

2019
May

A few good reasons to choose a draw-wire encoder

Draw-wire encoder is a little-known type of measuring system. That's why it is seldom considered when it comes to design a new solution for an industrial application.

But there are a number of good reasons why designers should appreciate its functional characteristics and so discover that sometimes it can be an excellent answer to measuring needs.

- Measuring lengths from 2 m (3.28 ft), 5 m (16.4 ft), 10 m (32.8 ft), and more, up to 50 m (164 ft)
- Any type of encoder can be integrated: incremental, absolute (first and foremost fieldbus and Ethernet), analogue (including potentiometer)
- Resolution down to 0.01 mm / 10 μ m
- Speed up to 2 m per second / 78.7 inches per second

What is a draw-wire encoder?

First of all let's understand what a draw-wire encoder is and how it works. This measuring system is basically made up of two parts integrated in the single device: a rotary encoder, it can be either optical or magnetic, with incremental, absolute, and analogue outputs (a potentiometer can be installed as well); and a stainless-steel wire having different lengths (Lika's range varies from 2 m up to 50 m / from 3.28 ft up to 164 ft), it is wound on a spring-wired drum and then pulled out and rewound during operation. The stainless-steel wire is attached to the moving axis being measured. The encoder is coupled to the drum, so as the cable moves back and forth, also the encoder is rotated. In this way the linear motion of the wire (but its flexibility enables even curved travels through guiding rollers) is translated into a rotary motion by the drum and then into a positional information by the encoder.

Why a draw-wire encoder?

So what are the advantages provided by this kind of encoder? Let's consider that the encoder-drum assembly (the fixed part of the device, and also the most delicate one) and the stainless-steel wire that is attached to the mechanism being measured (the moving as well as the most rugged part) can be intended in some way as two separate components.

It follows that the encoder-drum assembly can be installed at a some distance from the place where the wire and the axis being monitored operate. For this reason the assembly can mounted in a safe place, easily accessible, and adequately protected.

While the stainless-steel cable can be submitted to harsh environmental conditions at the same time, i.e. dirty, humidity, high temperatures, etc. Furthermore, by virtue of the minimum footprint of the cable, the operational space required by the wire can be very tight, and even a few centimetres wide, because the encoder, as stated, can be mounted in a different and larger location. A further benefit is that the cable-pulling mechanism can be coupled to any encoder which preserves the same complete set of functions as the standard encoder.

Lika's range includes the following versions:

- with **programmable incremental encoder** and resolution down to 0.01 mm / 10 μ m;
- with **SSI and analogue absolute encoder** and resolution down to 0.012 mm / 12 μ m;
- with **Ethernet and fieldbus absolute encoder: Profinet, EtherNet/IP, EtherCAT, POWERLINK**, etc. In this case the Ethernet technology is available also in the most uncomfortable conditions (the narrowest spaces, harsh industrial environment); resolution down to 0.024 mm / 24 μ m;
- **string-pot**.

If you want to know [more about Lika's range of draw-wire encoders](#), or to find answers to all your questions contact our team.

