Some constant torque load applications are:

- Conveyors
- Reciprocating and Screw Compressors
- Feeders
- Hoists
- Mixers
- Positive Displacement Pumps
- Traction Drives

II. Variable Torque (or quadratic torque)

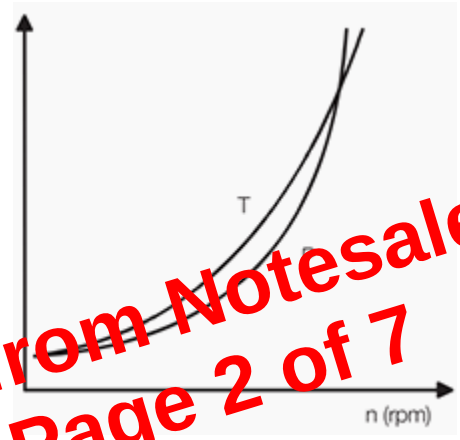

Figure 2 – Typical torque and power curves in a quadratic torque application. Adapted from *5 Most Common Motor Load Types* by Electrical Engineering Portal (2015). Retrieved from https://electrical-engineering-portal.com/5-most-common-motor-load-types

This is the most common load type. This load type demands lower torque at lower speeds than at high speeds. The torque of the load is directly proportional to the square of the speed while the load power is directly proportional to the cube of the speed. These loads require reduced torque when driven at speeds less than the base speed of the load. Conversely, such loads may require increased torque when driven at speeds greater than the base speed of the load. Reducing the speed of the motor by even a small amount can save a lot of energy. In exemplifying, when the speed of a variable torque load is reduced by 50%, the torque is reduced to 25%. The horsepower is reduced to the speed cubed, which is 12.5% of that required to drive the load at full speed.

Some variable torque load applications are:

- Centrifugal Pumps
- Low Viscosity Mixer