

# SIZING GENERATORS WHEN THEY ARE USED TO POWER VARIABLE SPEED DRIVES.

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**Description:**

There are times when drives may need to be powered by generators. It may be for backup power when utility power is lost or when the drives are used in remote locations where utility power is not available. The sizing of the generator can be an issue since drives are non-linear loads and the resulting harmonic content can lead to problems for the generator's voltage regulation circuits.

**How to size a generator that is used to power a Variable Speed Drive:**

The main concerns for sizing a generator are related to the generator's ability to tolerate harmonics associated with the drive. The amount of oversizing that is required can vary depending on the type of drive and how it is converting power to run a motor. There are differences in voltage regulation circuits used in generators. Some are analog and some are digital. Usually digital circuits are more responsive and can require a greater oversizing of the generator.

Type of Drive	Recommended Oversizing of Generator
AC (six pulse input bridge)	2-2.5 times the KVA of the drive
AC Regenerative Drive (active front end)	1.5-2 times the KVA of the drive
DC	3 times the KVA of the drive

The above values are meant as a general guide only and it is acceptable to use the excess capacity for linear loads. The generator supplier should always be consulted for proper sizing of the applied product.

There may be some other concerns for drives that are powered by generators but they are not as significant of a factor in sizing the components of the system. Inrush on variable speed drives is typically less than rated drive currents (except possibly for very small drives), so it is not generally an important consideration.

Another issue might be the concern for the sizing of the drive because of the harmonics. Again this is not much of a factor since the drive is already designed with the resulting higher input currents related to the harmonic content in mind.

Rick Akey, Jeff Fell		Date: 12/17/13
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