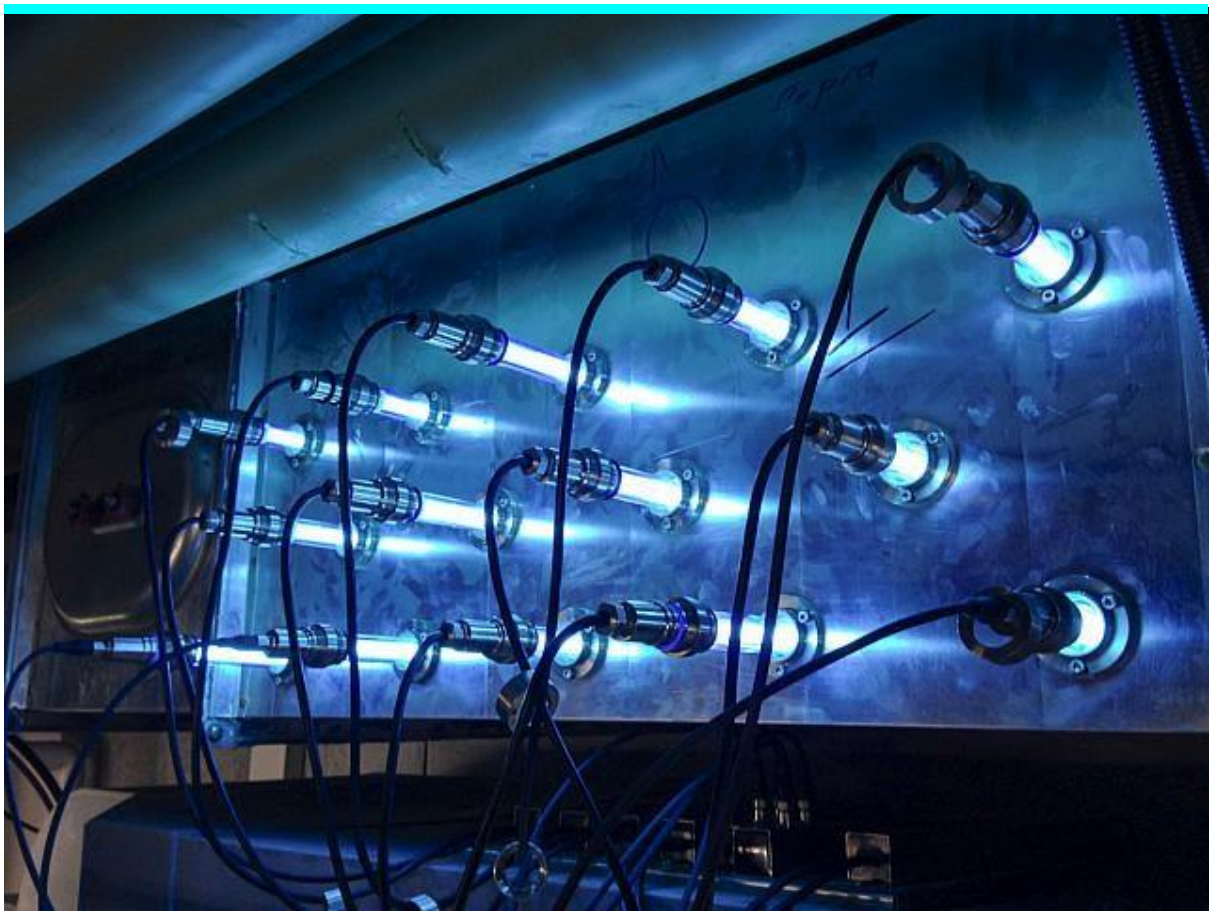
Case Study:

The importance of Infection Control Engineering during the first SARS Coronavirus crisis and readiness it created for SARS2: COVID-19

Hospitals, Southeast Asia – SARS 2003



Introduction

During the first coronavirus SARS crisis in 2002/2003, PPL's devices were installed in Hong Kong's and Singapore's hospitals in response to provide protection against that which was confirmed to be, a predominantly airborne coronavirus pathogen. Over a range of engineering interventions and management practices, infection was quashed, and the solutions were commended as a great success.

Today, in this coronavirus SARS2 pandemic, it is evident that both Singapore and Hong Kong are outperforming the world, having as recorded under 250 recorded COVID19 related deaths between these territories in total, since the end of 2019.

These same germicidal UVC Filters were rolled out around the regions' key institutional facilities after the SARS 2003 pandemic.

During COVID-19, China have installed UVC in schools, hospitals, critical government buildings and more recently, into their transport network. China's death toll from COVID-19 is amongst the lowest in the world today, and registers 0.3 per100,000 of population and yet, one would have expected much worse given the source of the pandemic arose in Wuhan. How?

It is clear - decades of science and medical evidence from other pathogenic diseases in history confirms: - the deployment of enhanced ventilation and germicidal UVC engineered infection interventions in these regions' institutions have contributed to the success, along with all the other crucial vaccination, case tracking/measurement and management procedures. Combined, these measures controlled and significantly supressed COVID-19 cases, deaths, hospitals from being overwhelmed, and crucially, avoided the need for destructive lock-down interventions that have been used in the "Western World."

For the South-East Asian regions, their people have been the safest in the globe and their economies have continued to grow and prosper. The rest of the world needs to catch up quickly to better protect people and economies by following the science and engineering infection controls in the same way as the (Global?)East have been doing since SARS in 2003.

What is SARS?

South Asian Respiratory Syndrome, SARS is a coronavirus that is spread via tiny particles produced by humans as they breathe, in a similar way to other Airborne Respiratory Illnesses (ARIs). There is a minor proportion of transmission via surface contact, with most infections being contracted via inhaling these airborne particles[1]. SARS-CoV, to give it its correct term, at that time, mainly affected people between 25 and 70 years of age, resulting in a dry cough, breathing difficulties, and decreasing oxygen saturation levels in the blood, which is the main cause of severe cases and death. SARS was the first pandemic of the 21st century with the virus spreading to 29 countries, including the UK and Canada and infecting at least 8,096 people and reportedly killing 774 [2]. There were no cases of SARS reported after 2004.

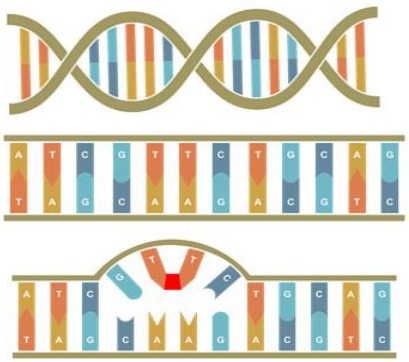
SARS spread rapidly around the world, largely due to infected individuals (?) traveling globally from point of origin (?)[3]. Given the airborne nature of the virus, transmission on an aircraft (a confined space and engineering interventions , then – not as today's aircraft) was rapid. In one case a single symptomatic patient caused the infection of 22 other passengers in just 3 hours.

At the start of the SARS outbreak, there was a high quantity of nosocomial (Hospital-acquired) transmission due to lack of non-pharmaceutical interventions to address airborne transmission, “Nosocomial clustering, with transmission to health care workers, patients, and visitors is a prominent feature of the severe acute respiratory syndrome (SARS). Hospital outbreaks of SARS typically occurred within the first week after admission” [4.]

Protecting hospitals was the initial driver behind the decision to use HVAC germicidal UV Filters in the ventilation duct systems for the whole building environment improvement but also, and probably more importantly, infection control was installed locally, at the source, above patient’s (?) beds in the wards to intercept and inactivate infected aerosol likely to have been in the exhaled breath of infected patients too. This double “primary building system” and “local room” infection control engineering measures within the facilities proved to be highly effective.

What is UVC, GUV or UVGI?

UVC light is also known as germicidal light, or GUV or UVGI. At 254 nm wavelength, UVC renders the DNA and RNA building blocks of microbes inactive by breaking bonds between the Thymine and Adenine proteins, pairing and “gluing” two adjacent Thymine nucleotides together. This process is irreversible with single strand RNA viruses such as coronavirus and stops the microbes from undergoing mitosis, replication or causing harm.



GUV Air Disinfection has proven efficacy against the transmission of measles, probably one of the most infectious diseases known to mankind, as well as other airborne diseases such as Tuberculosis, SARS-CoV, SARS-CoV-2, MERS-CoV, Influenza A, “Swine Flu”and “Bird Flu”, as well as pretty much all other bacteria and viruses known to mankind. These have all been successfully inactivated by GUV Air Treatment solutions in HVAC and via Upper Room Emitters, both in labs, and in practical real-life applications for decades in sensitive environments. Now in Covid-19, all interior spaces are sensitive, potentially, high risk spaces.

SARS-CoV, like all other coronaviruses, is easily inactivated by calculated and properly engineered UVC exposure [6]. The data from 2004 shows how easily SARS was inactivated by UV-C technology. It is extremely effective against infectious airborne diseases. “The survivability of SARS coronavirus in human specimens and environments seems to be relatively strong. Ventilation and UV irradiation can efficiently eliminate the viral infectivity”[7]

What GUV Intervention Measures were taken and what were the Results?

Rapid non-pharmaceutical intervention measures were put into place throughout South East Asia at the start of the first SARS pandemic. highest quality, Swiss-manufactured products were used to control infection via modelling and experience, were by being correctly specified and installed in hospitals in Hong Kong and Singapore during the first coronavirus crisis in <date>.

These upper room UV filters, as predicted, were most noticeably effective within intensive care units and dedicated infection wards within the hospitals. These environments saw very significant reduction in the microbial load in the air and successful infection intervention was achieved by the blend of UVC in HVAC ducts (total environment infection re-distribution control in recirculated air) and the upper room UV Filters (infection source control).

This very same engineered infection suppression solution is appropriate against SARS-CoV-2 which causes COVID-19, a virus which has no resistance against UVC, irrespective of which variant or mutation because of the way that UVC instantly inactivates its building blocks, at RNA level.

Other source control measures available today against COVID-19 include portable Medical Grade HEPA Filters. but these do require specialist experience and infrastructure to change the filters. In conventional and also clinical settings, these too, are also highly effective against Covid-19 and other common forms of nosocomial infections such as RSV, Fungal Spores and Influenza A.

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