Rugged Position Detection of Support Struts and Booms

Cable-Pull Rotary Encoder Reliably Detects the Extension Length of Construction Machinery

At a Glance

- Measuring mechanism resistant to external influences
- Rugged devices optimized for mobile equipment and use on construction sites
- Wide range of options for connecting to machine control systems
- Simple, flexible mounting

The Application

Construction machinery such as mobile cranes and truck-mounted concrete pumps are secured with support struts during their operation. The amount of load that the boom is able to move depends on the length of the support struts, which can often only be partially extended, depending on the local conditions. Which load is permissible in which position is calculated based on the current length of the loaded struts. The alignment and extension length of the boom are additional parameters that are required for this calculation. Naturally, construction machinery is used in harsh environments and is exposed to a wide range of influences: Dust, dirt, moisture, strong vibrations, shocks, and extreme weather conditions are part of everyday life on construction sites.

The Goal

To determine permissible boom positions based on the extension length of the individual support struts, the machine control system requires precise, up-to-date position data from the struts and boom. The measurement must not be affected by dirt, mechanical behavior, or environmental influences. The measuring instrument must work reliably, even under harsh environmental conditions.

The Solution

Cable-pull rotary encoders consist of a precision measuring cable and a rotary encoder. The cable pull is attached to the vehicle, while the free cable end is attached to the movable support strut or boom. The cable is pulled out when the mobile component is extended, and wound back via a spring mechanism when the component is retracted. The linear movement of the strut therefore creates rotational movement in the cable-pull housing, which is detected by the integrated absolute rotary encoder. The precise measured value enables accurate and reliable position detection, independent of ambient conditions and mechanical influences. Cable-pull rotary encoders are available from the ECA10TL, ECA21IL, and ECA30PL series, depending on the maximum length of the strut and boom.

The Benefits

The measuring mechanism and technical design of the cable-pull rotary encoders from Pepperl+Fuchs ensure an especially high degree of resistance to external influences. Simple mounting options minimize the required effort and allow for a high level of freedom when positioning the measuring instruments. This flexibility is further increased by a comprehensive range of accessories (guide pulley, cable attachment). Optional brush attachments allow the rotary encoders to be used even under the harshest conditions. An extensive range of interfaces and protocols is available for data transfer. The coupling-free adaptation of the rotary encoder enables precise position feedback and ensures reliable monitoring when retracting and extending the strut or boom.

Technical Features

- Rugged design for a long service life under extreme operating conditions
- Aluminum housing optimized for mobile equipment
- Wide range of interfaces
- ECA10TL compact device for especially confined conditions
- Measuring range up to 60 m
- Comprehensive range of accessories
- Rust- and acid-resistant measuring cable

For more information, visit: **pepperl-fuchs.com/px-ECA10TL**