# Application of Rotary and Linear sensors in Cranes

A crane is a type of machine, generally equipped with a hoist rope, wire ropes or chains, and sheaves. They can be used both to lift and lower materials and to move them horizontally. It is mainly used for lifting heavy things and transporting them to other places. The device uses one or more simple machines to create mechanical advantage and thus move loads beyond the normal capability of a human.

## Working Principle:

At the top of the mast, there is a gear and motor with rotary sensor that enables the crane to rotate. The working arm is called the jib, which is long and horizontal. The jib uses a trolley to help carry the load. The machinery arm is shorter than the jib. It contains the crane's motors, along with large concrete counterweights that help balance the load. The crane operator room contains the electronic controls used to operate the crane. Cranes combine simple machines to lift extremely heavy objects. In balance-style cranes, the crane's beam is balanced at a point, called the fulcrum. This allows it to lift heavy objects with a relatively small force. In this way, the crane's beam acts as a simple lever. Cranes also make use of the pulley, another simple machine. Some cranes often have more than one pulley. This helps it multiply its force to lift heavy objects.

Cranes and other construction machinery are required to be safe, efficient and reliable. Positioning is of prime importance, and redundant systems are often used to eliminate errors. Rotary Sensors as well as Linear Sensors are used for Precise Positioning.

Rotary Sensors are used for Rotational Angle Control

Linear Sensors are used for Boom Extension Measurement

Linear Sensors are used for Boom Length Measurement

The Boom length refers to physical length of the boom, and Angle of inclination (deviation from the vertical direction)Boom Extension means we can increase or decrease the boom length.