

## What is a Variable Speed Drive (V S D)?

Also known as an Inverter Drive, a Variable Speed Drive is used to change the operating speed of a 3-phase motor to meet the required operating conditions.

If the motor is running more slowly it absorbs less power and considerable savings in energy can be achieved -

**A pump running at half speed only uses about one-eighth of the power.**

Although only 3-phase motors can be operated in this way, 240V drives are available which use a single phase input and provide a variable 3-phase output, up to 4kW.

Drives which operate on 415V 3-phase are available across the range up to 132kW as standard.



## Variable Speed Pumps

Pumping systems are always sized for the maximum expected demand and often this maximum is never or rarely required.

Traditionally the flowrate is controlled by throttling but this is wasteful as the pump is running at full power unnecessarily.

Variable speed technology is used for water pumps to provide constant pressure systems and avoid waste when demand is low.

A pressure transmitter is fitted on the line to constantly monitor the water pressure and feed this information to the controller.

The aim is to maintain the pressure at a set point, which can be varied, and the motor is automatically slowed down or speeded up to achieve this.

For security of supply or if demand varies particularly widely, 2 or more pumps can be used with drives linked so that each starts in turn as the required flowrate increases.



## Water Supply Systems



Demand on a pressurisation unit distributing water around a farm can vary considerably throughout the day and the booster pump must be sized to meet the maximum demand and can switch on and off frequently when demand is low. If a variable speed system is installed the pump will run constantly but only operate as fast as it needs to.

For example, during the summer when stock is grazing out-lying fields the pressure normally needs to be higher than when all stock is housed on the yard.

Variable speed controls can also be used with borehole pumps.

## Washdown Systems

A high flow washdown pump is essential for efficient cleaning of a milking parlour but when smaller hoses are used during milking the pump may supply too much pressure or switch on and off frequently. Using a variable speed system reduces the switching frequency and the average operating speed of the pump.



### Variable Speed Advantages and Features

**Energy Saving**

**Less Wear on the Pump.**

**Less Noise**

**Greater Flexibility**

**No Wasteful Restriction Valves**

**Better Control**

**Multiple Set-points**

**(the pressure setting is lower at night- saving more energy.)**

**Reduced Electrical Surge**

**Increased Power Factor - Improved Electrical Transmission**

Further Information available from

**Penstar Ltd,**

Rhoshill Cardigan

[www.Penstar.co.uk](http://www.Penstar.co.uk)

[info@penstar.co.uk](mailto:info@penstar.co.uk)

Tel: 01239-841458