WACHENDORFF
The Encoder Experts

DEVELOPED AND
MADE IN GERMANY
5 YEARS WARRANTY

Innovation and progress:
The future of steel production with smart sensor technology

wachendorff-automation.com

There are few industries in which the demands are as high as in the production of steel. Such large systems can only rarely be serviced, as starting up and shutting down such systems is very expensive and time-consuming.

The use of sensors facilitates the entire application. Reliable and autonomous operation in the steel industry is necessary for this. They should be maintenance-free and highly reliable. In addition to the very high temperatures, vibration, shock, dust, moisture or oils have a direct impact on the longevity of the sensors.
To ensure that our products fulfil such high requirements, they are subjected to the Highly Accelerated Life Test (HALT) during development. The HALT test procedure aims to increase reliability by accelerating ageing in the shortest possible time. The HALT test, which is an essential part of Wachendorff's test strategy, confirms the robustness of the encoders.


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This gives both Wachendorff and the customer the certainty that the product is very reliable even under demanding environmental conditions. The combination of all influences is tested on the test subjects to ensure that the encoders will work consistently over the long term in the harshest of environments. applications in the steel industry are diverse and often require a different combination of environmental influences for the sensors used.

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Industrie ROBUST

Bucket wheel excavators

Another example of encoder applications is the bucket wheel excavator. It is indispensable in iron ore mining. Loose rock can be easily removed with it. The continuously rotating wheel shovels the loose rock through the large buckets onto a conveyor belt, which transports the rock away. The bucket wheel excavator is positioned positioned precisely over the iron ore deposit, rotated in turned in different directions and also and also shifted sideways. This is supported by encoders that are used to recognise the inclination, rotation and lateral positioning.

Our product range includes both singleturn and multiturn absolute encoders. The singleturn encoders provide a precise position within one revolution, while the multiturn encoders can also display the exact number of revolutions and, thanks to the patented Endra® technology, it is possible to operate the encoders without a battery or gearbox. This means that they can reliably detect and record rotations even when de-energised. This is made possible by the proven Wiegand effect.

Transport in lorries

The coal is transported in lorries from the mine to the store or the smelter. It is precisely during this transport that the correct and even speed is important. There is often not enough space to mount sensors or the parts to be measured are so large that direct mounting is not possible.

The LMSMA35 length measuring system is used for position detection in the remote-controlled mine release railcar. Rotary encoders are used in the various raw material feed trolleys to record the speed of the trolley and achieve precise positioning.

The robust length measuring systems ensure reliable speed and length measurement even in confined spaces and dirty environments. In order to be suitable for use in different areas, the measuring wheel has a special surface that is suitable for the material to be measured. suitable for the material to be measured. With an adjustable preload and a patented detent, the measuring wheel can be mounted on the rotating shaft without slippage.

The IP67 encapsulated rotary encoder provides sufficient impulse for precise control of the carriages.

Roundabout tipper for bulk goods

High temperatures are required to melt steel. Heating furnaces for steel production are often fuelled by coal and must not fail under any circumstances. The coal required for this is transported to the steelworks in a train. A special tipping system for unloading the bulk material was developed to enable the most efficient unloading possible. This allows train loads of bulk material to be unloaded simply and efficiently by tipping.

With encoders for speed feedback and positioning, the coal container can be tilted precisely and in a controlled manner. Incremental encoders are used for speed control and absolute encoders for positioning. They are used in harbours with high transport volumes and in industrial sectors such as metallurgy, coal and thermal power stations, where the highly developed QuattroMag® singelturn technology is used to precisely determine the exact position.

With the help of a patented calculation algorithm and four Hall sensors, the singleturn position of a magnetic absolute encoder can be determined extremely precisely. A cross-correlation is performed between the measured value and the reference value in order to obtain a stable result. By appropriately calculating the magnetic field generated by a diametrical magnet, possible interference from the Hall sensors is eliminated. As a result, magnetic singleturn technology can be used successfully in dynamic and high-precision applications.

Rolling mills

In the rolling mills, the steel is processed into flat steel between two rotating rollers. A distinction is made between hot and cold rolling. For both methods, the incremental hollow shaft encoder WDG 100I can be mounted on the end of the shaft and used to control the speed of the rolling mill motor. This allows the input and output speeds of the rollers, which follow one another, to be precisely synchronised. This ensures trouble-free operation.

Rotary encoders are also used for processing and moulding. The WDGI 58B incremental encoder is installed at the end of the motor to support the speed detection of the motor. This means that the exact speed of the motors can also be recorded and controlled here.

The raw material is fed by a raw material feed trolley. The LMSMA32 length measuring system is used here to record the position of the trolleys and achieve precise positioning. This can be used to measure the exact position and speed.

LMSMA32

Summary of the report:

Wachendorff encoders are prepared for harsh environmental conditions during development. Qualification and verification are based on complex and extensive environmental simulation tests.

Wachendorff products are characterised by an ideal combination of mechanics, optics and electronics, making them some of the most reliable and robust devices on the market.

They are highly accurate, flexible to install and compact. Thanks to their robustness and high vibration resistance, they are also reliable over a very long period of time. Another major advantage is their ability to withstand high bearing loads and temperatures. With these versatile and high technical properties, they are ideal sensors for use in a wide variety of applications that are intended for encoders in steel production.

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