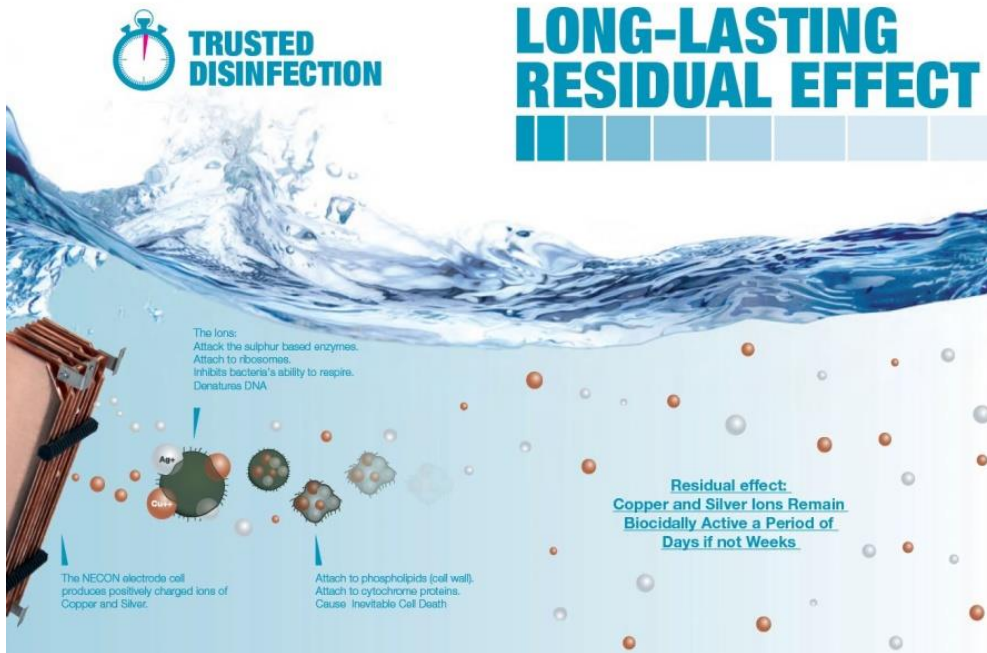


Copper/Silver Ionisation (CSI)

NECON Ionisation

An Overview of the system and how it works.



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The CSI NECON System

Statement for Use of Necon Systems in the Control of Legionella.

Outline of Causative Factors and Reason for Use:

Legionella:

Legionella is a gram negative bacterium commonly found in water systems both hot and cold. It is pathogenic in nature and 28 of the 61 species currently identified are known to cause some form of disease in humans. *L. pneumophila* is considered to be the main causative disease agent resulting in Legionnaires Disease but all forms of the bacterium are considered potential health threats. The bacterium lives in both hot and cold aqueous systems and is known to thrive and develop in biofilm deposits common in such systems.

From piping, distribution systems and storage systems the bacterium can be dislodged into the environment through vapour, mists and sprays. Direct ingestion of the bacterium is not known to cause disease rather the mode of infection is normally through inhalation of water vapour or mist. The incidence of Legionella contamination of water systems is high. A 5 year study in Spain of 20 hospitals found that 64.7% of the buildings showed positive results for Legionella. ¹(Sabria et al. 2001). Further, a study carried out in Quebec in 2002 of 211 domestic homes showed that Legionella was present in 32.7% of the homes tested ² (M.L Pedro-Botet et al. 2002) Control of the bacterium is vital in preventing disease outbreak and fatalities in the general population.

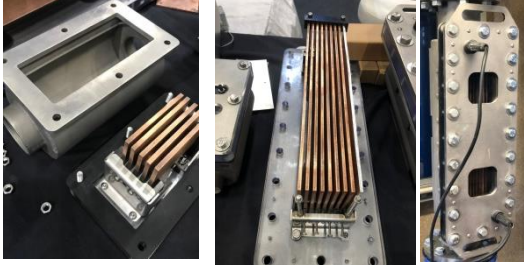
Necon Systems as a method of Control of Legionella:

Basic Principles:

All Necon Systems which proportionally dose according to use are based on copper and silver ionisation. In this process ionic copper and ionic silver are dispersed via electrolysis into a water stream and are positively charged and it is these that kill Legionella and other water borne bacteria which are negatively charged thus attracting each other. The copper breaks down biofilm making the bacteria free flowing in the water system without protection and the copper also softens the cell wall of bacteria adding the intervention of the silver to attack the DNA thus enabling the reproduction and creating what is called Lysis. Levels of copper and silver ions in the range of 0.4mg/l and 0.04 mg/l have been shown to eliminate Legionella outbreaks in hospitals ³ (Josep Modol et al 2007). More over copper silver ionisation has been proven in long term studies to be the most reliable technology available for the disinfection both drinking water and water used in distribution systems ⁴ (V. Yu et al 2010). In addition copper silver disinfection is the only disinfection modality to have had a successful long term study completed on its effectiveness – “All 16 hospitals reported cases of hospital acquired legionnaires’ disease prior to installing the copper–silver ionisation system. Seventy-five percent had previously attempted other disinfection methods including superheat and flush, ultraviolet light, and hyperchlorination. By 2000, the ionisation systems had been operational from 5 to 11 years. Prior to installation, 47% of the hospitals reported that more than 30% of distal water sites yielded Legionella. In 1995, after installation, 50% of the hospitals reported 0% positivity, and 43% still reported 0% in 2000. Moreover, no cases of hospital-acquired legionnaires’ disease have occurred in any hospital since 1995.” ⁵ (Janet E Stout et al 2004)

Functioning Principles:

All Necon systems contain three basic components.



Electrodes

The first of these is the electrode. The electrode is an alloy made of pure copper and silver. It is connected via low voltage cabled (below the current regulations for Electrical Installations) to the control unit. It is through these plates that the ionic copper and silver is dispersed into the water stream. We can provide both composite or separate silver and copper electrode plates as necessary. It can be connected to the main

incoming water line, feeds to tanks or on hot water circuits and fitted in a bypass to allow for ease of access, maintenance and isolation.



Control Panel

The second component is a control mechanism which regulates the current and amperage sent to the electrode there by controlling the level of ions dispersed into the water stream. These units will be sized according to the water consumption and will vary in size accordingly.



Ultrasonic Flow Meter

The third component is UFM flow detector and is a device for accurately measuring flow which is used as an integral part of our NECON system. The UFM is installed

downstream of the electrode.

On smaller systems a simple water meter can be used. All of this allows for proportional dosing at all times to ensure levels targeted at HSG 274 P2 levels and are maintained.



This picture shows an entire CSI Necon system install for the incoming mains feed to an entire hospital complex. This has 2 x 16Kg flow cells with proportional dosing from ultrasonic flow sensors and meter with third party alarms.

Alarming

Further components can be added to receive 24/7 alarming and is included in this package. The ongoing License for transmission is included in the maintenance cost. No land line required.

Legal Statements

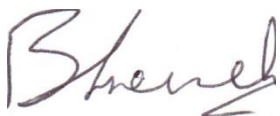
HSE

The Essential Use Authorisations issued by HSE for UK biocidal products under the Biocidal Products and Chemicals (Appointment of Authorities and Enforcement) Regulations 2013/Biocidal Products and Chemicals (Appointment of Authorities and Enforcement) Regulations (Northern Ireland) 2013 contains NECON as authorised to sell Ionisation in the UK.

Authorisation Number – UK-2014- 0823 for PT2 for control of Legionella in water for human use, such as bathing and showering water and PT5 for control of Legionella in drinking water (human and animal).

WRAS

All non-metallic parts in contact with water are WRAS approved
All electrics CE marked



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