Jewell Instruments

Metalworking Furnace Activity

- **Objectives:** Provide accurate data in exteme environments
- **Solution:** **Jewell Instruments Inclinometers**
- **Benefits:** High-precision and ruggedness
- **Results:** Reliable and long-term functionality

Overview

Steel and its importance to the future success of our world is undeniable. It is one of the only materials that is completely reusable and recyclable, and it will continue to play a critical role in building the circular economy of our world.

Steel is essential to the automotive, construction, rail and rail transportation, ships, and affects nearly everyone and the way in which we live and work. It delivers the energy that is the lifeblood of our society, protects the products we buy and creates the appliances we depend on.

Jewell Instruments LSOX

Application

Whether drawing beams, rolls, plates, or bars; when steel is extruded from a furnace it is vital that the process maintains a high accuracy of level and flatness and that there is virtually no tilting of the length of steel

As part of the process, steel mills not only have typical fans, pumps, compressors, gearboxes, and cooling towers; but they also have machines and processes unique to the steel industry. The machine sizes, machine designs, operating speeds, cycle times, batch operations, and harsh mill environments often command the use of carefully selected sensors and methods for effective equipment monitoring. Iron making and steel making areas often have an abundance of large belt conveyors, critical ultra-low speed machines with limited rotation, critical large EOT cranes, and large volume turbo blowers coupled with >2300 °F hot blast air, molten liquid iron, red hot slabs, often carbon monoxide risks, and – of course – rolling mills.

This steel producing process requires sensors that stand up to the harsh, high temperature and extreme environments of steel mills and have the ability to withstand high vibrations and oscillations in the steel product itself. Steel manufacturers often measure the taper, and many utilize inclinometers made by Jewell Instruments specifically for continuous cast-

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ing. Many inclinometers were made to handle mold oscillations of 1 Hz and not 4-6 Hz or higher, which is the frequency, at which many of the steel mill's molds oscillate. The Jewell Instruments LSOC, LSOX, and LSRP models are several of the very few sensors on the market that possess adequate resolution for this rugged and harsh application.

The LSOC, LSOX and LSRP high precision inclinometers are single-axis analog inclinometers series designed as rugged, high precision tilt sensors for peak performance in extreme conditions. These RoHS compliant sensors feature a fluid damped mechanism to deliver superior noise rejection in high shock and vibration environments as well as excellent output stability

Metals manufacturing plants often use clinometers to measure and control the tilting activity for the emptying of a furnace. A common sensor used for this application is the AccuStar ratiometric clinometer with voltage output. However, in many cases a sensor with voltage output was not effective due to electrical noise interference at the furnace. The Jewell Instruments RMIW uses a similar mounting configuration and footprint as the Accustar and includes 4-20mA output to reduce electrical noise in the tilt readings. The RMIW is used in a precise tilt monitoring and automation system for the emptying of a furnace for metal works. The RMIW is a high accuracy force balance type sensor, but with the cost of a MEMs sensor. Having a single component with the similar performance, footprint, and mounting capability along with 4-20mA output was determined to be an effective and convenient solution for many steel manufacturers.

Jewell Instruments LSOC

About Jewell Instruments

Jewell Instruments is a world leader in the design, manufacture, and distribution of high-precision products. Our expertise includes acceleration and tilt sensors, electronic compasses, avionics components, solenoids, and panel meters. The extensive application knowledge we have obtained through decades of experience allows us to provide custom solutions for a diverse group of industries. In fact, customers from all over the globe contact us for solutions to aerospace, medical, industrial, and telecommunications applications - to name a few.

To find out more, visit our website!

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