ISL Products International Ltd.

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CASE STUDY: 12VDC ELECTRONIC BALLAST FOR UVC WATER PURIFICATION

INTRODUCTION

The utilization of UVC light for purification purposes has been around since the late 1800s. The technology has seen an exponential growth in popularity over recent years. While special attention has been paid to the ability of UVC light to sanitize air and surfaces, its ability to treat water has been largely overlooked. Capable of more than just disinfecting and purifying drinking water; UVC bulbs powered by the proper UVC ballast are particularly good at ionizing water making them a vital part of detergent free washing machines.

Depending on the volume of the water being treated, the UVC lamps or bulbs can vary widely in power consumption and UV output. The lamp specs are very important to know because you will need the proper UVC ballast to operate the bulbs efficiently. ISL Products has been designing and manufacturing UVC ballast solutions for decades. Our 12VDC UVC ballast has been proven to provide extremely reliable performance for water treatment applications of all sorts.

Most common electronic ballasts for UVC disinfection are mostly powered by an AC input voltage. As devices become portable, battery operated and more universal, the need for a UVC ballast with a DC input voltage has also become a necessity. DC input ballasts are also able to run lower powered lamps more efficiently.

ORDER SAMPLES

OVERVIEW

A long-time customer of ISL asked us to design a cost-effective 12V DC input ballast to run 425mA UVC lamps for their new water treatment system. They had started this project with an AC input ballast but wanted to switch over to DC voltage for a more universal usage since their customer base is global. This water treatment system is used to ionize the water circulated in washing machines to effectively clean laundry without the need for detergent.

Their sustainable laundry system intrigued us as it's a very eco-friendly concept. This customer was a pioneer in this space and ISL wanted to help develop a solution for this unique application.

CHALLENGE

There was a pre-existing footprint that our ballast had to fit within, so it had to be compact. In addition, it needed to run the UVC lamps efficiently with a DC input voltage. The ballasts had to operate a few different size UVC lamps, which meant that there needed to be a wider operating window so it could output different power and voltages depending on the particular lamp being used. The lamps' UVC output intensity relies solely on the ballast. It was important to keep the output of the lamps within a very narrow band in order to ionize the water properly.

SOLUTION

Our team of well-versed engineers here at ISL Products were able to produce a reliable 12VDC ballast equipped to operate a range of 425mA UVC Mercury lamps. To keep costs down, we decided to go with a Rapid Start "RS" style ballast. Our high-quality board level components in addition to our renowned circuitry allowed us to dramatically increase reliability, ensuring the input and outputs from the ballast were consistent with all lamp sizes. Our quality control systems ensure that every ballast performs to optimal specifications before leaving our factory.

ISL designed the case around the customer's application, providing requested mounting ears and fully prepped flying leads. The customer chose flying leads that were stripped and tinned so that they could install various connectors, depending on the specific application. This makes the ballast even more universal for almost any water purification application or device.

CONCLUSION

We were able to design the ballast with a 12V DC input voltage; it can operate three different types of T5 style 425mA lamps: GPH108, GPH118 and GPH212.

ISL Products under wrote the UL 935 and CSA approvals with Intertek (ETL).

ISL Products has been manufacturing this ballast in large volumes for many years. This specific ballast model, I-81442 12V, has been one of our more popular designs over the years due to its unique 12VDC input. It can be found in a variety of air and water purification systems around the world.

We have the capabilities to develop a variety of different 12V DC Ballasts that operate the most common UVC Mercury Amalgam bulbs available on the market today. As one of the top electronic UVC ballast manufacturers, ISL Products has many options to choose from, with or without UL approvals.

If this particular design is not the most ideal for your application, we work with you to design a more unique ballast alternative. We can tweak almost any parameter to give you a more application specific design. This is typically done without any NRE.

Contact one of our Applications Engineers today to get a ballast ideal for your application.