Glossary

Ambient temperature—The temperature of the surrounding cooling medium. Commonly known as room temperature when the air is the cooling medium in contact with the equipment.

Base line—A measurement taken when a machine is in good operating condition that is used as a reference for monitoring and analysis.

Breakdown torque—The maximum torque that an AC motor will develop with rated voltage applied at rated frequency without an abrupt drop in speed. Also termed pull-out torque or maximum torque.

Efficiency—The ratio between useful work performed and the energy expended in producing it. It is the ratio of output power divided by the input power.

Full-load speed—The speed at which any rotating machine produces its rated output.

Full-load torque—The torque required to produce rated power at full-load speed.

General purpose motor—AC induction motor of 500 horsepower or less, open or enclosed construction, continuous duty, designed in standard ratings with standard characteristics for use under service conditions without restriction to a particular application (see NEMA MG 1-1998, 1.6.1).

Hertz (Hz)—The preferred terminology for cycles per second (frequency).

Horsepower—A unit for measuring the power of motors or the rate of doing work. One horsepower equals 33,000 foot-pounds of work per minute (550 ft•lbs per second) or 746 watts.

Insulation—Nonconducting materials separating the current-carrying parts of an electric machine from each other or from adjacent conducting material at a different potential.

Kilowatt (kW)—A unit of electrical power. Also, the output rating of motors manufactured and used off the North American continent.

Locked-rotor current—Steady-state current taken from the line with the rotor at standstill and at a rated voltage and frequency.

Locked-rotor torque—The minimum torque that a motor will develop at standstill for all angular positions of the rotor with rated voltage applied at rated frequency.

Megohmmeter—An instrument for measuring insulation resistance.

NEMA—National Electrical Manufacturers Association.

Poles—The magnetic poles set up inside an electric machine by the placement and connection of the windings.

Rated temperature rise—The permissible rise in temperature above ambient for an electric machine operating under load.

Rotor—The rotating element of any motor or generator.

Slip—The difference between synchronous and operating speeds, compared to synchronous speed, expressed as a percentage. Also the difference between synchronous and operating speeds, expressed in rpm.

Soft foot—The condition where the mounting feet of a motor and the pads of the base are not all in the same plane.

Stator—The stationary part of a rotating electric machine. Commonly used to describe the stationary part of an AC machine that contains the power windings.

Synchronous speed—The speed of the rotating machine element of an AC motor that matches the speed of the rotating magnetic field created by the armature winding.

Synchronous speed = (Frequency x 120)/(Number of poles)

Torque—The rotating force produced by a motor. The units of torque may be expressed as pound-foot, pound-inch (English system), or newton-meter (metric system).

Trending—Analysis of the change in measured data over at least three data measurement intervals.

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