

MAKING RAIL SERVICES SAFE FROM COVID-19 AND GETTING THE UK MOVING AGAIN

Protect employees and passengers
using PP-L health technology solutions
- UV-C kills 35,000 viruses and
bacterial infections, including Covid-19.

About Us



PP-L is a world-leading provider of Ultraviolet Light (UV-C) sterilisation solutions. With over 80 years' experience in the bio-technology field, our specialist teams design, supply, install and maintain systems that kill bacteria, harmful micro-organisms, coronaviruses and deadly pathogens in the air, on surfaces and in liquids.

The PP-L technology is proven to be an effective and reliable solution for over 80 years, and is currently deployed in the pharmaceutical, manufacturing and food processing industries together with hospital operating theatres – all areas where the elimination of viruses and bacteria is critical.



TenBroeke Co Ltd is an independent international advisory company focused on the delivery of major infrastructure projects. We have delivered a range of consultancy, project management and engineering services to enable the successful completion of major rail projects including – Old Oak Common Crossrail Depot, Canary Wharf Central Station, Jubilee Line extension, Kings Cross St. Pancras underground station re-development.

TenBroekeCo Ltd is the sole agent in the rail and transport industry for PP-L.

Through PP-L, we provide advisory services to design a tailor-made solution for each client's environment and oversee the supply, install and maintenance of the UV-C equipment.

Together, we will help you to create a safer working environment to protect your staff, passengers and contractors working on site from coronavirus, as well as any similar future viruses that might arise further down the line.

Protect today, future-proof for tomorrow.

A proven solution to Covid-19

Ultraviolet (UV-C) technology is a non-chemical approach to disinfection which is inexpensive, non-polluting and low maintenance. It kills bacteria and viruses even after they have become vaccine and chemically resistant, as proven against "The super-bug", MRSA.

UV light is non-ionising electromagnetic light radiation, transmitted in the form of waves, which are described by the wavelength

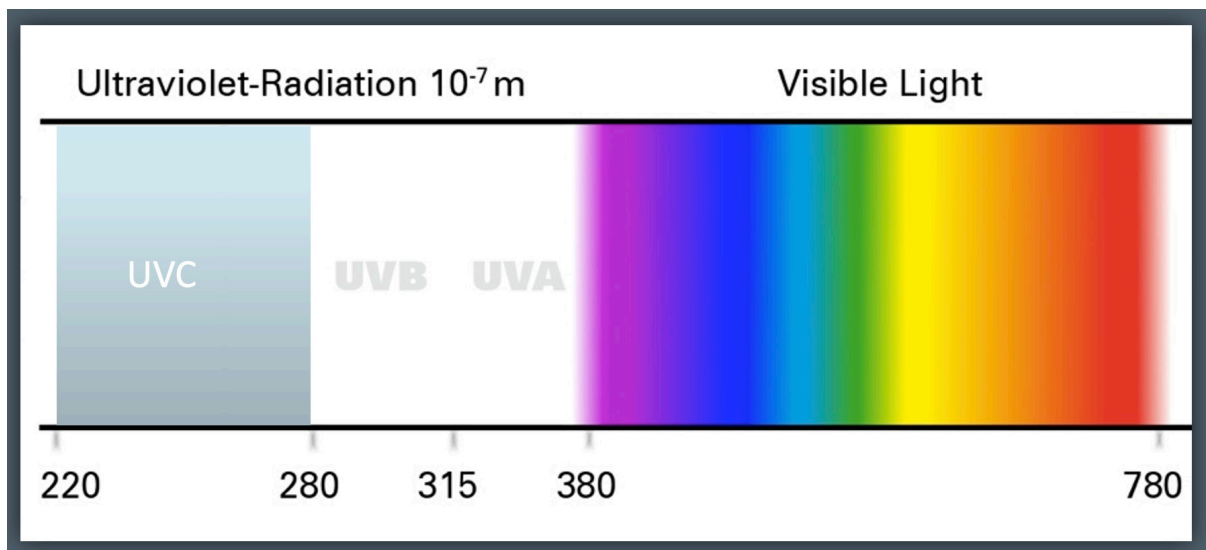
and measured in nanometres (nm). The UV light spectrum is located between the blue end of visible light and x-rays (400nm to 200nm) and split into three spectral range classification bands:

UV-A (315 nm – 400 nm)

UV-B (280 nm – 315 nm)

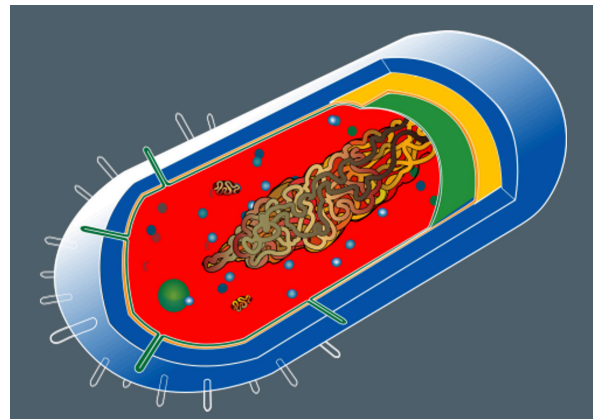
UV-C (200 nm – 280 nm)

'Germicidal Light'

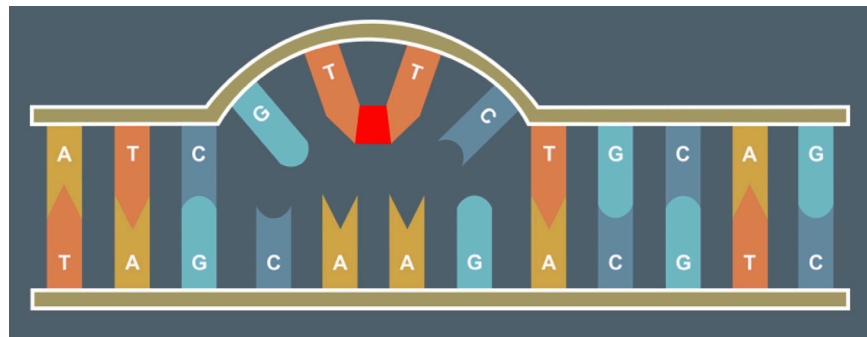


UV spectrum

UV-C, otherwise known as 'Germicidal Light' causes the DNA and RNA of a virus, pathogen or micro-organism to become inactive by breaking the internal strands and 'glueing" the Thymine within the DNA together. This "glueing" is non-reversible and inactivates the DNA and kills the virus.



DNA cell



DNA helix glued

PP-L – high quality products that meet compliance regulations

- Fast tracked onto the British Government's Coronavirus (Covid-19) response group of key suppliers compiled by the Crown Commercial Service under the Medical Services category due to our UV-C products and their Germicidal capabilities
- CE marked for conformity and compliance with all relevant European Laws and Regulations
- FDA approved in the USA
- The only disinfection systems manufacturer to be ISO9001 & ISO 14001 certified
- Typical cost of £1 per hour for an office



Applications of UV-C technology

Train carriages

A crowded train is probably the perfect environment for the propagation of microbial hazards. With bodies closely packed into a small space, and minimal air circulation throughout carriages, the transmission of microbes through breathing another person's infected exhaled air or touching a potentially contaminated surface such as a seat or rail is likely. Undisturbed air could allow harmful microbes to linger for up to 3 hours.

So, without effective air and surface sterilisation, viruses will continue to pose a serious a threat to passengers and human society as a whole.

With a PP-L solution installed, however, air can be sterilised through HVAC vents and surfaces can be cleaned through light treatment once a carriage is empty so as to prevent the spread of infection and mitigate the risk of disease transmission. This will leave passengers feeling safe and at ease when travelling.

Using PP-L's technology will enable passengers to feel safe and at ease when they use train services and encourage repeat usage.

Underground and over-ground train stations

Stations can be a huge transmission risk, as thousands of people use them every day – randomly touching surfaces and breathing recycled air. Whilst stations tend to have better air recirculation systems than confined carriages, key areas of concern are queues around ticket offices and machines, lifts, waiting rooms, cafés and ATMs – all of which have surface areas and less air flow.

The PP-L UV-C solutions can be used to clean any area used by passengers and staff. The PP-L system can be fitted to continually clean the air whilst trains are in service by either being fitted in passenger occupied areas of the train or installed within the heating and ventilation system. If fitted into a HVAC system, it sterilises the air before it is circulated whilst also keeping key components within the circulation system free from microbes.

Our bespoke solutions, tailored for specific environments, include two different sizes of retrofit compacts; one to suit smaller rooms and the other equipped to service larger areas such as enclosed station platforms.

Surfaces present unique challenges due to their shapes that can be difficult to clean thoroughly using conventional methods. PP-L has a solution using a fixed UV-C surface disinfectant system so that rooms can be cleaned efficiently and quickly either between train services overnight or during periods of low public use during the day.

Critically, PP-L systems can be used to undertake deep cleaning and air filtration without interrupting revenue earning services and potentially increasing revenue by attracting customers back to rail services.

Our technology sterilises surfaces quickly and effectively.





Train Depots

Train depots are an important part of delivering an efficient rail service. When trains come in for repair or a planned service, they could bring dangerous microbes with them and so depots need to be made safe and secure from Covid-19.

To prevent workers developing respiratory problems, such as those associated with Covid-19, train

surfaces should be sterilised inside and out. The same PP-L technology can also be deployed in communal areas such as canteens and toilets, even down to motion sensors and timers to ensure that workers are fully protected. Additionally, air should be continuously sterilised throughout the day via HVAC systems already in place.

Our sterilisation technology enables workers to feel safe entering trains, depots, control centres, in fact, any areas without the worry of contracting disease.

Railway & Office Buildings

When we think of buildings in the rail network, it's not just offices, but control rooms, signalling centres, equipment rooms, retail outlets at stations, platforms, drivers' cabs, staff facilities – essentially, any contained area. To date, employers have turned to newer, or better, HVAC filters to decontaminate the system. However, use of these filters can cause a reduction in air flow and increased maintenance and inspection regimes to remain effective.

With the threat of COVID-19 still prevalent, Sick Building Syndrome (SBS) is more dangerous than ever. A next-generation solution is required to combat a completely unprecedented virus. UV-C technology can be adapted to suit different environments. For example, low level systems disinfect air that flows close to floor level, which is where the highest risks lie as a result of contaminated particles that fall from a sneeze or a cough. In addition, aerosol-born microbes can pass through filter systems which means they are only a partial solution.

The PP-L UV-C solutions clean any area used by passengers and staff. The PP-L system can be fitted to continually clean the air by either being fitted in passenger occupied areas of the train or installed within the heating and ventilation system. If fitted into a HVAC system, the system sterilises the air before it is circulated whilst also keeping key components within the circulation system free from microbes.

UVGI systems can also be used on the handrails of escalators, stairwells, in lifts, kitchens and toilets and are capable of being left working overnight when the buildings are unoccupied. To tackle difficult surfaces, PP-L has a disinfectant system that enables rooms to be cleaned efficiently and quickly either at night or at times of intermittent 'zone' closure during the day.

Critically, the PP-L system can be used to undertake deep cleaning and air filtration without reducing revenue earning services.

We are experiencing new levels of risk; air quality is vital and installing a UV-C system is the most efficient method of air sterilisation and kills 99.9% of pathogens in the target area.



Manufacturing

Manufacturing facilities that service rolling stock, such as railroad cars, coaches and other rail vehicles, are prone to microbial hazards that could lead to respiratory problems for staff.

The air tends to be constantly filled with dust particles which carry potentially immuno-toxic microbes and chemicals. This air is then not sufficiently circulated, filtered or sterilised.

Again, air filters can be used to remove dust particles and other contaminants from the air, but these are expensive and cumbersome to maintain. Instead, PP-L's UV-C / UVGI system operates in a cost-effective and efficient way to keep users of the facilities safe and free from potential diseases.

To learn more about our health technology solutions, please contact our team.

PP-L & TenbroekeCo

This is a significant partnership between a world-leading bio-technology company and a renowned expert infrastructure advisory company, and together we provide a suite of quality-approved germicidal UV-C solutions that will allow services to resume in a safer 'new normal' environment and help to future proof operations.

Underpinned by a combined set of values which includes exceptional quality, steadfast reliability, unbeatable performance, pro-active support and cost-effective pricing, our solutions have been specifically designed for key industry sectors.

Our partnership can support you with:

- Operational Health Risk Assessment with respect to "Covid-Secure" spaces
- Design and Specify UV-C disinfection solutions
- Procurement and purchasing options
- Programme Management
- Installation / installation technical support
- Commissioning
- Covid-secure inspections and Certification

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