sanUVent™

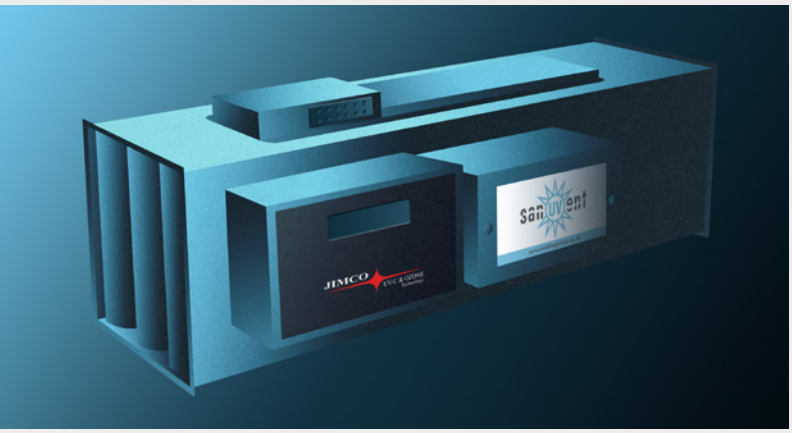
BY

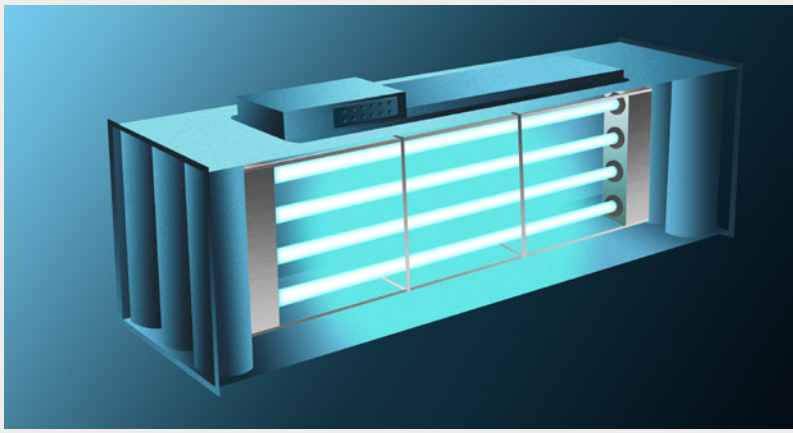
ELGiN BAY

UVC & OZONE TECHNOLOGY

Index

Improved indoor climate = **improved work environment**





01 Executive Summary

Sanuvent™ - Virus and Bacteria Control

Sanuvent™ by Elgin Bay Consultants Ltd, has been created not only to combat the threat of COVID-19, but to also deal with 'Sick Building Syndrome' an ongoing problem we have been facing way before COVID-19 raised its head.

In conjunction with Jimco A/S, a UVC technology based company in Denmark, we have been working to develop UVC technologies for in excess of 27 years and have a truly global reach. The expertise within this field is unrivalled.

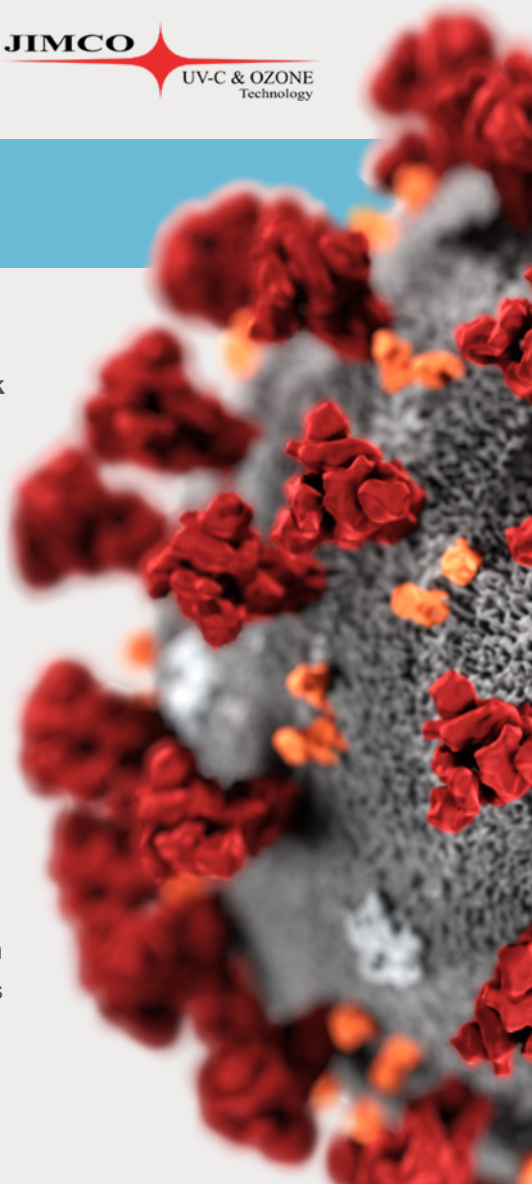
02 Introduction

The recent COVID-19 pandemic has highlighted the risk of transmission of airborne pathogens and the requirement to be able to mitigate the risk within the workplace or public spaces using existing air handling and filtration units.

This requirement is being driven by industry governing body CIBSE and the Health and Safety Executive (HSE). The subsequent result of this, adds significant cost to businesses, especially when trying to make the space safe and giving staff the comfort to return to the workplace.

Sanuvent™ offers a cost-effective 'Plug and Play' system suitable for both new build properties and retrofit. This significantly reduces bacteria and virus within the air that is circulated via the ventilation system.

By producing UVC light at 254nm, we are able to accurately calculate the amount of UVC required to achieve 5.4mj/cm^3 and Log 3 reduction within the ventilation system. In order to achieve Log 3 and above it is essential that each system is designed and calculated accordingly taking into consideration air flows and dwell time across the UVC lamps. Log 3 will disinfect pathogens including SARS-Cov 2, tuberculosis, influenza, Legionella.



03 Background

The SARS-COV-2 virus is now considered to spread primarily through the breathing of infected droplets and aerosols in the air. Although there has been limited evidence on the minimum infectious viral load for the COVID-19 pandemic.

Data suggests that over 94 percent of COVID-19 'superspreading' events occurred in limited ventilation areas, supporting aerosolised transmission as a strong contributor to COVID-19 infections. Aerosols containing a virus can remain suspended in the air for an hour or more and the level of exposure to the SARS-COVID-2 virus affects both the likelihood of infection and the severity of illness.

The risk of transmission from an individual with SARS-CoV-2 infection varies by the type and duration of exposure and appears highest with prolonged contact in indoor settings. Despite proper Personal Protective Equipment (PPE) such as face masks, the virus has been reported to spread in hospitals and non-hospital congregate settings.

Increased demand necessitates newer methods to reduce the risk of spread through circulating air. UVC is highly effective, relatively inexpensive, and can be adapted to the current HVAC systems (Heating, Ventilation, and Air Conditioning). We describe the important role and effectiveness of **Sanuvent™** which uses UVC.

04 The Problem

Sick Building syndrome (SBS) is estimated to cost the British economy 24.6 million lost working days every year.

A report by the World Health Organisation determined that as much as 30 percent of new re-modelled building around the world could cause sick building syndrome symptoms. The ineffectiveness of current technology will only increase the threat of pathogen transmission. Today we are dealing with COVID-19, but what is next? Some existing air handling units (AHUs) re-circulate up to 85% of the returned air from the building to reduce the heating/cooling load of the fresh air coming in. Modern AHU systems use either plate to plate of thermal wheel heat recovery to extract the heat from the exhausted air.

Here lies the problem: Even with new modern AHUs under Health Technical Memoranda (HTM) guidance, with air leakage rates being less than 4%, cross contamination of the exhaust to fresh air is still possible! However according to BESA heat recovery units could typically have internal leakage rates of 8-10% thus making the risk greater.

Guidance as recommended by BESA for occupied buildings, larger dilution rates of fresh air are required to help mitigate COVID-19 and flush out buildings, this can be up to 2-3 times the normal rate. This will significantly affect the building efficiency increasing AHU running costs in energy, wear and tear, and further energy consumption costs of up to 45% could be required to heat and cool the fresh air.

Alternative uses of transmittance prevention like HEPA filtration to reduce odour and bacteria, down to 0.3 microns, in principle is a good idea. However, it is ineffective with COVID-19 particles as these are much smaller, these filters also create additional resistance to the system potentially reducing the airflow and fresh air dilution effectiveness.

05 The **Sanuvent™** solution

Sanuvent™ is a cost effective way of significantly reducing both days lost to Sick Building Syndrome and to give the confidence to return to work for millions across the world due to COVID-19 and other potential pathogens. Sanuvent™ will provide on-going protection against this and future pandemics.

Our system does not only protect the people who work within the spaces but also protects the AHU equipment and ductwork from harbouring bacteria and viruses.

Our Sanuvent™ units, following a survey or design information provision, can be easily fitted within the ductwork, causing minimal disruption to the working building. All that is required is a single phase supply for each unit (depending on size). The simple installation will then allow the AHU to operate at full efficiency as per the original design specification.

UVC Light, is a known disinfectant for killing bacteria. Our company has used UVC for 20 years to effectively reduce bacterial counts in water systems and in the air. Our UVC is also used to stop the spread of bacteria across surfaces, and is used by the NHS for this purpose.

The system is supplied and fitted with 2no. safety switches to prevent activation of unnecessary operation when air handling units are off and accidental exposure to the powerful UVC lamps during maintenance.

Sanuvent™ uses the required amount of UVC to achieve 5.4mj/cm to a log 3 pathogen reduction.

06 Benefits

The following benefits in Covid times and beyond can be the winning result in getting businesses back to some sort of normality.

- **Protects staff** and customers.
- **Cost effective** but calculated solution based upon airflow volumes, dwell time, lamp requirements and air speed are needed.
- **Simple power supply** required to the controls box, the rest is factory wired, assembled and manufactured.
- **Easily installed** once a small site survey or design details are submitted.
- **Peace of mind** to cover, protect and disinfect against any cross contamination in the AHU mixing, thermal wheel or plate to plate recovery sections.
- **Low running costs** compared to the additional energy and running cost of the AHUs, heating and cooling plant.
- **Minimal maintenance** - annual service with 8000 hour lamp change.
- **Running the AHU system to its normal capacity** therefore keeping the working life as designed.
- **Log 3 deactivation and treatment** of all supply air into the occupied spaces.
- **Cleaner environment** which can help with a reduction in Sick Building Syndrome.
- **Potential insurance premium reductions** in years to come.

sanUVent UVC Technology

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Bringing the outside **environment inside!**

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