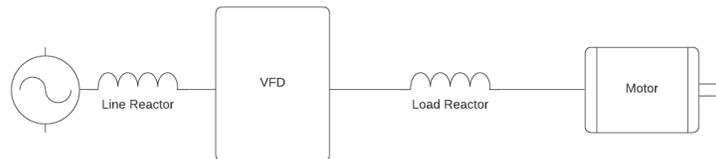


This Tech Note provides sales personnel leading questions for VFD customers to understand their situation.

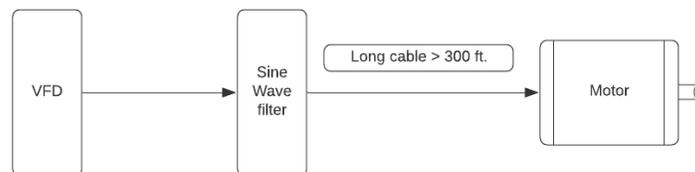
1) Are you considering this drive for?

A. New VFD application

- a. Would you like to consider a line reactor to prevent over-voltage (OV) tripping and to protect the input rectifiers?
 - i. Use a Mangoldt Line/Load reactor of 3% impedance. Install this on the input side of the drive.
- b. Would you like to consider a line reactor to reduce the harmonic current distortion?
 - i. Use a Mangoldt Line/Load reactor of 5% impedance. Install this at the input side of the drive to reduce harmonics, prevent OV tripping and protect the input rectifiers.



- c. Would you like to extend your motor life? (VFD's cause square wave voltage spikes and cause higher heating which can reduce motor life).
- d. Is your motor cable length less than 300 ft.?
 - i. Use a Mangoldt 5% impedance line/load reactor. Install this on the output side of the drive.
- e. Is your motor cable more than 300 ft. long or under water?
 - i. Use a Mangoldt sine Wave Filter which will convert the square wave pulsed voltage to a near sine wave. Install this on the output side of the drive.



B. Replacement VFD

- a. Why are you replacing the existing VFD?
- b. How many years was it in service?
 - i. Drives equipped with Mangoldt reactors will typically last up to 20 years.
- c. How did the VFD fail (failure mode, fault codes, environmental conditions, etc.)?
 - i. Mangoldt Line/Load reactors will protect drives from the typical causes of premature failure. It is recommended that a Mangoldt 5% impedance Line/Load reactor be used to protect against overvoltage transients, reduce harmonics and reduce DC bus capacitor heating.

2) Do you want to consider something to increase motor life?

- a. Good \$: Mangoldt 3% impedance Line/Load reactor
- b. Better \$\$: Mangoldt 5% impedance Line/Load reactor
- c. Best \$\$\$: Mangoldt PolyGap® Sine Wave Filter

3) Guidelines for Harmonic Mitigation

- a. Voltage distortion is > 4%
- b. Service transformer is 80% loaded, 60% of the time
- c. >20% of load is non-linear