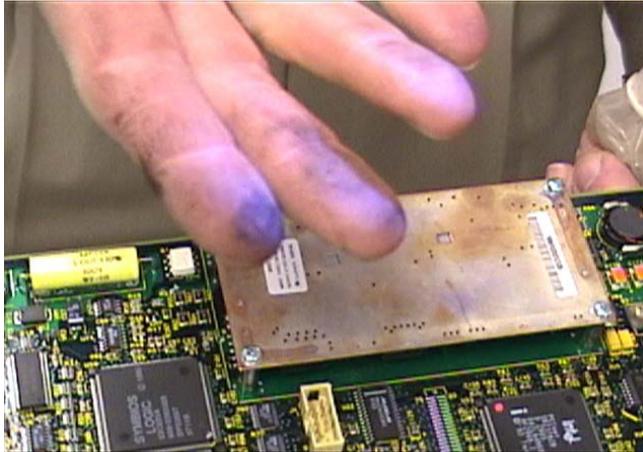


YOUR DATA CENTER MAY BE THREATENED BY AN ALLY

CONTAMINATION ISSUES FROM BELTS IN CRITICAL ENVIRONMENT AIR HANDLERS

Dedicated air units are supposed to be feeding clean “filtered” air into data centers, computer rooms, network rooms and other raised floor centers. However, recently a contamination phenomenon has been realized—most of these dedicated air units are actually contaminating expensive servers, network controllers and other computer operations. How can a unit that is made to clean the air be contaminating it?



The problem is not in the filters, chiller pipes or the BTU/H the machine puts out. The problem is the *belts* that drive the machine. Due to friction, pulley alignment and other mechanical factors, the belts inside an air unit are shedding thousands of small particles everyday. These belt particles/shavings range in size from a pinhead to less than a micron—small enough to be lifted into the air stream and reach sensitive air-cooled computer equipment. Many ask,

“isn’t my air filtered?” Yes, however the belt contamination is below the filter housing in most data center air units, allowing the belt’s particles to be introduced to the air *after* it was filtered. This belt debris cross-contamination is a slow process, but it can wreak havoc on your servers and other air-cooled computer equipment over time.

Problems Resulting From Belt Particles

Typical belts in a data center air unit are made of synthetic rubbers, high modulus fibers and possibly minerals. The belts are used in conjunction with an internal motor to turn pulleys that will allow the different parts to operate. The pulleys and other parts within the air unit will cause friction, causing the belt to particulate small amounts of its outer layer. If the pulley system is not perfectly aligned, the slight shimmy in alignment (which may be very hard to notice) can shred small particles of the belt

quicker than normal. These factors shed light on why this belt debris occurs, but what happens when it gets in the air?

The material these drive belts are made of can cause downtime to the computer equipment within a data center. Synthetic materials and minerals can easily become statically charged and cause circuit shorts if conductive pathways are made through the accumulation of these particles on circuit boards. Also, if allowed to build up long enough, this particulate can cause drive failures, tape misreads and head crashes to tape drives and other sensitive equipment within the data center.

The particles that the belt creates can look similar to dirt or toner. When determining the cause of downtime on equipment, some have mistakenly attributed the downtime to typical dust, when it was actually an accumulation of belt debris.

What Can Be Done To Inhibit Belt Debris?

There are several ways to limit belt debris in the data center.



1. One of the best solutions is to use a low-particulate belt. Low-particulate belts are specially engineered so as not to break-down as easy as conventional belts – and they will run smoother and cooler. Most of these low-particulate belts come in the same size and dimensions that the typical drive belts do – so it can be easy to swap them out.
2. Another good practice is to properly clean the belt drive compartment and the surrounding area inside the air unit every time the air unit is shut down or

mechanically worked on. Many times, just by opening the panel to access the interior of the air unit large amounts of debris that normally were trapped within the unit become exposed to open air, thereby speeding up facility contamination. To properly clean this area a professional critical filter vacuum such as the Nilfisk GM-80 (ULPA filtered vacuum) should be used upon entering the interior of the air unit: the majority of the debris can be vacuumed up that way. This should be followed up with wiping the surface of the interior with an antistatic chemical and micro-fiber cloth in a slow and deliberate manner so as not to propel unseen particles into the air unknowingly.

3. Have the pulleys and wheels aligned regularly and confirm the alignment was done with proper tension. A proper alignment will allow the belt to break down at a slower rate. A good way to

ensure you have been serviced with a proper alignment is to listen to the unit while it is running. There should be no pitchy noises coming from the belt or the pulleys. Watch to make sure there is no visible shimmy (side-to-side rapid movement) of the belt when the machine is turned on.

With a low-particulate belt, regular pulley alignments and better cleaning procedures the air unit can still be an ally to a well-run data center.

Jason Roth

Chief Technology Officer

Sterile Environment Technologies, Inc.

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