



# VARIABLE FREQUENCY DRIVE (VFD) IRRIGATION PRACTICES

Often irrigation systems require pumps to deliver water to crops. The amount of water needed may vary depending on factors like weather conditions, soil moisture or the specific requirements of different crops. Further, irrigation systems can have various pressure and flow demands. VFDs are essential to help reduce energy and water waste.

VFDs effectively adjust the speed and output of pumps, allowing more control over the pressure and amount of water being delivered. A VFD modifies the pump speed, which in turn alters the discharge pressure and water flow rate. This flexibility can help optimize energy and water usage.

## HERE ARE A FEW WAYS VFDS HELP LOWER IRRIGATION COSTS:

**Energy savings:** VFDs enable precise control over pump speed, allowing the pump to operate at the optimal speed required to meet the irrigation demands. Fixed-speed pumps often operate at full capacity even when lower flow rates are sufficient, using excessive energy. By adjusting the pump speed using a VFD, energy consumption may be significantly reduced, resulting in lower energy costs.

**Water conservation:** VFDs provide the ability to adjust the flow rate of water accurately. In some cases excessive irrigation is used because pump capacity control is lacking. VFDs slow the pump to match the demand even when lower flow is desired.

**Maintenance and equipment longevity:** VFDs contribute to the longevity of irrigation equipment. By controlling pump discharge pressure, VFDs can help avoid over pressurizing the irrigation system, which can be damaging. By gradually ramping up the speed of pumps rather than starting them at full speed, wear and tear on mechanical components are reduced, resulting in decreased maintenance requirements and extended equipment life. This helps to lower repair and replacement costs associated with irrigation systems.

**Labor savings:** Allowing a VFD to control pump discharge can help reduce the need to:

- Turn pumps on and off between sets
- Perform manual pressure adjustments



For more information about irrigation incentives visit [www.energytrust.org/irrigation](http://www.energytrust.org/irrigation) or call **1.866.202.0576**.

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