DIFFICULT TO SAY ONLY "UV-C LAMPS"

Low pressure, high output; amalgam, medium pressure, with ozone, without ozone, but also UV-C LED.

Unfortunately there is a lot of confusion and misinformation in the Ultraviolet disinfection sector. The misuse of terms such as "UV sterilization", the attribution of "magical" disinfection capabilities of UV-A wavelengths (of which there is no solid scientific evidence), the disparaging texts on this technology by authors who have interests in promoting competing technologies or vendors of chemical disinfectants are caused both by discordant information on the Internet and by a still not very incisive activity of sector associations, within which scientists and related industries still struggle to agree on how to measure the power of UV sources and how to compare them.

It may then happen to find manufacturers who define their lamps "6 times more powerful than the others" or call the technology "VUV", "Deep UV" to stand out and make their products more unique and incomparable.

Trying to clarify, there are several UV sources:

The first big family is the lamps. The emission occurs by luminescence from an ionized gas, in this case the mercury vapors.

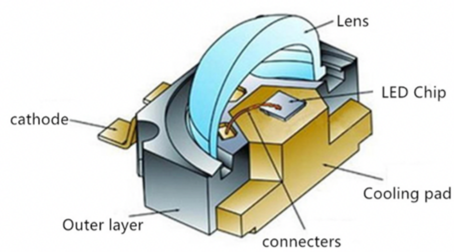
1. Low pressure UV lamps. They offer high efficiency (approximately 35% UV-C) but low power, typically 1 W / cm (power per unit of arc length). They produce wavelength at 254 nm.

2. UV amalgam lamps. A high power version of the low pressure lamps. They operate at higher temperatures and have a life span of up to 16,000 hours. Their efficiency is slightly lower than that of traditional low pressure lamps (approximately 33% UV-C) but the power density is around 2–3 W / cm.

3. Medium pressure UV lamps. These lamps have a broad spectrum with a pronounced peak and high radiation output but low efficiency, 15% or less UV-C. Typical power density is 30 W / cm3 or more. They produce polychromatic light from 200 nm up to visible and infrared light.

All these UV-C sources are exhausted both as a result of the "discharge" of the gas contained within the bulb and due to the progressive loss of transparency of the glass that constitutes them, in which the electrons are deposited.
Are there lamps that, with the same technology, have% higher UV emissions? No. It is physics so the rules of the game are the same for everyone.
What about ozone? Depending on the quartz glass used for the lamp body, it is capable of emitting light at 254 nm and 185 nm. The wavelength of 185 nm has the ability to "transform" the oxygen naturally present in the air into Ozone.
Most lamps are produced with glass or synthetic materials that "filter" 185 nm for safety reasons, in fact ozone can be harmful if breathed in. Otherwise, for particular applications such as the abatement of odors, the emission of 185nm and the consequent creation of Ozone in the air can be fundamental for the good results of the treatment.
Let’s get to the big news, which is eliminating competing light sources.

In fact we are talking about the most innovative source of ultraviolet rays, namely UV-C LEDs.



These microscopic new UV light sources are able to achieve the same results as standard UV-C lamps while offering revolutionary features in terms of portability and applicability.
Since their recent implementation it has been possible to design new products for the sanitation of water and surfaces that could not even be imagined until a few years ago.
LEDs are optoelectronic devices (diodes) that exploit the properties of semiconductor materials. They consist of three layers: the so-called n layer, which contains electrons, the p layer, with holes (i.e. carriers of positive charge), and an intermediate layer (the active layer) consisting of the semiconductor. By applying a voltage to the n layer and the p layer, the electrons combine with the holes and emit photons - that is, light.
Unlike traditional light sources, whose output wavelength is fixed, UV LEDs can be manufactured to operate at the optimal wavelength for the application:
265nm is recognized as the maximum DNA absorption peak; however, 275-280 nm are widely used due to their great stability.
The design rules for UV LEDs open up new opportunities for everything that can be disinfected: we are no longer limited to a long lamp, but we can mount LEDs in flat panels; on flexible printed circuits; outside the cylinders; the options are almost endless
Several world-class bodies and organizations, such as WHO, EPA, CDC, ASHRAE and many others recommend the use of UV-C rays for the disinfection of water, environments and surfaces.