Ocean Insight

Wave illumination

What does the future hold for UV-C light disinfection?

UV-C disinfection as a practice has been steadily growing in demand.

Interest in the practice was amplified with the Covid-19 pandemic focusing attention on disinfection practices across multiple applications and environments globally.

Following a year in which UV-C lighting disinfection has truly garnered worldwide attention, Wave Illumination and Ocean Insight have surveyed manufacturers and users to explore the future plans that both have for embracing the technique.

The survey

Regarded as one of the most effective solutions for eliminating coronavirus from surfaces (and potentially air and water), UV-C disinfection is backed as a reliable decontamination practice by leading research universities and organizations, including the International Ultraviolet Association.

Wave Illumination and Ocean Insight surveyed leading lighting manufacturers as well as operations, facilities, maintenance and safety teams in multiple sectors to find out what they believe **the future now holds for UV-C light disinfection**.

Conducted over a 3-month period, from August to October 2020, Wave Illumination, in partnership with Ocean Insight, distributed two multi-question surveys to a global audience: one for manufacturers of UV-C lighting and one for end users.

Paid social advertising on LinkedIn, e-mail and third-party partnerships were used to distribute the survey to both audiences, consisting of existing customers and partners as well as the wider addressable market.

Questions were specifically designed to unveil the applications, benefits and challenges the respondents see themselves facing in the adoption of UV-C disinfection practices.

For manufacturers, we sought to understand what UV-C lighting products they currently had on the market, their plans to introduce new or further innovations in the area and their perceived market interest and challenges.

For end users, our aim was to glean insights on their level of understanding of UV-C Light disinfection, their plans for adoption and their perceived benefits and challenges.

Across **both areas**, a crucial insight of the survey was respondents' plans for capturing and analysing measurements from UV-C light disinfection products. Measurement of light output is a critical element of ensuring effective disinfection.

The following report outlines our key findings from both surveys, with many surprising facts and statements revealed and a defining view on where the future of UV-C light disinfection truly lies.

What manufacturers say

Our first area of analysis was to understand the perceived market opportunity that existed with UV-C light disinfection, specifically for surface disinfection, which had garnered the most attention due to the Covid-19 pandemic. The answer was clear from our survey results:

The market opportunity for UV-C disinfection already exists but is certain to expand through 2021.

The high growth in demand for UV-C light disinfection may have initially been perceived by manufacturers as a passing trend. However, the pandemic has truly embedded a need for low-contact, effective disinfection practices in many environments – and for many, UV-C lighting is seen as the prevalent answer to this need.

of survey participants are seeing high or very high demand for UV-C light disinfection products.

said Covid-19 has increased demand for UV-C light disinfection.

agree that they anticipate there being a strong demand for UV light disinfection post-Covid-19.

of survey participants said their company currently has a UV-C light disinfection product on the market.

said their company is likely or very likely to bring such a product (or additional products) to market in the next 12 months.

Lighting manufacturers appear quite aware that UV-C light disinfection is a key area of growth and not just a passing trend. This is supported by their plans to invest or invest further in innovation in this area in the short-medium term.

This commitment to innovation has been driven by customer demand, and a perception that this demand is set to long continue in a post-Covid-19 era.

Despite this demand, not everyone is benefitting at present. 33% of participants reported that their company is not benefitting from this increased demand, likely because they have yet to bring a product to market that facilitates the desired requirements.

What manufacturers say

Lighting manufacturers are observing demand for UV-C lighting disinfection products across a variety of sector applications. There are prominent recurring applications evident across the responses including cleanrooms, healthcare facilities, office buildings, education facilities and airports/aviation environments.

On a less prevalent level, **retail, leisure, industrial, automotive and the defense sector** were also mentioned as contributing to the high demand for UV-C lighting.

The most prominent sector applications mentioned are no surprise. Keeping healthcare facilities, schools and universities open and safe has been a core goal during the Covid-19 pandemic and one which will maintain vital importance into the future.

For measuring performance to ensure effective disinfection, manufacturers reported **relying most heavily on the use of a "UV spectrometer" like the UV WaveGo**.

Leaning on support from third parties, academic bodies and external labs is also to play a key role in managing and obtaining measurements. With regulatory compliance measures expected to be introduced in the next 12 months around the reporting and analysis of UV-C lighting measurements, manufacturers are actively seeking to measure both wavelength and dosage.

The lack of regulations and regulatory guidance is perceived by lighting manufacturers to be the key area challenging adoption of UV-C light disinfection currently.

of those surveyed believe lack of regulatory guidance to be the main barrier to UV-C lighting adoption

24% also believe the presence of other cheaper or **more effective methods will prove a challenge**. With all "emerging" technologies, **cost of adoption** over existing methods will always play a factor. Effectiveness is of most importance however, and is likely to win out over cost, particularly in healthcare and education environments.

What users say

Our user respondents were tightly focused in Operations, Maintenance, Facilities and Safety functions across key sectors of focus. In areas of responsibility, **Operations (38.9%) and Facilities/Maintenance (34.4%)** were well represented. Sector wise, **22% of respondents worked in Healthcare and 21.1% in Industrial Engineering/Manufacturing.**

Responses suggested there is high uptake in UV-C disinfection systems with many organizations already embracing this technology. There is still significant opportunity remaining for further growth, however.

That opportunity for growth is a real prospect, evidenced by user companies' plans to readily adopt UV-C lighting products and practices in the next 12 months. Responses from users in Healthcare and Industrial sectors indicate that these environments are most likely to drive adoption and market growth.

of users said their organization was currently using a UV light disinfection system.

of users said their organization was likely or very likely to implement UV light disinfection practices in the next 12 months.

of users considered themselves at least somewhat knowledgeable in the area of UV light disinfection but just 12% claimed expert knowledge.

The area of UV-C light disinfection is one which still requires education among users, however. Many respondents considered themselves at least "somewhat knowledgeable" but few are at expert level.

79% of users were aware that for UV light disinfection to work effectively and safely, the UV light source emitted should **meet a certain wavelength.** However, there is confusion and split opinion as to how this light source will be measured in their organization. As with manufacturers, a spectrometer was one cited source of measurement but the finer details proved a grey area with end users of UV-C systems.

What users say

Survey respondents indicated a variety of intended uses for UV-C light disinfection. Most of these were high level and non-technical, indicating that some education on viable applications would be beneficial among intended end users.

However, the primary quoted applications by end users very much stand in line with the perceived popular applications listed by lighting manufacturer respondents, with **workspace equipment and healthcare environments a key focus.**

- Disinfecting offices and office equipment
- Food equipment
- Sensitive equipment (where traditional disinfectant could be damaging)
- Medical, dental and laboratory spaces
- Manufacturing equipment and toolss

Key themes rang through end users' responses in terms of their perceived benefits of UV-C light disinfection. **Keeping employees and customer safe** is naturally to the fore with responses indicating end users believe UV-C light disinfection systems and practices deliver a superior level of cleanliness and safety.

Unsurprisingly, **protection against Covid-19 and similar viruses** was also a front-of-mind benefit.

- Employee and customer safety
- Easy, efficient, safe and hands-off method
- High level of cleanliness
- Lack of chemicals, pollution/fumes and residue
- Protection against Covid-19

Unlike indications from the manufacturer survey, lack of regulatory guidance was not seen by many users as a barrier to adoption of UV-C lighting products. It appears those seeking to adopt such technologies do so not because of regulatory obligations, but instead to **ensure the safest working environments.**

As with any new technologies, it was instead "cost" which stands as the most significant barrier, with **29% indicating the cost of adoption was a challenge** holding their organization back from embracing UV-C light disinfection.

said that an alternative disinfection method already in place was the main barrier to adoption of UV-C light disinfection

Perceived effectiveness may still be a barrier to overcome too. Many users indicated their decision not to embrace UV-C light disinfection technologies was due to **existing disinfection practices and products already in place.** Again, it is likely cost may be a factor here if significant investment has occurred with the implementation and training practices around existing disinfection methods.

Where next for UV-C light disinfection?

The survey results speak for themselves - UV-C light disinfection is set to become mainstream.

UV-C lighting is clearly an area of investment for both lighting manufacturers and end users across multiple sectors. The benefits of UV-C disinfection have been greatly appreciated during the COVID-19 pandemic. However, that appreciation is set to last long after COVID-19 has subsided.

In the next 12 months, we can expect **mass adoption in healthcare environments,** particularly in Europe and North America, where UV-C light disinfection is already a common practice in medical sectors.

Phased adoption across large corporations, government authorities, schools and universities, airports and industrial manufacturers is also likely, as such environments must take a heightened view on safety.

Cost may continue to be a barrier to entry in sectors such as retail, leisure and hospitality however, as they have been hard-hit economically by the global pandemic and the trade-off of cost versus effectiveness may not be as significant.

For UV-C disinfection to be effective, the correct dose needs to be administered – but a need for **education and guidance** on this matter has shone significantly in survey results. The introduction of regulatory guidance in this area may ultimately prove the biggest game-changer for the market.

That guidance is coming. In 2020, the Global Lighting Association consulted with leading lighting industry experts to develop guidelines to ensure that UV-C technology and products are used safely and effectively. Central to these guidelines was the establishment of standardised irradiance measurements which should be measured and monitored to ensure UV dosage is emitted to effective disinfection levels.

What gets measured gets managed, and so, once appropriate guidelines and practices are in place to ensure the effectiveness of such technologies, **UV-C light disinfection is certain to see adoption at unprecedented levels in the next decade.**

> "UV-C disinfection is a rapid, effective and environmentally sustainable way to protect us all from pathogens in our everyday lives. To deploy UV-C disinfection effectively, you have to know that the right dose is being applied. Measurement tools let you do that."

Henry Langston, Chief Commercial Officer for Ocean Insight

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