

4 Solutions To Deal With Dust

Got dust? Most production environments do. If it isn't dust, it's grease, corrosives, or other particulate that harms electronic components and makes IT challenging in the manufacturing space. Airborne hazards break down computer fans and coat motherboards. The end result is system breakdown and production line downtime.

There are ways to beat the dust, even in the most particulate-rich environments. We surveyed IT professionals on their strategies for managing infrastructure and boiled it down to four solutions.



Cleaning

Every few months, depending on the dust level and type, someone opens the PC up to use canned air to carefully blow dust and debris off the motherboard and fan. It's followed up with a vacuum to suck up debris.

Tips:

- While cleaning the fan is necessary, simply blasting it with pressurized air isn't sufficient, as you will likely be blowing particles into your computer and it can actually damage your computer's fan. A fan is designed to run at a certain RPM, and the air can cause it to spin faster than it was designed. To combat this, you can stick a toothpick in the fan to stop the blades from spinning and allow you to give them a good cleaning.
- If you are using canned air, be sure to not invert the can. The liquid inside will damage computer electronics.
- Watch the vacuuming. One wrong nudge and a capacitor might be knocked off, and the whole computer could be a ruined.

Upsides and Downsides: If you take care, cleaning is relatively straightforward and if you are dealing with only a few PCs, this can be a good way to go. But on a large line, this method can be time consuming. Most important, it won't work for all particulate. You can't vacuum grease, for instance.

Frequent Replacement

If cleaning out systems doesn't appeal to you, you can simply replace the PCs and thin clients at frequent intervals. This is often referred to as the "rip and replace" strategy.

Tips:

- The trick is to map out the lifecycle of an average system in the environment and replace it 1-2 months prior to its predicted failure. Establishing a rolling cycle of replacement can prevent the great productivity staller: System Failure. The time to replace a system and move files, preferences, credentials and whatnot is drastically less than recovery times from a system crash, especially if all the system data is lost or corrupted.
- Beware of extended service packs available from computer manufacturers. While some are a great investment, others are invalidated by willful use of a PC in a Harsh Environment. Read the fine print.

- When buying new systems, there is often the inclination to use parts from old systems. This can be a cost savings, but don't forget to factor in the time costs of stripping the old machines, and the increased risk of new machines with old parts.

Upsides and Downsides: This method is comparatively expensive, but may make financial sense if you can get away with inexpensive terminals, such as light-duty thin clients, and your environment is not too harsh. While replacing a \$250 thin client every two years can be a viable alternative to a more expensive industrial option, particularly harsh environments can drastically reduce that lifecycle. Don't forget to factor in installation time, usually 1-2 hours per system as well.

Enclosures

In particularly harsh production environments, putting a barrier between the PC and the manufacturing floor is a good option. These barriers are known as PC Enclosures and Computer Dust Shields. They may be made of steel or plastic, and may encompass the PC or the PC and monitor.

Tips:

- There are many types of enclosures, each designed for different environments. If the system is outside, being sprayed with water, near a furnace, or adjacent to electrical interference, there is often a specific IP or NEMA rated solution.
- With an enclosure, your PC is safe from the dust that can kill it. Many have a filtration system of their own and ports access your systems I/O (though always double check that one).
- While enclosures are reusable and long lived, they are also a static size which means you are locked into certain PC dimensions. Additionally, enclosures add to the size of your PC. Get a test unit to ensure the total volume works in your space.

Upsides and Downsides: All in all, enclosures are a solid solution to separate your system from nasty particles when you have the space. But they are expensive: a typical shield can run upwards of \$300, sometimes doubling the per unit cost of a workstation. In general, this option is best reserved for very harsh environments involving a limited number of systems.

Fanless/Ventless Computing

The last dust-fighting strategy IT pros can employ is to use fanless/ventless industrial computers. This computer type is cooled passively and sits within a ventless, or sealed, chassis blocking dusty air. This combination results in a system where there are no moving parts and no air flow, simultaneously reducing the points of failure and keeping the electronics safe.

Tips:

- Note that many thin clients and some PCs are fanless, but are not ventless. They are cooled through convection, often utilizing a perforated case. In industrial environments, a solid state system improves longevity but dust and corrosives can still penetrate the system.
- Unlike cleaning and enclosures, the Fanless/Ventless option is not a fix for existing PCs. This option requires a total or gradual replacement of your IT lineup.
- You can expect to pay more for Fanless/Ventless PCs and “hardened” thin clients, but not so much as industrial computers of yesterday. Typically, customers see up-front price increases of 20-30%, but in many environments they earn this back in longer system life spans.

Upsides and Downsides: Going fanless is a great option if you are in particulate-rich (but not overly harsh) environments or are looking for systems with longer life spans and increased reliability. You will pay more initially, but their longer life makes up for it in the long run. Plus, no cleaning is required.

Contact

If you have any questions or would like to speak with a Sales Engineer about a hardware solution, please contact us at:

US Office

Phone: +1 802 861 2300 | Email: info@onlogic.com | www.onlogic.com

EU Office

Phone: +31 088 5200 700 | Email: info@onlogic.eu | www.onlogic.com