Millmate Weighing Systems

Weighing systems for the metals industry

Meeting the demand for fast and accurate weight information on-line, all the time.

In the demanding environment of the metals processing industry getting the right balance between accuracy, speed and reliability in your sensing systems can mean a great deal. Weighing systems are an important part of the whole process but making sure that all the components can stand up to the harsh environment requires experience and skill – and the right components. A balance that few other manufacturers can match.

Easy to install, easy to use

The key to the Millmate Weighing Systems lies in the ease with which it can be integrated into your process systems. Purpose built units make mounting the load cells, electronics and displays easy, in both new and existing installations.

The operator can handle taring, weighing and print out by simple push-button commands from the display in the operator cabin. Large scale displays allow reading from up to 100 metres distance. Sophisticated control electronics combine off the shelf application functions with full configurability and connectivity making installation and commissioning simple and rapid.

Economical in costs, efficient in action

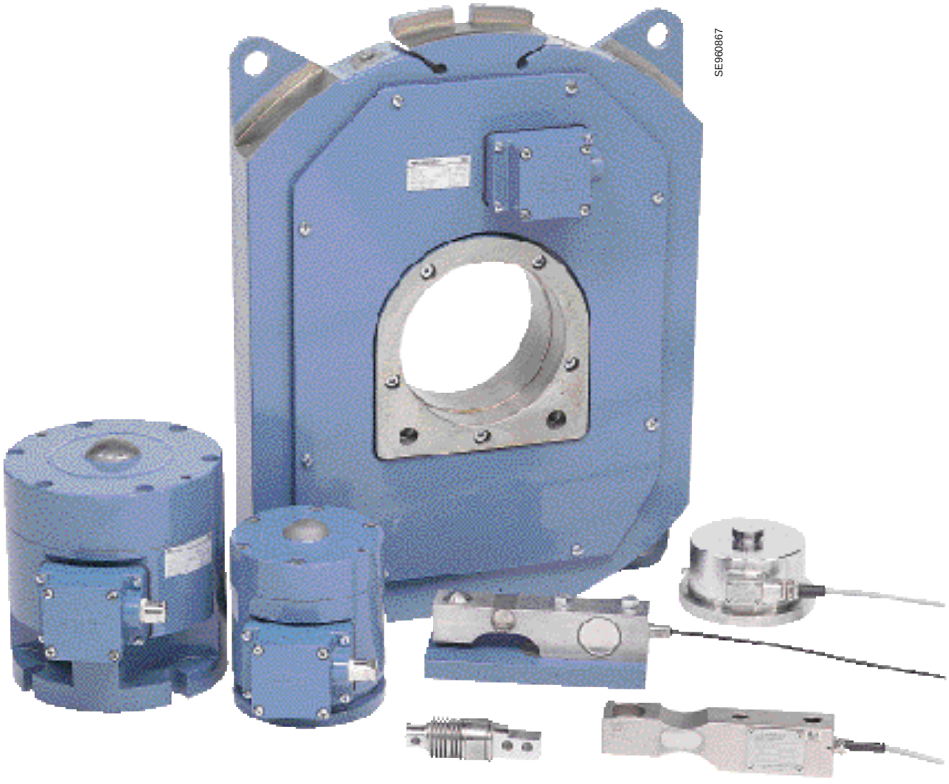
With Millmate Weighing Systems the load information is immediate and continuous without the need for separate weighing operations. This means better control over stock and recipes with immediate effect on material consumption and the time taken to prepare charges. Weighing data can also be integrated into plant wide process reporting, stock control computers and logging systems for overall supervision and quality control.

Reliable and accurate in harsh environments

Millmate Weighing Systems include load cells with transducer based on ABB patented Pressductor® Technology. Designed to work well even in the toughest environments and will withstand shock-loads and high overload without loss of accuracy while providing a high signal level for faultless operation even in conditions with high electrical interference. Operationally the load cell measurement error is typically less than 0.05%.

- *Easy*
- *Economical*
- *Reliable*
- *Accurate*

SE980636



SE980867

SE980637

With rugged load cells, high signals levels and a range of purpose built sensors, Millmate Weighing Systems can be quickly and easily integrated into your application.
The Millmate Controller 400W combines ease of use with advanced communications and a range of display options. This means that the system can be used to provide weighing data to a wide range of applications.

Quality control

The requirements of today's quality certification such as ISO9000 mean that companies must be able to prove their quality with accurate reliable and repeatable procedures. In steel making Millmate Weighing Systems provide the data needed to support verification of recipes, output quantities and qualities and stock control.

Global experience, world wide support

ABB has more than a century of experience in iron and steel industries and more than thirty years in weighing systems, world wide. There are more than 1,500 crane weighing installed with users in many countries. Purpose built equipment with its own diagnostic and reporting system makes sure that weighing is always accurate with down time for maintenance kept to the minimum.

Millmate Weighing Systems are supported by a world wide organisation for advice and consultation in preplanning as well as after sales service.

An integrated weighing system provides continuous benefits

Millmate Weighing Systems have been optimised for applications in the iron and steel industry with the ability to resist up to 300% overload, high accuracy and long term stability.

CRANE WEIGHING

Crane weighing is a major asset in almost every stage of metal production from raw material to finished product. Continuous, accurate and automatic weighing of every load that is lifted eliminates the need for separate weighing operations and thus speeds up the entire process. With accurate information available to control operators at every stage makes the economical use of resources much more feasible. Crane weighing can be used at all stages of the steel making process – from scrap handling and charge assembly to handling finished products – providing certified loading weights, accurate control of recipes and weight data for process and quality control.

Teeming operations

Crane scales give precise control over critical factors in teeming including rise rate and ingot weight. Both of these are important influences on the quality of the output. The use of large character digital displays on the crane itself allows the crane operator to control rise rate by monitoring pouring from as far away as 30 metres from the chill.

Scrap yard operations

Weighing the raw material while suspended from the crane makes loading operations quicker and more accurate. Matching actual loading to the recipe makes batch assembly more precise and easier. It also mean less adjustment during refining. With the crane scales directly connected to the control computer it is possible to monitor stock usage and maintain up to date records of stock holding.

Furnace feeding

The ability to continuously monitor ladle weight makes it possible to pour exact quantities a portion at a time. This means that it would be possible to meet the demand for small quantities of different recipes within one batch melt. This way the furnace is working close to capacity by altering the recipe after each tapping.

The result is a major saving not only in time, waste and labour but also in wear on the refractory lining of charging and transfer ladles.

SE770986

Crane scales give precise control over critical factors in teeming including rise rate and ingot weight.

SE811828

Crane weighing can significantly improve productivity by reducing waste and cutting down the time required for weighing.

- *Crane weighing*
- *Scrap weighing*
- *Blast furnace weighing*
- *Continuous casting*

SE980619

SCRAP WEIGHING

Perhaps the toughest environment for the weighing system, ABB provides several unique solutions for monitoring scrap weight which can be combined to give flexible, fast and accurate scrap handling in any situation. The load cell has high overload and side load capacity, this coupled with the lack of re-calibration and lack of change over time, make the system ideally suited to scrap handling operations.

The system is purpose built for scrap operations and is therefore designed for ease of use. Reliability and speed of operation, accuracy of weighing and long life. It is readily adaptable to variations in scrap yard layout and incoming/outgoing handling methods.

SE830384

ABB provides several unique solutions for monitoring scrap weight which can be combined to give flexible, fast and accurate scrap handling in any situation.

SE940181

BLAST FURNACE WEIGHING

Weight data is an important factor in the accurate production of steel to given recipes. Top hopper weighing provides total weight indication with pressure compensation and flow rate indication derived from weight data change over time.

The load cells provide data for total hot metal weight, poured weight and residual weight in torpedo cars. This makes pouring operations more accurate and better controlled.

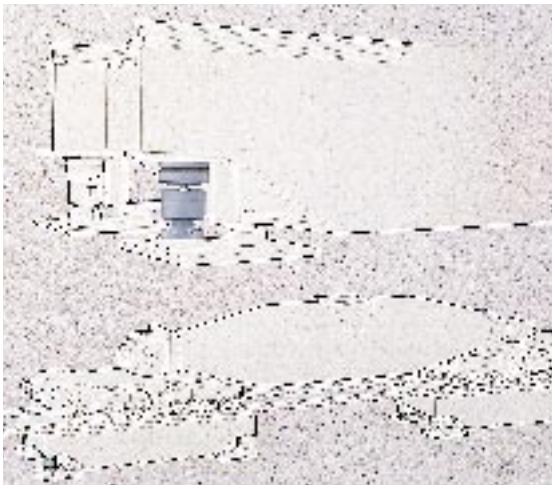
Transfer cars

Weighing of ladle transfer cars is one of the most demanding applications in steel industry with high temperatures, shock loads, side loads, metal spills and other destructive events. Therefore ABB's experience and know-how is essential and can be demonstrated in a number of installations world wide.

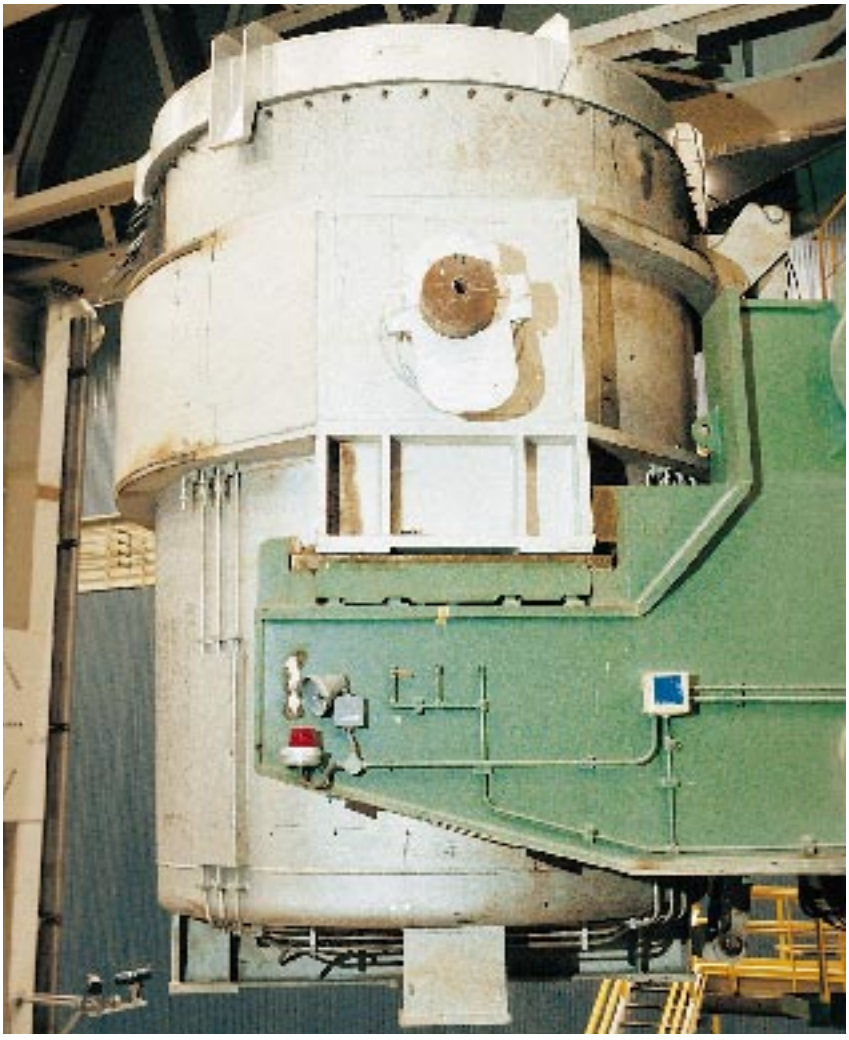
SE830382

Accurate, economic and safe, blast furnance weighing helps improve productivity and profitability.

SE940180



SE7808675


SE980620


SE980621


SE830389

CONTINUOUS CASTING

The use of Millmate Weighing Systems in the continuous casting process makes it possible to improve product quality, increase yield, increase automation and improve safety.

Ladle weighing

With load cells installed in the ladle turret linked to the operator station with an easily used dedicated operator panel it is possible to obtain far greater information more rapidly and accurately than by any other method. Ladle weighing gives you full control over delivered quantities from the steel works and quantities processed. Control of the material yield in the machine. Indication of steel quantity remaining in the ladle so that advanced preparations can be made for ladle exchange at the appropriate moment. This gives an accurate control of the flow from the ladle to the tundish.

Tundish weighing

Continuous data from load cells in the tundish allow greatly increased automation of the process. With better control over the level in the tundish bath there is improvements in quality of the strand surface, more consistent steel quality, less variation in temperature and improved water cooling economy. Better control over levels also results in better safety for men and machines. Custom designed installations can be provided for specific applications.

Slab weighing

Load cells in the roller table give continuous data on the quantity of metal delivered to the rolling mill, constant assessment of the yield of the caster and allow for optimisation of the rolling operation.

The use of Millmate Weighing Systems in the continuous casting process makes it possible to improve product quality, increase yield, increase automation and improve safety.

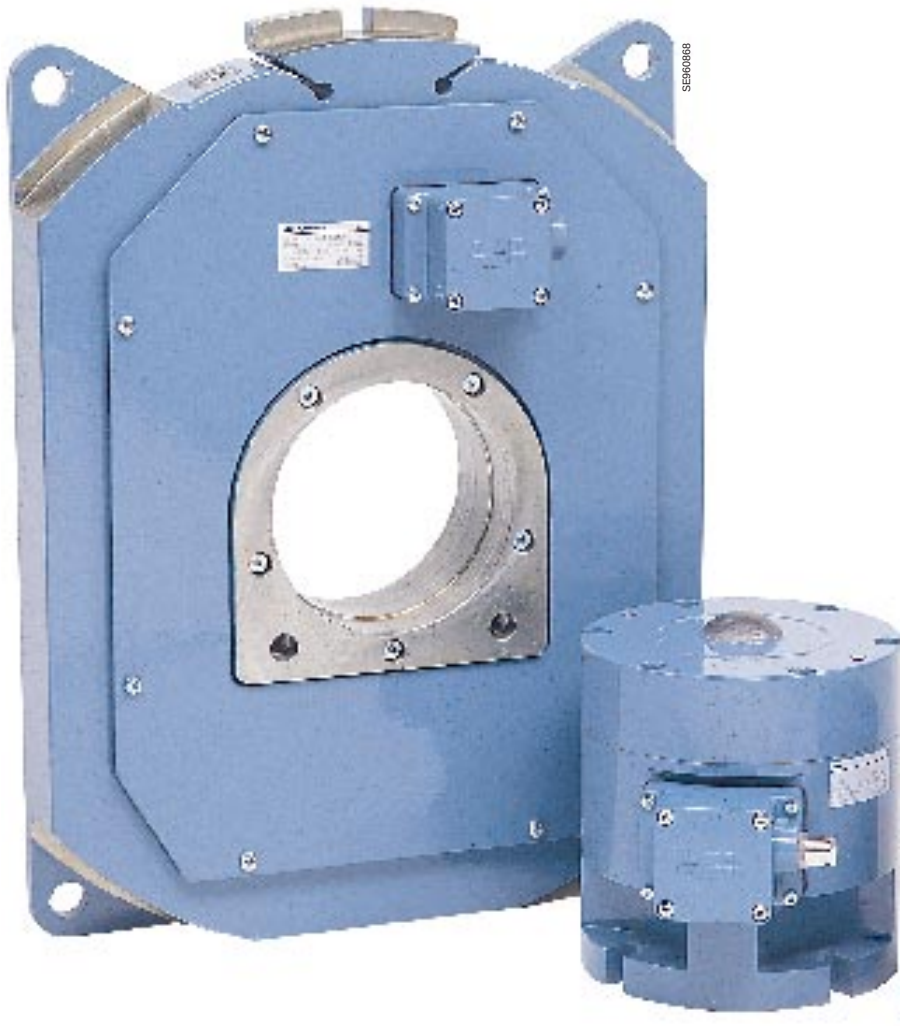
A well proven design for total reliability

ABB weighing is an end to end concept built for its purpose. ABB manufactures all the critical components to exacting standards and combines them into a custom made weighing system to exactly match your needs.

At the heart of the system is the load cell, based on Pressductor® Technology, a robust, reliable and accurate sensor which eliminates many of the problems associated with other weighing methods. The construction of the transducer produces a near solid state device with no mechanical or electronic parts to wear out or fail. Built into a load cell designed for specific applications, such as crane weighing or ladle turret, the load cell has low impedance and high signal output some ten times higher then that of even high output strain gauges. This means that the load cell performs well even in environments at high temperatures and high humidity with extreme electrical interference. Under normal operating conditions the load cell is accurate to within 0.1%.

The way in which force measurement takes place means that the load cell can take 300% overload and up to 30% side load without damaging the cell. The physical nature of the measuring principle (magneto-elastic effect) is such that the load cell is not subject to fatigue, this effect does not change over time. This means that the cells do not need periodic re-calibration nor is there any change in signal year after year.

As a result Millmate Weighing Systems are extremely stable and offer repeatable reliable accuracy for a very long time.

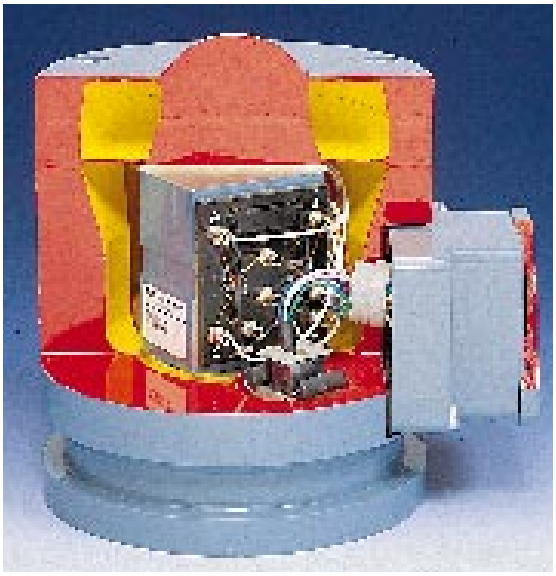


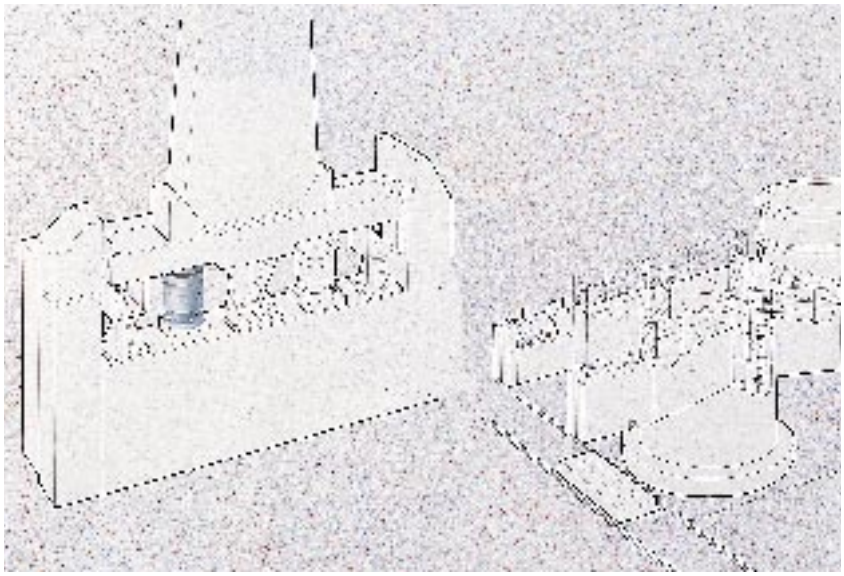
Flexible configurations to suit all types of applications

The way in which loads cells can be integrated into equipment and the differing ways that the operational interface can be arranged allow maximum adaptability for differing plant layout. A wide range of options for display type and location along with the ability to link into many forms of plant-wide and process computing systems make it possible to distribute weighing data to many locations.

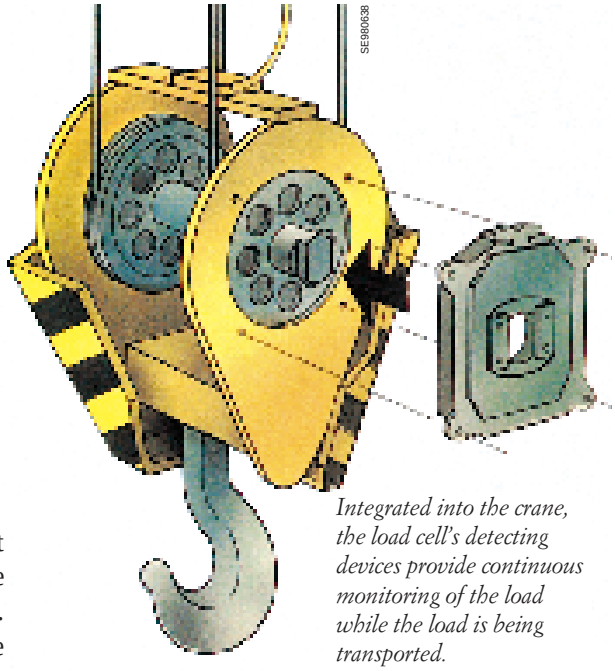
The Pressductor® Transducer can be fitted into many types of load cell for specific applications, such as; the crane load cell can be fitted in hook block, lifting beam or guide pulley and the rail beam load cell in continuous casting machines for e.g. tundish weighing.
Standard sizes range from 5 to 160 tonnes and can be used together to handle loads up to 640 tonnes.

- *High overload capacity*
- *Insensitive to interference*
- *High repeatability*
- *Long term stability*





The force measuring element is a robust and reliable Pressductor® Transducer.



Integrated into a weigh beam Pressductor® Load Cells provide a solid and stable foundation for the ladle foot. This is essential for a good weighing result.

Integrated into the crane, the load cell's detecting devices provide continuous monitoring of the load while the load is being transported.

Low maintenance

The design of the load cell and the way in which it is linked to the control systems makes Millmate Weighing Systems extremely robust and reliable. Advanced diagnostics and self test features in the controller ensure that any alarm conditions are reported rapidly and dealt with effectively.

Advanced electronics put control at your fingertips

Millmate Controller 400W adds communications and control capability to the advantages of the load cell to make the Millmate Weighing Systems a complete, accurate and controllable system.

Location

The load cells are connected using standard cables, this and the relatively high output signal level means that the controlling computer can be placed wherever is most suitable. Making installation and maintenance of the connections simple and straightforward. The operator's panel is as robust as the rest of the system designed to suit the operating environment. And to be operated under less than optimum conditions.

The central processor is housed in a dust proof cabinet and is supplied with cable housing and plinth to accommodate the communications connections. Power is distributed with compensation for distortion and disturbance in the power network.

Operation

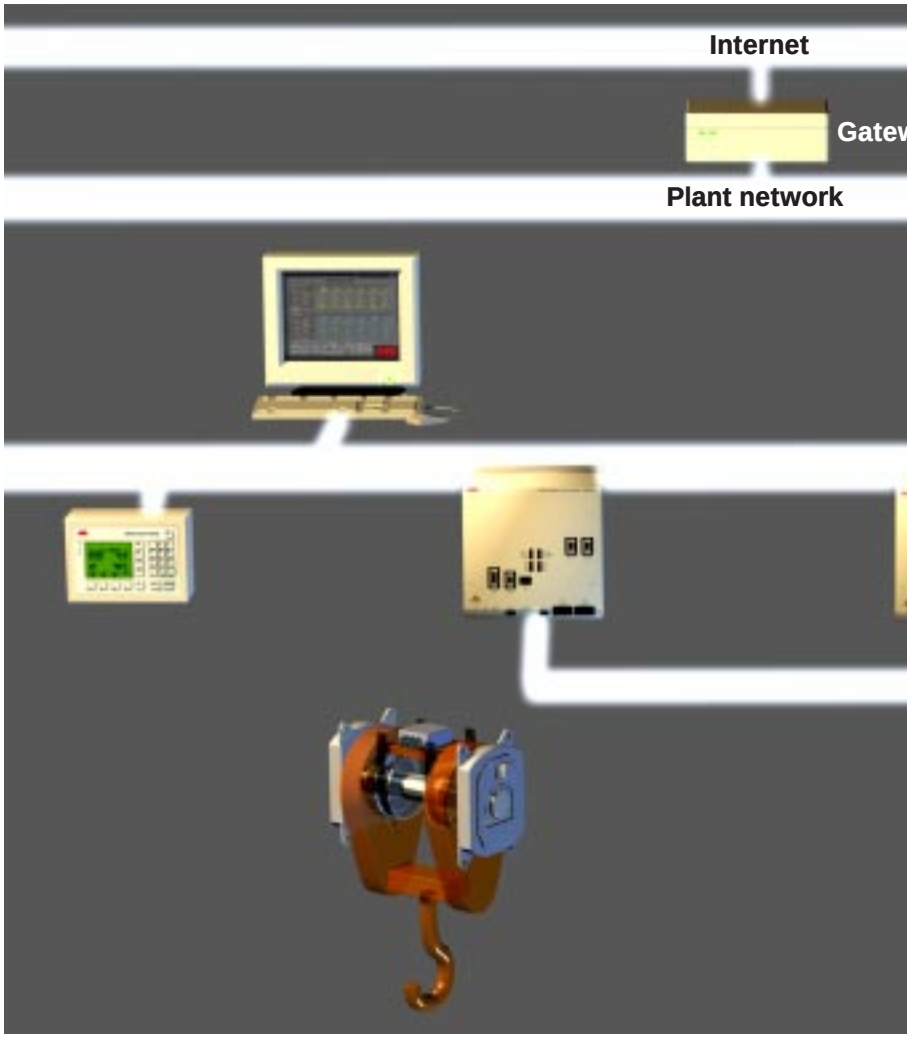
Millmate Controller 400W is programmed for specific applications so that the operational displays carry appropriate messages and information, whether it is a remote PC, dedicated operator panel or engineering support. At operations level the operator panel has two modes – run mode and service mode, with menus appropriate to each and password protection for service modes. Service mode allows full definition of the control unit and operator panel.

System information, communications and operator messages are displayed on a LCD screen.

Operator level information can be supplied in local languages as needed by operators. The central processor can also drive large displays via a standard RS232/485 link.

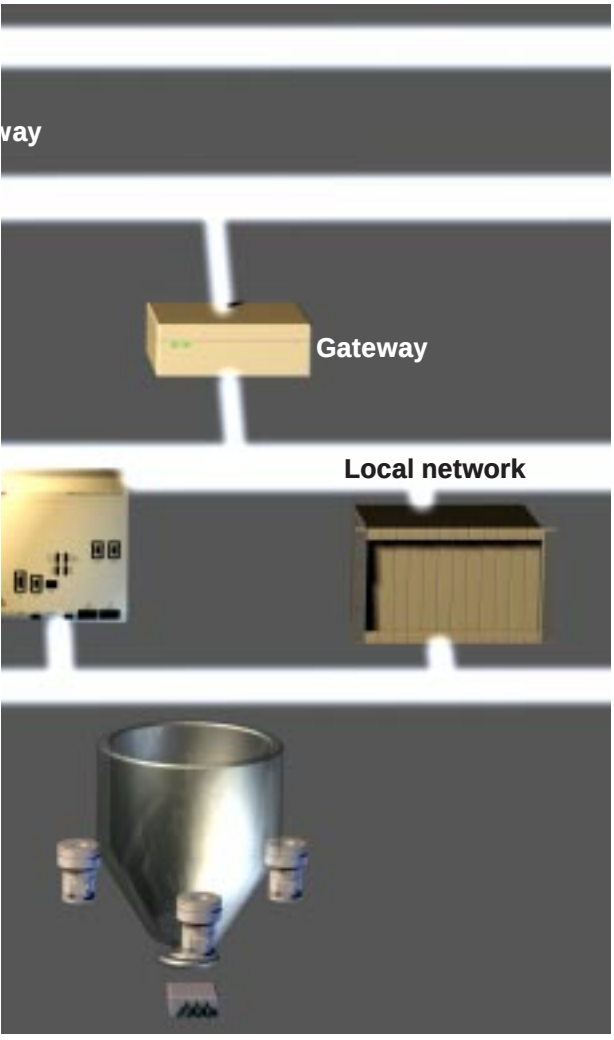
Configuration

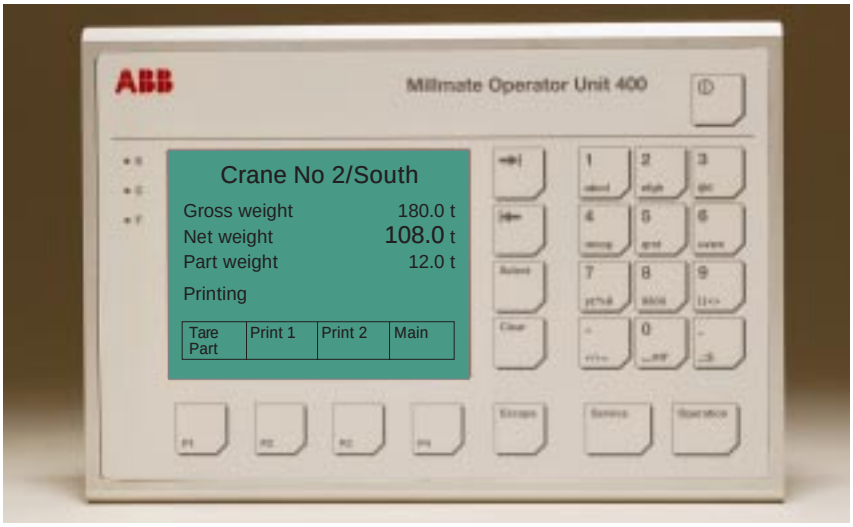
Millmate Controller 400W is designed for flexible use allowing system designers to decide on the type of data distribution needed by the local operation. Multiple controllers can be connected to operator panels or PCs via ethernet where multiple weighing operations are supervised from central locations.



Using open system protocols Millmate Controller 400W makes data available throughout your operations locally for real time control and remotely for performance monitoring, statistical analysis and management reporting. Data derived from the weighing control system can be shared with many clients without compromising production.

- *Flexible configuration*
- *Control over location*
- *Control over operation*
- *Control over configuration*
- *Control over information*





Application specific messages are displayed on the operator screen.

Information management

Millmate Controller 400W is fitted with a range of communications connections allowing full integration into the mill-wide network. For communications between central processors and operator stations the system uses ethernet LAN with TCP/-IP protocol. The system is also fitted with RS-232 and RS-485 ports with the potential for linking via Siemens protocol 3964. Extensive use of HTTP protocols makes it possible to enhance services with client specific data for remote use such as management reporting, statistical analysis and quality control.

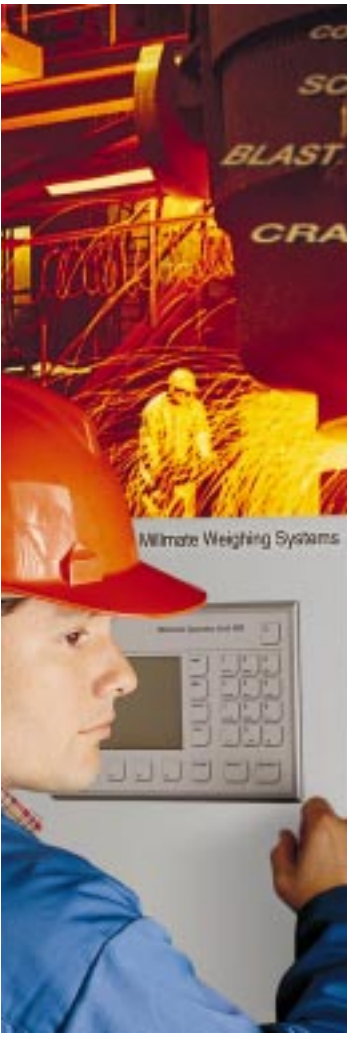


ABB is a world-wide organization committed to providing solutions for the generation, transmission, distribution and use of electrical power. It consists of 1,000 companies in 140 countries.

As part of that group ABB Industrial Products is one of the world's largest suppliers of industrial automation and machines, products and services. Unique global resources provide the highest levels of customer value growing from in-depth knowledge and understanding of industry needs. Leading edge technology, specific application knowledge and an uncompromising commitment to quality make ABB Industrial Products an important partner for industries in their drive for productivity, quality and profitability.

ABB Force Measurement Products and Systems is a division within ABB Industrial Products. It provides equipment for accurate, reliable measurement and control in a broad range of applications from steel making to paper converting industries.

Care Of. Printed in Sweden by Westerås Media Tryck, Västerås 1998.

3BSE016936R0001

ABB Industrial Products
A unit within ABB Industrial Systems AB

S-721 59 Västerås, Sweden
Phone: +46 21 34 20 00
Fax: +46 21 34 00 05
Internet: www.abb.com/pressductor

We have local representatives in:

Argentina Buenos Aires, **Australia** Melbourne, **Austria** Vienna, **Belgium** Brussels, **Brazil** São Paulo, **Canada** Montreal, **Chile** Santiago, **China** Beijing, **Denmark** Ballerup, **Finland** Helsinki, **France** Décines, **Germany** Düsseldorf, **India** Bangalore, **Indonesia** Jakarta, **Italy** Milan, **Japan** Tokyo, **Korea** Seoul, **Malaysia** Kuala Lumpur, **Mexico** Guadalajara, **South Africa** Randhart, **Spain** Bilbao, **Taiwan** Kaoshiung, **United Kingdom** Didsbury, **USA** Brewster N.Y., **Venezuela** Caracas