

Tools to help you plan and record (and remember to celebrate success)

The steps above will help you decide what actions to take. You also need to decide who will be responsible for getting the job done. Here is a simple way to plan this.

Example action plan

Investigation	Action needed	Desired outcome	Who's responsible/ deadline
Which fans on the site have a VSD? Which do not?			
Which non-VSD fan motors could operate at a constant slower speed?			
Which fans have oversize motors?			
For VSD-fitted fans, are we using the control to reduce fan speed? Have we removed or fully opened the volume control damper?			

Example recording chart

Who	Action taken/when	Impact

Remember

Reduce fan speed and you can save up to 50% of the total energy used by fans, or £3,125 per year for every 50 kW motor!

HOW-TO GUIDE

Can VSDs improve the efficiency of your motors?



HOW-TO GUIDE

What this guide is about

This guide is designed to complement the motor speed toolbox talk. It focuses on:

- Why it makes sense to save energy by using variable speed drives, especially on fans
- Practical steps to make your fans more efficient
- Tools to help you plan and record

The purpose of the guide is to help you make a business case and action plan for reducing the motor speed on fans, including how to determine which fans will benefit from a variable speed drive (VSD), how much energy a VSD will save, and what VSD alternatives are available to reduce energy consumption for other fans. Keep the guide as a reminder for yourself, hand it out to the person on your site who may take charge of this action plan, or simply write on it to keep a record of all actions taken.

Why it makes sense to save energy by controlling fan speed

- Motors account for most of the electricity we use – up to £1,000,000 a year in our largest quarries – but not all motors make good use of the energy they consume.
- Fan motors (or any other variable torque motors) are the easiest place to save energy: you can reduce fan speed by 20% and save 50% of the energy the motor uses. (Reducing the speed of a constant torque motor such as a conveyor, crusher or positive displacement pump by 20% saves only 15%.)
- Reducing fan speed with a VSD can make a motor live longer by reducing noise and vibration.
- Many motors are too big for the job they do – replacing oversize motors with smaller ones will save energy.

Did you know?

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Practical steps to save energy by reducing fan speeds

Every site's action planning will differ. Please consider the steps below as a suggested route and adapt the actions under each step to your site's specific needs.

Step 1: Work out estimated savings from installing VSDs.

- Identify which fans on your site have VSDs fitted and which do not.
- For fans without VSDs, estimate the potential energy savings per year using the table below.

Motor size kW	Typical saving	Motor size kW	Typical saving
10	£625	30	£1,875
15	£938	50	£3,125
20	£1,250	100	£6,250

Step 2: Take action to reduce motor speed.

- Consider cheaper alternatives to VSD.
 - See whether you can switch off the fan more frequently. Remember a soft start is useful, but does not control motor speed in normal operation.
 - Replace oversize motors with smaller, more efficient ones.
 - For systems that require a constant slower speed, change the pulley ratio on the belt transmission.
 - Check: is there an efficient in-line damper and are you using it?
- Install VSDs on fans for which there is no alternative – VSDs work on exhaust air, combustion air, dust extraction and aggregate dryers.
- Use the VSDs correctly.
 - Remember to control motor speed in normal operation.
 - Remove or fully open the volume control damper that previously controlled the flow rate.