

# Variable Speed Drives Maintaining & Monitoring



## Why Maintain Variable Speed Drives

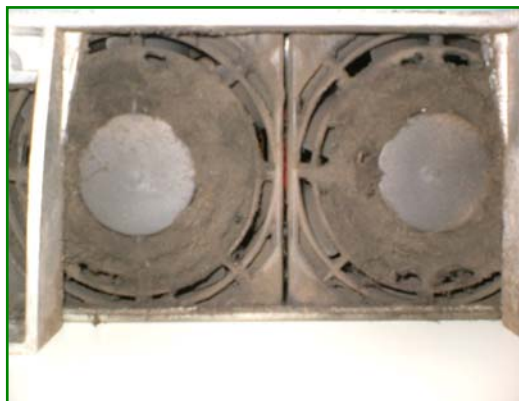
VSD's have now become a common and important item in commercial buildings. Either through buildings regulations on new installations or retrofit works for energy saving reasons on existing installations their installed numbers in recent years have dramatically increased.

This has often reached a situation where on some large sites management are not even certain of the size of their install base and even where all the units are located. They sit forgotten and neglected on a wall or in a panel until a catastrophic problem occurs.

It is a common belief that electronic power equipment such as drives does not require regular maintenance. However, based on our experience, failure probability of products equipped with electronic components, increases after years of operation. For electric drives this is typically 5 to 10 years. The main reason is aging of components, but it is also affected by the operational conditions.

Importantly all major VSD manufacturers recommend annual maintenance to prolong the life of their equipment, just check their documentation.

Likewise after a VSD is installed even though it is operational it is seldom checked to ensure that it is running to its optimum performance and delivering maximum energy saving & process performance benefits.



## Why Do Drives Fail?

The photographs above show clearly two common but not exclusive reasons why drives fail prematurely and unnecessarily. Both are easily preventable and both are down to neglect.

### Loose wiring: -

While this sounds simple, checking connections is a step many people miss entirely or do incorrectly. Heat cycles and mechanical vibration can lead to loose connections. Overtightening screws likewise isn't a good idea, further tightening an already tight connection can damage it.

Bad connections eventually lead to arcing. Arcing at the VSD input could result in nuisance over-voltage faults, clearing of input fuses, or damage to protective components. Arcing at the VSD output could result in over-current faults or even damage to the power components as seen above.

### Dust & Contamination: -

Dust on an electronic device (such as VSD hardware) can cause a malfunction or even failure. It contributes to a lack of airflow, resulting in diminished performance from heat sinks and circulating fans, which can lead to thermal problems.

Dust absorbs moisture, which also plays a role in failure particularly with wall mount units.

The life expectancy of a drive should be ten years plus if properly maintained. .

Making the most of your investment in drives

Leave us to manage and maintain your drives  
For details and to arrange a survey call - 01392 444555

drive control

Unit 14 Harrier Court, Westcott Lane, Exeter Airport, Clyst Honiton, Exeter, EX5 2DR

T: 01392 444555 F: 01392 362291 E: mail@drivecontrol.biz W: www.drivecontrol.biz

## Why Monitor Variable Speed Drives



When things go wrong or short cuts are required to overcome issues unrelated to drives there can be a philosophy of 'put it into hand and run at 50Hz'. Whilst this may overcome immediate problems if forgotten the drive is then not performing at its optimum level and can be wasting significant quantities of energy. Therefore just ensuring that the drive is operating under auto or remote control can lead to significant savings .

Likewise even if the drive is under automatic control is that control system providing the optimum set-points? All these issues can be analysed with a regular period of monitoring. Remember even one drive not operating correctly can cost significant amounts of money and can probably cover the cost of an annual check!

### What We Can Do For You

At Drive Control we have been providing innovative drive maintenance and support services for over a decade with a focus on commercial buildings. It became apparent to us very early on that drives installed for building services applications require a different approach to industrial sites. Estates & facilities departments often have limited numbers of staff who may also not be trained or familiar with variable speed drives. Busy estates managers are not often aware of the quantity and value of the installed base of drives and only become aware of their value and importance when one fails.

Realising this when we signed our first support contract with a large hospital over fifteen years ago we first sat with them and asked what they wanted. The requirement was actually quite simple, "when we have a problem we want the problem taken away without costing the earth".

It is often a fact that when someone is in trouble and requires an immediate solution to a problem prices tend to rise. What this hospital wanted was a guarantee of service without paying an unnecessary premium. At Drive Control we arrived at a solution for them that we have followed ever since on this and many sites since with minor improvements and tailored priorities on the way.

Drives can fail for many reasons, indeed failure is inevitable but by having a support service and strategy in place failure can be delayed and disruption upon failure much reduced.

### How Does it Work

Large facilities have many plant-rooms some of which will have VSD's installed from various different manufacturers. The first task is to find all the drives, identify and document them, this in itself can be no small task. Once identified and logged the drive can then be assessed for risk based on variables such as size, manufacturer, age, condition , plant room environment etc. Once this risk is know it can be factored into a calculation based on its likelihood of failure over a period of five years.

This is the basis of our calculations for our support contracts. In general new drives in clean plant rooms don't fail within five years , lots of old drives in dirty plant room do fail. Most sites have a mixture of these and others that fall between these extremes.

Based generally over a five year period our bespoke support contracts offer a fixed price over this period with priority response and no additional charges for parts and labour, i.e. we fix a price for five years to cover all drives failures / repair including an annual service and we stick to it.

After a service we also provide a comprehensive report generated from our bespoke database. This fixed cost will obviously depend on the quantity of units and their condition etc. But importantly our costings are based on the cost price of replacement drives and parts. Our contracts will cover any drive regardless of manufacturer.

If however a simple annual service and report is required this can be provided as an alternative.

Leave us to manage and maintain your drives  
For details and to arrange a survey call - 01392 444555