

Benefits of Electric Linear Actuators Over Hydraulic Systems

Contrary to common opinion electric actuators actually have a lower total cost than hydraulic cylinders. Although the upfront costs of an electric linear actuator can be more than a hydraulic system, the additional benefits described below tip the balance in favor of electric linear actuators.

CONTROL

Electric linear actuators equipped with a servo motor and connected to a controller offer complete control of piston position, velocity, acceleration and applied force with a few key strokes. Control of these parameters in a hydraulic system can be designed into the system but changes to the motion profile are very limited after installation.



ENERGY CONSUMPTION

Electric linear actuators only consume energy when in motion and when moving convert more than 95% of input energy into thrust. In comparison hydraulic systems run their pumps continuously to maintain line pressure, dropping efficiency well below 50%.

MAINTENANCE

Electric linear actuators are virtually maintenance free requiring only the periodic application of a small amount of grease. Hydraulic systems require regular attention to change filters, add hydraulic fluid and inspect for frayed or damaged hoses. Years of empirical data of the Dynamic Capacity of ball screw/ bearing systems allows accurate life predictions.

NOISE GENERATION

Electric linear actuators are silent unless in motion and then virtually silent. Hydraulic systems generally have high horsepower motors running continuously producing significant noise.

SPACE REQUIREMENTS

Electric linear actuators are self-contained units mounted where the force or motion is required and connected to the system controller with a small diameter cable. Hydraulic Systems mount the cylinder where the force or motion is required and are connected by at least two hoses to a reservoir equipped with a motor, pump and filters which are remotely positioned close to the cylinder.

ENVIRONMENTAL ISSUES

Electric linear actuators are mechanical mechanisms and do not contain or produce harmful materials. Hydraulic systems are driven by high pressure fluid moving through hoses which must be carefully maintained to prevent leakage. If hydraulic fluid is released product damage and/or environmental damage can occur. Also, fluid vapor can produce environmental issues and surface contamination requiring additional cleaning of finished parts.

Which would you prefer, a compact, quiet, clean, fully programmable motion device or a complex, noisy, leak prone device over which you have limited control?