

I'm human



The amazing electric motor torque calculator is designed to illustrate the relationship between motor speed, power, and torque. Created by Arturo Barrantes, an AWS Senior Developer at Indra, this calculator allows users to calculate the torque of electric motors. According to Steven Wooding, Editorial Quality Assurance Coordinator, electric motors are widely used in various applications, including household appliances. Torque is the rotational force developed by an electric motor, and it depends on the magnetic fluxes inside the motor. However, the relationship between torque and speed differs in direct current (DC) and alternating current (AC) motors. In DC motors, high-torque motors rotate slower at other loads. The phrase "high torque low-speed electric motor" is commonly associated with DC motors due to this characteristic. In contrast, AC motors experience maximum torque at a specific rotating speed, known as the breakdown torque. The slip value represents the difference between the synchronous velocity and the shaft speed in AC motors. It can be calculated using the formula $s = (\text{rpm_noload} - \text{rpm_load}) / \text{rpm_noload} \times 100\%$. Slip is an important factor in understanding how much less speed you get when running an electric motor compared to its synchronous velocity. Regardless of the current source, there is a main formula that relates shaft revolutions per minute, torque, and power: $T = 60 \times P / (2 \times \pi \times \text{rpm})$. This formula represents the amount of rotational force developed by the motor. In AC electric motors, there are two rotation speeds: synchronous speed or magnetic field speed, and real rotation speed. Synchronous revolutions per minute can be calculated as $\text{rpmsynch} = 120 \times f / p$, where f is the supply frequency and p is the number of poles. The electric motor torque calculator includes a feature that allows users to calculate operating rotating speed or slip by adding the maximum slip. The maximum torque of an electric motor is typically measured at its specific rotational speed, such as 1800 rpm or 3600 rpm. The Omni Calculator tool provides a simple way to calculate this torque or use a formula: $\text{Power} = 2 \times \text{rpm} \times T / 60$, where power and rpm are given, and solve for T . For example, with 1 hp and 1800 rpm, the calculated torque is approximately 3.96 N·m. Alternatively, using the motor's frequency and number of poles can also provide the necessary information to calculate the torque. The breakdown torque refers to the maximum torque an AC motor can achieve when starting, which increases as the speed increases until it reaches a peak point. Afterward, the torque decreases rapidly as the motor approaches its synchronous velocity. To increase electric motor torque from a design perspective, adding more poles within the motor results in lower speeds and higher torques.

Calculate torque of electric motor. Torque calculation. How to calculate motor torque needed. How to calculate power of motor from torque. How to calculate torque of motor. How to check torque of motor. Dc motor torque calculator online.