



APPLICATIONS BULLETIN

CURRENT DRAW WITH TECHSYS CORPORATION PRODUCTS

This Application Bulletin is designed to provide information as to the current draws of the U1 range of Pump systems. To understand how the current is effected the actual operation of the system needs to be understood.

All Techsys Corporation Pump Systems operate with the lead pump starting and operating on the Variable Speed Drive. When the system detects the need for pumps one pump is started on the VFD. It typically starts at 50% of the calculated minimum frequency and then ramps up to the desired speed to satisfy the system requirements. If one pump cannot satisfy this requirement then the "**lead**" pump changes over to fixed speed and the first "**lag**" pump ramps up on the VFD. This continues until all pumps are running or the system requirement is satisfied.

This method of operation offers the best of all options being smooth transition from one pump to the next without intermittent pressure spikes and the ability to control the starting current of all of the pumps in the system.

The starting current of a motor is determined by the torque required to start the motor from zero rpm. Without assisted starting this can be as high as 7 x FLA (Full load amps of the motor)

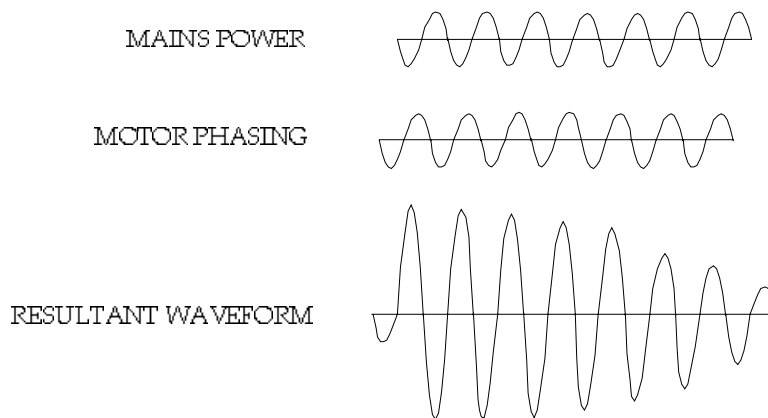
The Techsys Corporation system controls the starting current draw of all of the pumps so that it is determined by the required acceleration of the system.

This can be tuned on site by varying the acceleration rate of the VFD. Coupled with the system requirements the system can be tuned to react according to the system requirements but LIMITED to a maximum current draw. A menu item in the VFD configuration called "I Limit" pegs the maximum current that the system can draw. This is a failsafe control that guarantees a specified maximum current draw. The "I Limit" figure overrides the Techsys Corporation control to maintain a maximum current draw. This can be set to any figure up to 150% of motor FLA.



The only time that the system current can raise above FLA is when a transition between VFD and fixed speed contactors occur.

In ideal changeover the phases are matched and there will be no combined spike in current at changeover. This will be the case in approximately 70-90% of changeovers. However if the phases are out of synchronization then there can be a current increase above FLA in the system.



This spike can be a maximum of 4 X FLA for the motor. This residual is active for a maximum time of 100 msec, which is well below the general time for starting and well below the figure for most assisted starting methods. This current increase will occur on a random basis with the expected frequency of 10% of changeovers.

SUMMARY

Techsys Corporation systems can be limited to below FLA for all applications by virtue of the system control and associated with manual backups. Any minor current increases are statistically minor and will occur for such a short period to make them virtually undetectable.

