

# POLYPUMP LIMITED

## **Motor Start-up**

We are often asked “what’s the difference between Star-Delta and Direct-On-Line (DOL) Motor starting methods – “what is Variable Speed Drive (VSD) Variable Frequency Drives (VFD) and what is a Soft Starter”

Most Rotating equipment i.e. Pumps, Mixers, Fans, Gearboxes etc are motor driven by an electric motor... upon starting this draws significant levels electric current; this sudden demand for current may cause voltage drops with variable consequences, thus the correct means of starting should be considered – as this will affect the investment required for the Pump, Mixer Fans Gearbox Motors and Starter.

### **Star-Delta**

The Motor is wired in Star, this allows the motor to achieve an initial speed level meaning the current requirement is relatively low, this either time based, or speed based, it then switches to the normal delta mode. Major benefit of this starting system is current is 1/3 of the rated motor current – usually reducing cables size in to the bargain, applications where the equipment is required to start under full load conditions i.e. a fully loaded conveyer or gearbox Star Delta is of no use. These applications require Direct-On-Line starting as below.

### **Direct-On-Line (DOL)**

DOL starting is essentially starting in 1 step, unlike Star-Delta (2 steps). DOL is generally only used for smaller current loading, as start current levels can exceed 8 to 10 times the running current. DOL starting is the simplest and lowest cost option for motor starting – due to high starting current cable is usually larger than Star-Delta. Motor protection usually consists of relay, and a contractor is used to switch power on/off.

### **Soft Start**

A soft starter regulates the voltage flow to the motor during start-up. The voltage is delivered slowly to the motor rather like a clutch system in your car – These electronic devises are the favoured start method in industry as this method avoids instantaneous mechanical shock loads, some larger machines are stipulated to start this way as full load equipment is often more expensive.

### **Variable Speed Drives**

VSD is an electronic device which gives full control over the way a motor starts and stops (like a soft start), Most VSD units offers further standard features such as constant pressure or a prespecified flow curve must be maintained. VSD’s versatility and ever reducing prices means it’s becoming the standard for many water pressure boost pump systems – In a system where flow loading is variable it ensures minimal energy, simply put a VFD can reduce your running costs.