

### Motor Types—DC Motors

A motor converts electrical energy into rotational kinetic energy.

#### Advantages

- Simple to control
- High speed
- Range of powers and voltages

*A DC Motor*

#### Disadvantages

- Relatively inefficient (approx 75%)
- High inertia (doesn't stop straight away)
- Accurate position control is difficult – requires a closed loop system
- Speed affected changes with load
- Low torque—usually needs gearing

*Inside a high power motor*

### Motor Types—Stepper Motors

A stepper motors are found in equipment where very high accuracy and small movements are required. They can be found in disc drives, printers and CAM machines. They are able to move in discrete steps of several degrees at a time.

#### Advantages

- Can accurately control position
- Can accurately control speed
- Can change direction
- High torque
- Position of shaft can be locked in place
- Low inertia

*A stepper motor*

#### Disadvantages

- Expensive
- More difficult to control than DC Motors
- Limited speed