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Understanding the 5th Harmonic

Nonlinear loads such as variable frequency drives, lighting, and computer systems are a common cause of harmonics on a system. Harmonics on a distribution system can have deteriorating effects on motors by causing overheating or tripping of over-current protection devices. In particular, the 5th harmonic has a negative sequence. Distorted voltage containing the 5th harmonic attempts to drive a motor in reverse, creating a negative torque. Compensating for the torque, the motor in turn draws additional current to satisfy the load requirements which causes the overheating.

So, an overloaded motor may not be the product of a faulty motor or excessive load demands, it may just be a harmonic issue.

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