Meeting the Needs of Mining Operations

The growing demand for raw materials is putting increased pressure on the mining industry. To respond to the challenge, today’s mines must be as productive and efficient as possible.

Weighing is an important part of a mine’s day-to-day operations. Accurate scales affect profits by ensuring that you charge the correct amount for materials that are transported. They also help comply with government regulations and avoid fines for overloaded trucks.

METTLER TOLEDO scales have demonstrated the ability to operate reliably over a long service life, even in the toughest industrial environments. By combining reliable scales with a well-planned traffic pattern, data management system, and unattended driver terminals, your facility can process more trucks per day and reduce traffic congestion.

We understand the challenges facing today’s mining operations. Our emphasis on technology and service enables us to provide the following benefits:

- Superior products
- Responsive service
- Lowest total cost of ownership
- Compliance with regulations
New Weighbridges
Boost Coal Production

BHP Billiton teamed up with METTLER TOLEDO to increase production at its West Cliff Coal Preparation Plant. A key to the upgrade was the addition of six new weighbridges at the facility's loading bays.

The West Cliff Coal Preparation Plant in New South Wales, Australia, is owned and operated by BHP Billiton Illawarra Coal. The plant processes Bulli-seam hard coking coal and uses trucks to transport it approximately 25 km either to the BlueScope Steel works at Port Kembla for local use or to the Port Kembla Coal Terminal for export.

To improve efficiency, the West Cliff plant carefully analyzed its process and identified bottlenecks. Based on that analysis, the plant made changes that doubled its throughput to approximately 6.5 Mtpa of raw coal or 5.5 Mtpa of clean coal. An important part of the improvements was the installation by METTLER TOLEDO of six 100-ton weighbridges with an integrated vehicle identification and data management system.

**Weighbridge Replacement**

The original weighbridges had been installed in 1976 when West Cliff was built. Their design consisted of a steel platform suspended on mechanical pivots with analog strain gages. A concrete pit housed the mechanical apparatus so that the weighing platform was at pavement height. The weighbridges had reached the end of their working life and were difficult to maintain.

Another reason for replacing the weighbridges was that the West Cliff plant had signed a new six-year contract for truck transport with HBL Bulktrans. To improve transport efficiency and lower transport rates, the fleet was being replaced with B-Dou-ble trucks that are 25 meters long. The new larger trucks could not fit on the existing weighbridges.

Analysis of the existing loading system identified significant loading and weighing inefficiencies. Truck drivers were loading from stockpiles with front-end loaders or from bins and then passing through a truck wash and weighing on the old weighbridges. In order to meet legal-load or efficiency requirements, up to 60% of the trucks had to return to the loading bays to either trim or top up their loads. Some drivers were making three or four trips to the loading bays at five minutes per trip.

Six new weighbridges were installed directly under the plant's product bins.
Loading Efficiency
A team from BHP Billiton worked with METTLER TOLEDO to upgrade the weighbridge system and improve truck-loading efficiency. They studied the possibility of installing new weighbridges under the six bays where trucks are loaded from three 2,700-ton product bins.

Fortunately, the existing bin and pavement geometry presented only a few engineering and technical difficulties. The team was able to install the weighbridges above the existing pavement and still allow clearance for the trucks by removing a spool piece and raising each of the 12 bin doors. This avoided costly excavation, ongoing water and spillage management, and safety risks.

One concern was that large amounts of coal could spill during loading and collect underneath the weighbridges. To solve this problem, the team designed a system of steel barriers that keep spilled coal on top of the weighbridge platforms, from which it can be removed safely and easily. The barriers are 2-meter-high fixed walls made of steel plate and positioned on either side of each weighbridge. Extended steel curbs are fixed to the moving platforms, providing adequate clearance to prevent binding.

JAGXTREME Terminals
The six JAGXTREME® scale terminals supplied with the weighbridges were programmed to interface with the existing vehicle tag readers so that there was no need to replace a whole fleet of vehicle tags. The terminals accept entry of weighing transaction data at the weighbridge, making it possible to complete a transaction and validate data while a truck is still on the weighbridge. Each JAGXTREME terminal is connected via Ethernet to a central database to validate maximum vehicle weights so that drivers know if their trucks are overloaded before leaving the weighbridge.

METTLER TOLEDO also supplied PC-based monitoring software that allows remote users to view the “real-time” operations of each JAGXTREME terminal at the West Cliff plant and to perform supervisory tasks. The power of this remote-access feature was demonstrated when it was used by the METTLER TOLEDO software engineers to monitor the status of the application and implement software changes from their office in Melbourne, some 800 km away.

This feature is being used today by HBL Bulktrans to monitor weighbridge activity from their Wollongong office (50 km from West Cliff) and to give after-hours assistance to drivers who are unfamiliar with the West Cliff system.

The entire project was successfully completed on time and within budget. According to Roger Bowman, the West Cliff Plant Manager, “The weighbridge installation performance is excellent. There have been many positive comments from the truck drivers and logistics supervisors, and the truck loading efficiency is improving all the time. I would like to thank the METTLER TOLEDO team for helping us to make this important change.”

Whether loading from stockpiles or bins, drivers are now able to load their trucks very precisely to legal limits and axle weight distribution. Spillage protection systems have also proved successful. As an extra benefit, the site is a safer place because there is less traffic movement and less dust generated by trucks.
Vehicle Scale Software for Increased Efficiency

An OverDrive™ software solution can increase efficiency and profits by making a truck scale an integral part of a facility’s business operation. It provides a complete data management center with instant access to the information about products, pricing, vehicles, and customers that is used in weighing transactions. In addition to processing weighing transactions, the software controls inventory, generates invoices, and compiles reports.

Complete Scale Control

OverDrive software provides the brains to run a complete inbound/outbound weighing operation, including multiple scales, traffic lights, gates, and ticket printers. It can be used as a stand-alone system or integrated into a computer network. For larger operations, OverDrive software can manage multiple sites, making it possible to consolidate and share data. In addition to speeding up traffic over a truck scale, it saves time and money by streamlining the business end of an operation.

Unattended Weighing

When it is not practical to have a scale operator on duty, OverDrive software can be used with our unattended driver terminals. These terminals automate scales by allowing truck drivers to process their own inbound and outbound weighing transactions in seconds. Drivers identify themselves with an access code or card and receive a ticket for each transaction. All data from the unattended transaction is recorded in the OverDrive database.

Unattended driver terminals keep traffic moving over scales by allowing drivers to process their own transactions in seconds.

Unattended driver terminals can be equipped with card reader, printer, intercom, or other options.
Shipping products by rail allows you to move very large amounts quickly and economically. When the products are sold by weight, a reliable rail scale is essential.

METTLER TOLEDO weighbridges are durable enough to stand up to heavy-duty use. Their main I-beams are positioned to support the full weight placed on the rails. Because the strongest components support the load, our weighbridges are designed to outlast other weighbridges that direct stress to weaker parts of their structures.

We offer a complete line of rail scales to meet your weighing needs:

**Static Weighing**
Our static rail scale is designed to weigh an uncoupled rail car that is stopped on the weighbridge. A typical installation uses two separate weighbridges that are spaced to accommodate rail cars of varying lengths. The scale terminal sums the weights from the two weighbridges and displays the total weight.

**Coupled In-Motion**
Our coupled in-motion (CIM) rail scale is designed to weigh rail cars that are coupled together and moving across the weighbridge at speeds of 3 to 5 miles per hour. It can make weighing quicker and safer by eliminating the need to couple and uncouple rail cars. Our CIM rail scales feature robust check rods that keep the rails properly aligned at all times.

**Truck/Rail Scale**
This model combines a static rail scale with a concrete platform for weighing trucks. The rails are recessed, allowing trucks to drive across the weighbridge. If your operation weighs both trucks and rail cars, this solution can reduce both the initial cost and ongoing maintenance costs. It also requires less space than separate scales.

**Benefits**
- Robust weighbridge design: For a long service life
- POWERCELL® MTX® load cells: For accurate and reliable weighing
- Custom scales: All rail sizes and gauges are available
- Rail fasteners: Pandrol e-clips or bolt-and-clip fasteners for secure installation
- StrikeShield™ system: The ultimate protection against lightning damage

Coupled in-motion scales weigh rail cars that are coupled together and moving across the weighbridge.
Laboratory Instruments for Precise Measuring

To ensure product quality, mining operations need the best testing instruments available. METTLER TOLEDO can help your quality control program by supplying weighing and measuring equipment for use in both laboratory and production environments.

Our balances deliver the precise weighing that is required in the laboratory. They range from basic balances for simple weighing applications to balances with a variety of analytical features. We offer solutions that incorporate innovative quality-management tools and touch-screen displays. As a leading manufacturer of laboratory balances, we strive to make weighing and sample handling as simple as possible for you.

We offer a range of solutions for measuring moisture content. Halogen moisture analyzers combine halogen-heating technology with strong analytical capabilities. Revolutionary halogen drying makes moisture determination faster, gentler, and more precise. It provides professional and efficient moisture determination for the most demanding requirements.

METTLER TOLEDO laboratory instruments can help you increase accuracy, boost productivity, and comply with government regulations. We back up these products with extensive application know-how, plus a large selection of accessories and options for connecting with your information systems.

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