# Precise Positioning in Filling Plants

## Robust Magnetic Rotary Encoders Offering High Resolution and a High Level of Accuracy

### At a Glance

- High level of precision for exact positioning of bottles
- High speed for a high throughput
- Extremely robust, not susceptible to wear, and maintenance-free—ideal for continuous operation
- Exact position data provided, even in the event of a power failure
- Wide range of interfaces (EtherCAT, PROFIBUS, PROFINET, SSI)

## The Application

In modern filling plants, bottles can be filled with beverages at a rate of up to 90,000 bottles an hour. In these applications, rotary encoders are used to precisely determine the position of turntables and conveyor belts. The sensors can be positioned in different locations in the plant, such as on the central axis of the turntable, on the rotating assembly of the turntable drive, or on the drive of the conveyor belt. Depending on the application, absolute or incremental rotary encoders are used.

## The Goal

In order to achieve such a high throughput, the turntables and conveyors have to move very quickly. At the same time, the bottles have to be precisely positioned under the filling nozzle during the filling process. The plant control system therefore has to ensure a high level of precision while operating at minimal cycle times.

## The Solution

The ENA58IL series from Pepperl+Fuchs is the first line of magnetic rotary encoders that can meet the requirements of filling plants. They are more reliable due to their resistance to shock and vibrations, and their ability to withstand harsh environments of dirt and dust. Using a Wiegand sensor allows a more compact design and eliminates the need for gears.

## The Benefits

With their short cycle time of less than 80 microseconds, these sensors reach the speed required in modern filling plants without any problems. Thanks to their accuracy of 0.1 degrees, the magnetic rotary encoders provide exact position data for the precise positioning of bottles. The sensors are also not susceptible to wear and are maintenance-free, making them ideal for meeting the stringent requirements in the food industry.

The rotary encoder generates an induction voltage with every axis rotation, thereby supplying power to the electronics. A built-in battery is no longer required, meaning the rotary encoder can provide exact position data for the system components even in the event of a power failure. Interfaces for SSI, EtherCAT, PROFIBUS, and PROFINET ensure seamless communication right through to the controller.

### Technical Features

- Design: Ø 58 mm
- Shaft type: solid and recessed hollow shaft
- Flange type: servo flange; hollow shaft flange with torque rest
- Max. rotational speed: 12,000 rpm
- Degree of protection: IP65 and IP67
- Max. shaft load: axial 40 N, radial 110 N
- Electrical interfaces: SSI, PROFIBUS, PROFINET, EtherCAT
- Max. bit count: singleturn 65,536 (16 bit), multiturn 65,536 (16 bit)

For more information, visit: **pepperl-fuchs.com/px-ena58il**