution.

• Air and surface disinfection

Due to UV's anti-microbial properties, it can also be used to disinfect surfaces and inactivate airborne pathogens. UV disinfection is deployed in a wide range of applications and

industries and is particularly useful in high-contact areas. UV light reliably reduces the germ load and improves hygiene and storage conditions. UV lamp drivers can be used to adjust UV output so you achieve your desired disinfection level.

• UV curing

High-intensity UV light can also be used in a photochemical process that instantly cures inks, coatings, or adhesives. Not only is this fast, but it is also more practical as it reduces logistical complexity and no harmful solvents are released.

There are two groups of drivers that are used depending on the specific type of UV project: Low-Pressure UV Lamps and Medium Pressure UV Lamps.

1. Low pressure

Low-pressure lamps, limited to 1000 W, provide exactly the right wavelength of light to fight bacteria and have several advantages compared with medium-pressure lamps. The conversion rate from electrical to UV energy for low-pressure lamps stands at around 34 to 38 percent. This means they deliver a higher rate of efficiency than medium-pressure UV lamp drivers, where the conversion is around 12 percent.

2. Medium pressure

While the higher efficiency level of low-pressure lamps may be advantageous in certain circumstances, medium-pressure lamps can achieve higher levels of electrical power - as high as 36 kW. As such, medium pressure lamp drivers are likely to be more suitable for projects that have limited space and need a high UV level, as in some space-restricted water disinfection systems.

Medium-pressure lamp drivers also produce light of multiple wavelengths, which is beneficial for advanced oxidation. Besides attacking the DNA of bacteria, they can also be combined with other solutions to help with the breakdown of chemical substances.

What are the advantages of Nedap UV driver technology for your business?

The efficiency of UV lamp drivers is crucial for several reasons. Firstly, poor quality lamp drivers can result in damage to the UV lamp from over-voltage or component stress. Before the advent of electronic lamp drivers, many businesses relied on electromagnetic devices, which were inefficient, offered less control in terms of power, and required extra attention in terms of their mounting and space requirements.

At Nedap, we are proud of the efficiency and power output levels we are able to achieve with our UV lamp drivers. We advise you to select UV sources with higher levels of energy efficiency, lowering costs for your customers business over the lifetime of a product, reducing carbon footprint, and improving your product reliability. Initial low-cost lamp driver systems offering limited features with regard to the power factor, THD, and efficiency will lead to higher operational costs during the lifetime of your UV systems.

Nedap's driver technology is already employed to improve the safety of drinking water and optimize the printing process for millions of customers around the world.

Our UV lamp drivers have already been put to use in several world-leading projects. In New York City, Nedap supplied the lamp drivers for one of the largest UV drinking water purification plants ever built. The plant can supply 8.3 billion liters of clean water to more than 9 million inhabitants in New York and its surrounding areas. The plant uses more than 6000 Nedap UV lamp drivers to purify the water, offering engineers full monitoring to test the UV lamp settings at any time using dedicated Nedap software.



Elsewhere, one of the leading US printing companies was able to reduce its energy usage, lower installation costs, and cut space by approximately 50% by switching from electro-magnetic 50/60 Hz ballasts to our high-frequency electronic lamp drivers. The benefits of the reliability, high levels of efficiency, and high Power Factor offered by our technology, in combination with step-less dimming, were the major factors that prompted the decision to adopt Nedap's solutions.



Lighting the way forward

Are you looking for a premium product at the right price? One that achieves the highest levels of efficiency and longevity in the market? Find out how Nedap can move your business forward with smart lamp driver technology. Get in touch with us today.

**We
power
UV**
*Smart UV driver
technology for more
sustainable operation*



Nr. 1 technology • Most efficient driver technology, requires less installation space. >900.000 electronic UV lamp drivers installed and in use worldwide.



Reliable • Nedap UV drivers are designed to last. The average lifetime production is more than 10 years.



Flexibility • Digital lamp selection and optimization and UV lamp dimming down to 30% and beyond.



Insights • Relevant data for cleaner operation. Embedded software for system data reporting.