Force measurement weighing systems
ABB force measurement weighing systems for metal processing applications in India

Weighing systems are key components in metal processing industries such as iron and steel. These systems must work safely, accurately and reliably in a harsh operating environment.

Measurement made easy

Introduction

ABB has been actively applying its new strain gauge weighing systems in India since 2009 and looking back on over 50 years history of successful Pressductor® weighing systems.

Having many years of experience with these weighing applications, ABB has developed systems that can withstand impact and high overloads while remaining accurate. These systems provide the right balance of accuracy, speed and long-term reliability. Based on strain gauge technology, they incorporate high overload capacity and temperature resistance.

Primary ABB weighing applications in metal processing for customers in India include:
- crane scales with load pin overload protection
- torpedo and ladle cars
- ladle turrets
- tundishes in metal casting
- slab and scrap weighing
- scales for blast furnace batching systems
- hoppers and silos
- coil, slab and platforms

Weighing information can also be integrated across plant data handling, warehouse and logging systems to provide general monitoring and quality control.

For more information

Further details of ABB Measurement & Analytics products are available for free download from: www.abb.com/measurement

or by scanning this code:
Crane scale load cells (type 9QGPK)

The ABB 9QGPK crane scale load cell measures the tensile force between the hook and the ropes. These systems are rugged and reliable with load cell capacities up to 160 tons.

The disk-shaped load cell (shown in Figure 1) is mounted either on the hook block or on the lifting beam. The load cells are insensitive to lateral forces and are fitted with strong dustproof cover plates. A weighing terminal receives the transmitted force signal.

After installation, the load cells become an integrated part of the crane structure (example shown in Figure 2). Crane scale load cells come with various nominal capacities, depending on requirements. Compensation and cables for high temperature are available as options.

ABB 9QGPK load cells for crane scales can act as drop-in replacements for existing Pressductor® QGPK105 and QGPK 101/102 load cells. All the mechanical dimensions and measuring ranges are fully compatible.
**Overload protection for cranes (type 9QGPS)**

Increasing concerns with the safety of cranes have made it necessary to monitor the applied loads. The operator should be informed about an overload or imbalanced load condition. Pin load cells serve that purpose. ABB has developed pin load cells and associated evaluation electronics to indicate exceptional load situations affecting the crane.

These overload systems consist of a load pin that contains strain gauge sensors. The pin replaces the rope's fixed-point shaft. Alternatively, it can be used instead of a shaft in any loaded sheave arrangement, such as the hook block or on the crane's trolley. The load pin, working as a double shear beam, sends an output signal to the load cell evaluation electronics, which in turn generates an alarm signal to inform the crane operator about an overload condition.

The evaluation electronics are generally simple units, mounted either on a DIN rail in the control room or in a locally installed housing. The units may provide multiple alarm outputs for overload detection of overloads, slack ropes and asymmetrical loads.

The load pin is a non-standard, stainless steel part custom-designed for a particular crane. It fits into the available mechanics and provides a safety factor of at least 500 %. Load pins can be rated for loads from 300 kg to 1,000 tons and we can provide the load pins with approval for Ex Zones.

**Load cell for use in container and platform scales (type 9QGPL)**

These load cells typically find use in conjunction with rubber/steel pressure plates or sliding pressure plates. Type 9QGPL load cells have an especially rugged design suitable for weighing in harsh environments. They offer high accuracy and easy commissioning.

Installation of 9QGPL load cells is usually under a platform or a weight bridge in a frame. The applied load reaches the load cells via the pressure plates. Versions for high ambient temperatures (+180 °C maximum) are available as an option. The Type 9QGPL load cells can replace existing Pressductor® QGPL105 load cells since all the mechanical dimensions and measuring ranges are fully compatible.

A complete weighing system usually consists of one to four load cells, a weighing multiplexer or connection box, a weigh controller and optional peripherals such as PC, printer, keyboard or large-scale display.