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The importance of cleaning and maintenance of flooring in data centres

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Maintaining a data centre requires constant monitoring to ensure all equipment is working efficiently and technical cleans are carried out regularly to prevent critical equipment failure that can come about through air particle contamination. When it comes to flooring in data centres, there are three major areas of consideration for facilities management: adapting to flooring design evolution, effective execution of raised access flooring replacement work, and the importance of regular and specialist technical cleaning.

Historically, the cavity in raised access flooring (RAF) has been used to house cables that provide power and connectivity as well as acting as a floor void plenum chamber to allow delivery of conditioned air to the underside of the server racks. However, poor cable management, which can restrict the correct air path for cooling systems, has led to new flooring designs that see cables now stored above the critical equipment instead. This leaves more space below the floor for cooling infrastructure, which is vital to the day-to-day running of the data centre. Whether installation or maintenance is the focus, it's important to understand the construction of the equipment in the room and whether it features a design which

allows for more or less cooling space in order to adapt maintenance or cleaning plans accordingly. This aspect is vital as overheating in a critical space can result in a circuit shortage. Downtime in a data centre can mean a huge loss of earnings for a business, so it is to be avoided at all costs.

RAF replacements are usually carried out when a critical space is expanding, an area has been damaged, or when there is a threat of zinc whisker contamination. Correct RAF replacement requires installation of zip walls into the main data hall to stop any cross contamination around the 'clean zones' of the remaining data hall. Plenum air flow baffles should also be installed inside the floor void to stop contamination entering the 'clean' areas. It is vital that qualified technicians such as ABM Critical Solutions team members carry out these projects to ensure all correct procedures are in place to prevent system failures. It's also worth noting that other elements required for an optimum data centre environment include the ability to handle a large number of cables and the ability to adapt for future technological and cooling advancements.

Finally, regular technical cleans to the sub floor are essential and should be completed using specialised

equipment and materials, including triple-filtration high-efficiency particulate air (HEPA) or S-Class vacuums. Commercial vacuums without the HEPA filtration filter systems allow particles back into the room. Underfloor contaminants left within the floor void increase the risk of unexplained server outages which can be caused by particulate matter with a conductive element, being caught within the flow of conditioned air and finding its way onto printed circuit boards.

It is essential that technicians are trained to identify zinc whiskers – something that ABM Critical Solutions offers as mandatory during a technical clean. Scanning Electron Microscopy (SEM) testing is also performed on the suspected areas: the analysis is collected on a sticky tape stud which is examined using a scanning electron microscope and energy-dispersive X-ray analysis (EXD).

Low-speed and high-speed electric floor rotary machines should be used to cleanse the raised floor surface within the data hall; the buffers allow for interchangeable cleaning pads to be used. These ensure the contaminated floors are thoroughly cleaned and ready for use.

Human error and infrastructure failure caused by insufficient maintenance are the main reasons for critical downtime and outages, but they can be avoided if the above steps are followed correctly.



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