Air Management & Infection Control

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Nosocomial infections are a major concern to healthcare professionals and the public alike. While headlines typically focus on MRSA and C. difficile, there are many other pathogenic micro-organisms.

Within the operating theatre, Surgical Site Infections (SSIs) are a major cause for concern as they are associated with considerable and serious morbidity.

Research indicates that the level of airborne bacteria within an operating theatre is directly proportional to the level of post-operative infection. It is generally accepted that “clean surgery” with a moderate or high risk of infection should be carried out in an ultra clean atmosphere. The agreed international definition of ‘ultra clean’ is air containing less than 10 Colony Forming Units per cubic metre (< 10 CFU/m³).

Howorth, through its collaborative work with Sir John Charnley, is acknowledged as one of the pioneers of aseptic surgical technology. The widespread use of the Howorth Exflow™ Ultra Clean Ventilation (UCV) system has helped reduce post-operative infection rates in orthopaedic surgery from in excess of 10% to below 1%.

An Exflow UCV when utilised as part of a well maintained HVAC system will ensure that air in the “clean zone” contains less than 10 CFU/m³. This figure typically reduces to 5 CFU/m³ when the surgical team are wearing modern occlusive gowns and masks. Tests have also indicated that a further reduction to levels of around 1 CFU/m³ are possible by utilising Howorth’s “Body Exhaust” system.

The effective operation of a UCV system is wholly reliant on the regular maintenance of the entire supply HVAC system from inlet to exhaust. Should any part of the system, whether AHU, filters, ductwork, dampers, heaters or chillers fail or operate sub-optimally, then the UCVs ability to provide clean air will be compromised.