

FAQ's - Heco Gear Design Life

Continuous Torque Rating

The torque rating at or below which the speed reducer should yield satisfactory life. Life is dependent on operating speed at this torque and the lubrication used in the speed reducer. Maximum reducer life will be achieved when operating at lower output RPM.

Intermittent Torque Rating

Operation of the speed reducer at the intermittent torque rating should not exceed 10% of the operating cycle. Continued use of the speed reducer at the intermittent rating may significantly shorten the life of the speed reducer.

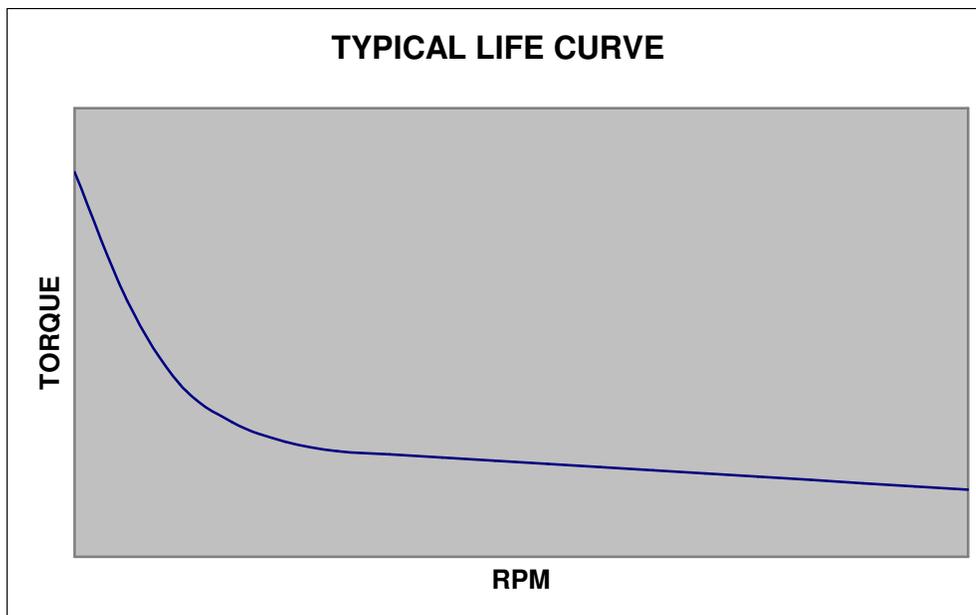
Peak Torque Rating

The peak torque rating is the rating at which continued use can cause catastrophic failure. This peak rating should be limited to an instantaneous shock load and should not be part of a normal operating cycle.

Design Life

Torque, Speed, Radial and Axial Load all affect speed reducer life. The type of lubricant used in the speed reducer can significantly affect the life of the reducer.

Design Life is dependent on the application Output Torque and Output Speed (RPM). Maximum speed reducer life in high torque applications will be achieved at lower output speeds. Conversely, maximum speed reducer life in high speed applications will be achieved at lower output torques.



High speed high torque applications will have short design life.

Speed reducer life is also dependent on the duty cycle of the specific application. A duty cycle is defined by Heco as an operation beginning with start and ending with a full stop or full reversal. Duty cycle segments often consist a number of components with different speed and torque requirements; starting, running and stopping are the typical components. Swing or slewing drives often consist of reversals with overrunning loads that effect speed reducer life. Starting and stopping under load and will affect speed reducer life.

Consult Heco Gear with the duty cycle information and Heco can estimate speed reducer life for your specific application. Customer testing in the specific application is the recommended way to determine actual life.

Overrunning Loads

Overrunning loads may induce forces into the speed reducer that can significantly shorten life. Heco speed reducers are typically driven by hydraulic motors that are connected inline with hydraulic relief valves to relieve pressure spikes in the hydraulic systems.

In overrunning load conditions speed reducers can be driven backwards turning the hydraulic drive motors into hydraulic pumps that create hydraulic system pressure spikes. Typically hydraulic cross-port relief or counter balance valves will relieve these pressure spikes.

Because of inefficiencies in the hydraulic motors being driven as pumps it can take 150% of the typical drive operating torque to back-drive a speed reducer/hydraulic motor and create enough hydraulic pressure for the system cross port relief or counter balance valves to react. This condition is prevalent in swing or slewing drives as well as ground power drives on mobile equipment.

Speed Ratings

Heco speed reducers can accept high RPM input. Applications requiring simultaneous high speed and high torque operation will have short design life. Applications requiring high speed and low torque duty cycles or low speed and high torque duty cycles will have extended reducer life.

Horsepower Ratings

In the case of high-speed operation typically seen in Industrial applications, Horsepower may be the limiting design factor not just torque.

Higher horsepower applications are typically the combination of high speed and high torque. In this case horsepower rather than torque may determine the size of the Heco speed reducer that best fits the application. Auxiliary cooling may be required in high horsepower and high speed applications. Consult Heco on these applications.