Instruments and analyzers
Products, solutions and services for the metals industry
Measurement made easy

ABB’s Measurement & Analytics business unit is among the world’s leading manufacturers and suppliers of instrumentation and analyzers.

With thousands of experts around the world and high-performance technology, ABB’s team is dedicated to making measurement easy for its customers.

Contents

Measurement & Analytics
04–05 Comprehensive measurement and analytical solutions serving the metals industry
06–09 From yard to market
Measurement & Analytics
10–11 Our product portfolio

Primary metal making
12–13 Preparation for blast furnace
14–15 Blast furnace
16–17 Ladle furnace (and pump house)
18–19 Basic oxygen furnace (LD converter)
20–20 By-product plant
21–21 Boiler control, water and hydrogen analysis
22–23 Continuous casting
24–25 Re-heating oven

Hot rolling mill
26–27 From hot flat to profile and tube mills

Cold rolling mill
28–29 For carbon steel, stainless steel and non-ferrous metals

Processing lines
30–35 Continuous Annealing Line (CAL), Continuous Galvanizing Line (CGL) and Color Coating Line (CCL)

Measurement & Analytics
36–37 Service for the metals industry

ABB complete offering
38–41 Products, solutions and services for the metals industry
Measurement & Analytics
Comprehensive measurement and analytical solutions serving the metals industry

ABB measurement and analytical products provide world-class technological solutions to make it easier for you to run your plant. They feature common electronics for easy repairs, fewer spares and easier maintenance. Plus, their common interface and menu structure means they are also easy to use. This results in products that are easy to configure, easy to integrate and easy to maintain.

Open up for an overview of the metals applications that can benefit from ABB’s measurement and analytical solutions...
A complete portfolio of measurement and analytical solutions. ABB’s superior measurement and analytical products, solutions, and services ensure the highest possible return over the entire life of your plant.

1. Preparation for blast furnace
   The iron ore is blasted into a reheating furnace, bunt plant, and then moved to the blast furnace where it is used to make steel. The raw materials used in a blast furnace are:
   - Iron ore
   - Limestone
   - Coke
   - Natural gas
   - Pre-reduced ore

2. Kokan gas heaters
   After the iron ore is blasted into the furnace, the kokan gas heater is used to heat the material. Because of their high heat capacity and temperature, and an internal combustion arrangement, these furnaces are used in a power source function. In a Kokan gas heater, a high-temperature gas stream, called the kokan, is used to heat the material. A high-temperature gas stream, called the kokan, is used to heat the material.

3. Continuous casting
   Continuous casting is a method of casting in which molten metal is solidified into a “semifinished” billet. Continuous casting is also known as strand casting, which is a process where the steel stock is charged at the furnace entrance, heated in the furnace and discharged at the furnace exit. Heat is transferred to the steel stock during its traverse through the furnace mainly by means of convection and radiation from the burner gases and the furnace walls.

4. Reheating furnace
   In steel plants reheating furnaces are used in hot rolling mills to heat the steel stock (Billets, blooms or slabs) to temperatures of around 1200 °C which is suitable for mechanical rolling. This process is also referred to as hot rolling (hot deformation) or hot working.

5. Continuous annealing
   Continuous annealing is an annealing process that occurs above the recrystallization temperature of the material. After the grains are recrystallized, the material is cooled to a temperature lower than the recrystallization temperature. The annealing process is used to improve the mechanical properties of the material. This process is also referred to as cold rolling (cold deformation) or cold working.

6. Cold rolling mill
   Cold rolling occurs with the metal below its recrystallization temperature, which is usually less than 100 °C. Cold rolling significantly increases the strength via strain hardening up to 20 %. It also improves the surface finish and holds tighter tolerances. Commonly these products are usually smaller than the same products that are hot rolled. Because of the smaller size of the workpieces these products are usually smaller than the same products that are hot rolled. Because of the smaller size of the workpieces.

7. Color coating mill
   After the annealing process the metal stock is cut to the desired width and then the color coating process is carried out. This is done in a gas- or oil-fired soaking pit for larger sections of the material. This is done in a gas- or oil-fired soaking pit for larger sections of the material. As the material is worked the temperature must be monitored to make sure it remains above the recrystallization temperature. This is done by using a line scan camera for the color coating mill. Once the material leaves the soaking pit it is cooled to a temperature below its recrystallization temperature.

8. Processing line – Continuous Galvanizing Line (CGL)
   Galvanizing is a process where the metal stock is made into a layer of zinc by immersing the metal in a bath of molten zinc. Then the metal stock is cooled to a temperature below its recrystallization temperature. This is done in a gas- or oil-fired soaking pit for larger sections of the material. As the material is worked the temperature must be monitored to make sure it remains above the recrystallization temperature. This is done by using a line scan camera for the color coating mill. Once the material leaves the soaking pit it is cooled to a temperature below its recrystallization temperature.

9. Cold rolling mill
   Cold rolling mills produce metal sections with better strength, and elongation. It improves the surface finish and holds tighter tolerances. Commonly these products are usually smaller than the same products that are hot rolled. Because of the smaller size of the workpieces these products are usually smaller than the same products that are hot rolled. Because of the smaller size of the workpieces.

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Measurement & Analytics
Our product portfolio by application

Legend

In the following pages we reference products for:
01 Flow measurement
02 Pressure measurement
03 Temperature measurement
04 Actuators and positioners
05 Level measurement
06 Analytical measurement
07 Weighing systems
08 Roll force measurement
09 Flatness measurement and control
10 Strip tension measurement
11 Thickness gauging systems
12 Position and width measurement
Primary metal making
Preparation for blast furnace

Raw material handling, coke oven battery, sinter plant and pellet plant are well equipped with ABB products for flow measurement, pressure measurement, temperature measurement, control valve actuators, level measurement, weighing systems and analyzers.

01 Flow measurement
With ABB’s knowledge about flow measurement and management, you have access to over 100 years of flow measurement and control experience to help you save cost and increase profits.

- Vortex/Swirl flowmeters
  VortexMaster and SwirlMaster are used in the whole metals industry process. Air/steam/water systems are needed to keep the process running smoothly. Vortex and swirl meters are widely used in these systems to ensure process control and safety. Also used for oxygen/industrial gases measurement in the metals industry.
- Electromagnetic flowmeters for water
  ElectroMagnetic Flowmeters (EMF) are placed in the control loop and installed in water flows such as cooling water, boilers or any other piping system where high pressures are involved. Multivariable transmitters can as well be applied to boilers or flow measurements points thanks to their intrinsic ability to provide complex calculations (i.e. flow, level, density).
  In addition, the metals industry is characterized by abrasive media. Within 2600T product line we have a special nano-structured coating called Diaflex that dramatically increases diaphragm hardness and resistance to abrasion while maintaining its intrinsic elasticity.
  The main distinctive features can be summarized as:
  - High static pressure range
  - High overload
  - Diaflex coating

02 Pressure measurement
The multiplicity of pressure transmitters and application capabilities from ABB allow you to standardize transmitter installations – plant-wide.

- Differential pressure and multivariable transmitters
  from 2600T series
  2600T pressure transmitters are typically mounted on furnaces, boilers or any other piping system where high pressures are involved. Multivariable transmitters can as well be applied to boilers or flow measurements points thanks to their intrinsic ability to provide complex calculations (i.e. flow, level, density).
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03 Temperature measurement
With over 125 years of experience in temperature measurement, we have the technology and application knowledge for even the most difficult environments and hazardous areas.

- RTD-PT-100
- Thermocouple (K, S, N type)
- Head-mount temperature transmitters TTH 200
- Rail-mount temperature transmitters TTR 200

04 Actuators and positioners
From electrical and pneumatic actuators and state-of-the-art digital and electro-pneumatic positioners to I/P converters, ABB provides a comprehensive range of products, designed, engineered and manufactured to deliver first class performance in the metals industry.

- Electrical and pneumatic actuators
- Electro-pneumatic and digital positioners
- Field and panel mount I/P converters

05 Level measurement
As a market leader in level detection with the largest selection of agency approved level switch technologies, the ABB K-TEK level line has the proven technology to provide solutions for the most difficult liquids and solids level applications.

- Guided radar level transmitter for solids
- Ultrasonic level transmitter for mixed material/water
- Level switches for water/solids
- LLL100 laser level

Inventory control (measuring level in silos and bunkers) and positioning (measurement of moving objects like tripper cars or wagons).

- KM26 magnetic level gauges
- LMT100/200 magnetostrictive level

06 Analytical measurement
For over half a century, ABB has developed, manufactured, supplied and installed analytical instruments for a wide variety of industries.

- Continuous gas analyzers (CGA)
  Continuous gas analyzers (CGA) are suitable for all major process steps of iron and steel making covering processes in three major categories – iron making/steel making/steel refining. Our products are also used in raw material preparations such as sintering/coke ovens. CGA is used for process control or emission monitoring from different processes.
  - Process optimization with measurement of CO, CO₂, O₂ at sinter plant and coke furnace
    - AO2000/EL3000/LS4000
  - Emission monitoring with NOx, SO₂, CO and O₂ at sinter plant and coke furnace
  - Conductivity analyzer
  - pH analyzer

07 Weighing systems
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. ABB offers a wide range of dedicated products for weighing applications for crane, scrap, blast furnace and continuous casting.

- Load cell based bin weighing system for hopper/bunker
Blast furnaces differ from bloomeries and reverberatory furnaces in that flue gas is in direct contact with the ore and iron, allowing carbon monoxide to diffuse into the ore and reduce the iron oxide to elemental iron mixed with carbon.

The blast furnaces operate as a countercurrent exchange process whereas a bloomery does not. Another difference is that bloomeries operate as a batch process while blast furnaces operate continuously for long periods because they are difficult to start up and shut down.

Blast furnaces operate on the principle of chemical reduction whereby carbon monoxide, having a stronger affinity for the oxygen in iron ore than iron does, reduces the iron to its elemental form.
Primary metal making
Ladle furnace (and pump house)

In a foundry, a ladle is a vessel used to transport and pour out molten metals. Many non-ferrous foundries also use ceramic crucibles for transporting and pouring molten metal and will also refer to these as ladles.

After tapping from electrical arc furnace, the ladle furnace is put on a ladle furnace refining position. Ladle furnace refining is conducted through arc heating and argon blowing. During this process, the steel deoxidization, desulfurization, the adjustment of steel temperature and chemical composition are completed. In primary slag, there is no vacuum function in ladle furnace, but a vacuum device may be obligated in the ladle furnace zone for future development. The ladle containing qualified liquid steel is hoisted to a ladle rotator of continuous the casting machine and then it taps from the base of the receiving ladle to tundish, after that, it drops down into the crystallizer to cast into bloom, which are straightened and cut to set dimensions and sent to a cooling bed through a roller table. It turns into qualified bloom.

01 Flow measurement

- Vortex/Swirl flowmeters
  VortexMaster and SwirlMaster are used in the whole metals industry process. Air/steam/water systems are needed to keep the process running smoothly. Vortex and swirl meters are widely used in these systems to ensure process control and safety. Also used for oxygen/industrial gases measurement in the metals industry. Especially for the process of smelting oven, swirl meter is one of the top choices for oxygen beam measurement.

02 Pressure measurement

- Differential pressure and multivariable transmitters from 2600T series
  2600T pressure transmitters are typically mounted on furnaces, boilers or any other piping system where high pressures are involved. Multivariable transmitters can as well be applied to boilers or flow measurements points thanks to their intrinsic ability to provide complex calculations (i.e. flow, level, density).

- Diaflex coating
  Within 2600T product line we have a special nano-structured coating called Diaflex that dramatically increases diaphragm hardness and resistance to abrasion while maintaining its intrinsic elasticity. The main distinctive features can be summarized as:
  - High static pressure range
  - High overload
  - Diaflex coating

- Gauge pressure transmitter 2600T series
  Despite not applicable to the primary process, gauge pressure transmitters can be installed on all those gas, water and liquids ancillary cycles inside the plant. As differential pressure transmitters, Diaflex coating provides superior mechanical properties. In case of overpressure, 2600T gauge pressure transmitters can sustain up to 105 MPa/1050 bar/15255 psi.

03 Temperature measurement

With over 125 years of experience in temperature measurement, we have the technology and application knowledge for even the most difficult environments and hazardous areas.

- RTD for motor bearing and winding temperatures

04 Actuators and positioners

- Electrical and pneumatic actuators
- Digital positioners for control valve applications

05 Level measurement

- Ultrasonic level transmitter for water

07 Weighing systems

- 9QGPK series
  - Ladle crane weighing
- 9QGPS series
  - Crane overload protection
Primary metal making
Basic oxygen furnace (LD converter)

Basic Oxygen Furnace (BOF) is a pear shaped vessel where the pig iron from the blast furnace, and ferrous scrap, is refined into steel by injecting a jet high-purity oxygen through the hot metal.
Primary metal making
By-product plant

The coke oven by-product plant is an integral part of the by-product coke-making process. In the process of converting coal into coke using the by-product coke oven, the volatile matter in the coal is vaporized and driven off.

01 Flow measurement
- Electromagnetic flowmeter for water
- DP flow based on orifice or Venturi and 2600T differential pressure transmitters for steam, water and gas
- Multivariable transmitter for steam, water and gas

02 Pressure measurement
- Differential pressure transmitter 2600T series
- Gauge pressure transmitter 2600T series
- Multivariable transmitter 2600T series

03 Temperature measurement
- Thermocouple (K, S, N type)
- Temperature sensor RTD-PT100
- Temperature transmitter TTH200, TTR200

04 Actuators and positioners
- Electrical and pneumatic actuators
- Electro-pneumatic and digital positioners
- I/P converters

05 Level measurement
- Guided radar level transmitter for solids
- Ultrasonic level transmitter for mixed material/water

06 Analytical measurement
- AO2000/EL3000/LS4000
  - Process optimization with CO, CO₂ and O₂ at coke furnace
  - Emission monitoring with CO, NOx, SO₂ and O₂ at coke furnace
  - Safety measurement with O₂ of cleaned coke oven gas used as fuel in further processes

07 Level Measurement
- KM26 level gauge
  The ABB K-TEK level products KM26 level gauge provides reliable visual indication of boiler water level without concerns of glass scaling, leaking or maintenance seen with other indicator technologies. When the LMT200 magnetostrictive level transmitter is combined with the KM26, the user has a non-intrusive level measurement which allow for reliable and accurate boiler control.

08 Hydrogen analysis technology provides a proven solution for direct measurement of dissolved hydrogen in molten aluminium. Boiler water is the liquid phase of steam within a boiler.

09 Hydrogen analysis (for liquid aluminium)
06 Analytical measurement
- AISCAN and AISCAN Argon
  The technology provides a proven solution for direct measurement of dissolved hydrogen in molten aluminium. The AISCAN analyzer provides an on-line quantitative measurement based on field proven probe and Closed Loop Recirculation (CLR) technologies. Benefits of AISCAN:
  - Accurate on-line quantitative measurement of dissolved hydrogen
  - Continuous monitoring capabilities
  - Probe failure detection option

Boiler water analysis and treatment
06 Analytical measurement
- Continuous water analyzers (CWA) and steam and water analysis (SWAS):
  - Conductivity analyzers
  - pH analyzers
  - Sodium analyzers
  - Silica analyzers
  - Phosphate analyzers

Primary metal making
Boiler control, water and hydrogen analysis
Primary metal making

Continuous metal casting

Continuous casting is the process whereby molten steel is solidified into a “semi-finished” billet, bloom, or slab for subsequent rolling in the finishing mills. Continuous casting has evolved to achieve improved yield, quality, productivity and cost efficiency.

Steel from the electric or basic oxygen furnace is tapped into a ladle and taken to the continuous casting machine. The ladle is raised onto a turret that rotates the ladle into the casting position above the tundish. Liquid steel flows out of the ladle into the tundish, and then into a water-cooled copper mold. Solidification begins in the mold, and continues through the First Zone and Strand Guide. The strand is then straightened, torch-cut, then discharged for intermediate storage or hot charged for finished rolling.

01 Flow measurement

- Electromagnetic flowmeters for water
  Electromagnetic Flowmeters (EMF) are placed in the control loop and installed in water flows such as cooling water, recycled water and waste water.
- DP flow based on orifice or Venturi and 2600T differential pressure transmitters or multivariable transmitter

02 Pressure measurement

- Differential pressure transmitter 2600T series *8, 17
- Gauge pressure transmitter 2600T series *9, 17
- Multivariable transmitter 2600T series *9, 17

03 Temperature measurement

- Thermocouple (K, S, N type)
- Temperature sensor RTD-PT100
- Temperature transmitter TTR200, TTH200

04 Actuators and positioners

- Electric actuators and positioners for cooling water valve control
- Spray control for steel cooling process with Contrac part turn actuators
  Electrical actuators are designed for longest maintenance-free operation. They feature an oil-lubricated spur gear with drive shafts supported by ball bearings. Rotary motion is converted to linear motion in the linear actuator by means of a highly efficient ball screw spindle. Contrac actuators are characterized by a deadband of just ± 0.05 %, providing high-accuracy positioning for all valve types. With their robust design and IP66/NEMA 4X protection, Contrac actuators withstand even the most arduous operating conditions.

06 Analytical measurement

- pH/conductivity transmitters and sensors

07 Weighing systems

- 9QGPL/9QGPK series
  - Ladle weighing in ladle turret
  - Ladle transfer car
  - Tundish weighing
  - Slab weighing
  - Crane weighing
    (load cells with high temperature options up to 180 °C/356 °F)

* Read more on indicated page.
Primary metal making
Re-heating oven

In steel plants reheating furnaces are used in hot rolling mills to heat the steel stock (billets, blooms or slabs) to temperatures of around 1200 °C (2192 °F) which is suitable for deformation of steel and hence for rolling in the mill.

The heating process in a reheating furnace is a continuous process where the steel stock is charged at the furnace entrance, heated in the furnace and discharge at the furnace exit. Heat is transferred to the steel stock during its traverse through the furnace mainly by means of convection and radiation from the burner gases and the furnace walls.

01 Flow measurement
• Vortex/Swirl flowmeters
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04 Actuators and positioners
• EDP300/TZIDC digital positioners
  Control valve positioners for gas/air cooling water valves. The EDP300 and TZIDC are electronically configurable positioners with communication capabilities designed for mounting to linear or rotary actuators. Standard or advanced performance with 4 to 20 mA and HART capability.
• Contra CT electric and UP/LP pneumatic actuators
  Actuators for combustion air damper control and ID & FD fan damper control. ABB’s extensive portfolio of actuators provides highly accurate and stable positioning of your final control element to achieve your operational targets:
  - Energy efficiency processes
  - Reliable performance

06 Analytical measurement
• AO2000/EL3000 LS4000
  - Process optimization of reheating furnace with O₂, CO
  - Emission monitoring O₂, CO, CO₂, NOx
Hot rolling mill
From hot flat to profile and tube mills

Since 1984, the number of ABB innovative solutions and “world firsts” have made it an attractive supplier for rolling mills. ABB is a leading long-term supplier for all types of hot flat, profile and tube mills.

Our offerings are for:
- Plate mills
- Steckel mills
- Hot strip mills
- Section mills
- Rod and bar mills
- Rail mills
- Bloom and billet mills
- Seamless tubes mills
- Welded pipes

In depth knowledge of technological functions, process models, advanced process control and diagnostics allows ABB to guarantee high-quality performance in terms of thickness, width, flatness and temperature at the highest level of productivity.

01 Flow measurement
With ABB’s knowledge about flow measurement and management, you have access to over 100 years of flow measurement and control experience to help you save cost and increase profits.
- Electromagnetic flowmeters for water
- CoriolisMaster FCB400 massflow meter
  Meters for flow and density measurement. By measuring the density of the lubrication oil, possible water inclusions resulting in massive wear out or damages can be detected.

04 Actuators and positioners
ABB’s extensive portfolio of positioners provides highly accurate and stable positioning of your control valves, crucial to achieve your operational targets:
- 55Energy efficiency processes
- 55Reliable performance

05 Level measurement
- Laser level measurement
- Millmate roll force systems

08 Roll force measurement
A truly measured roll force is crucial in achieving correct roll gap settings, true force distribution from operator side to drive side of your mill and supervision of the backup bearings and roll eccentricity. The reliable and user-friendly roll force measurement systems are based on the unique Pressductor technology.

09 Flatness measurement and control
Flatness control system will minimize rejects, pass times and strip breaks. This is achieved thru the use of all mill actuators, both mechanical and thermal, in an optimal way for creating the best possible flatness – running in automatic control all the time.
- Stressometer flatness measurement and control systems

10 Strip/looper tension measurement
One of the crucial parameters in achieving correct strip thickness during hot and cold rolling is the strip tension. In order to reach the highest possible accuracy, an ABB strip/looper tensiometer is the best and most reliable alternative. It measures accurately even in the harshest environment, ensuring that the strip tension can be controlled within the desired range, during both acceleration and deceleration.
- Large PillowBlock tensiometers
- Millmate looper tensiometer systems

* Read more on indicated page.
Cold rolling mill
For carbon steel, stainless steel and non-ferrous metals

The quality of rolled metal is determined by the quality of the technology used in its cold mill processing. Surface characteristics, flatness and strip thickness all need to be precisely monitored and controlled in order to produce a perfect product.

Our offerings are for:
- Single stand mills (non-reversing mills, reversing mills, Inline mills)
- Tandem cold rolling mills (batch, compact cold mills, continuous/Inline mills)
- Skin pass/temper mills
- Double cold reduction mills
- Foil mills

ABB offers a solution package to optimize and control rolling mill processes. It covers a range of features from auto-adaptive set-up models, advanced technological control, and simulation solutions through to the efficient visualization of the entire process, including operation and diagnosis concepts that together help guarantee maximum productivity, quality and yield.

**01 Flow measurement**
- CoriolisMaster FCB400 massflow meter
  A wide range of meter sizes provide precise measurement of massflow, volume flow, density, temperature and concentration. Benefits are low pressure drop in the meter and wide flow measurement range.
  ABB’s CoriolisMaster series has a history of success in a wide variety of industries and applications. With innovations like SensorApplicationMemory, Easy Set-up and with up to 5 modular I/Os – they save time and money during installation, commissioning and maintenance.

**07 Weighing**
- 9QGPL series
  - Coil weighing

**08 Roll force measurement**
- Millmate roll force systems *

**09 Flatness measurement and control**
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- Large PillowBlock tensiometers

**11 Thickness gauging systems**
The Box Gauge measures aluminium strip thickness with a gapless sensor – excitation and receiver in one single unit. The compact and robust design, together with insensitivity to alloy variations and harsh rolling mill environments, enables accurate measurements in any position, even interstand in a tandem mill. The MTG Gauge is ideal for use with all types of AGC, for control of thickness as well as for reducing thickness errors of all non-ferrous metals.
- Millmate thickness gauging systems – MTG Box gauge
- Millmate thickness gauging systems – C-frame gauge

**12 Position and width measurement**
Keep track of your strip edges in your mills and process lines using the Millmate Strip Scanner System (MSS), a well-proven robust sensor with negligible maintenance costs. Based on ABB’s patented Pulsed Eddy Current (PEC) technology, it is a non-contact sensor with no moving parts. The measurement is extremely stable, even during the worst conditions. Mill coolant, steam, heat and dust do not affect the measurement.
- Millmate strip scanner systems

* Read more on indicated page.
Processing Lines

Open up to see ABB Measurement & Analytics’ processing line offerings...
Continuous Galvanizing Line (CGL) and Continuous Annealing Line (CAL), processes that convert the steel from further corrosion in many circumstances. A grey, fairly strong material that protects the steel by immersing the metal in a bath of molten zinc at a temperature of around 840 °F (449 °C). When exposed to the atmosphere, the pure zinc (Zn) reacts with oxygen (O2) and dioxide (CO2) to form zinc carbonate (ZnCO3), a usually dull finish coating. The strip is then branded and wound, ready for delivery to customers.

Color Coating Line (CCL) is applied to both sides of the strip and baked on in the color coating mill for further processing where stainless steel, and can be identified by the crystallization and lowering costs. It integrates the 5 processes involved. Multivariable transmitters can as well be applied to boilers or any other piping system where high pressures are involved. The multiplicity of pressure transmitters and application capabilities from ABB allow you to standardize transmitter installation – plant-wide.

- **Vortex/Swirl flowmeters**
  - Ideal for the chemical, pharmaceutical and food and process, environmental, steam and power industries. ABB offers a versatile series of pneumatic and electro-pneumatic positioners, as well as being the leading supplier of I/P converters in the world today.
  - Contrac electric valve actuators are characterized by a deadband of just ±0.05 %, providing free operation. They feature an oil-lubricated spur gear of a highly efficient ball screw spindle. Contrac actuators, both mechanical and thermal, in an optimal way for creating the best possible flatness – running in automatic control all the time.

- **Emagmatic Actuators for piping**
  - Electromagnetic flowmeters for water
  - ElectroMagnetic Flowmeters (EMF) are placed in the areas of piping system and any other piping system where high pressures are involved. Diameters can be optimized in order to offer the best compromise between pressure losses and sensor in the line. The VA Master FAM540 flowmeter can be utilized for measurement of flows such as cooling water, recycled water and waste water with drive shafts supported by ball bearings. Rotary motion is maintained by the oil-lubricated spur gear with its robust high-accuracy positioning for all valve types. With their robust and wear-free operation, as well as the highest positioning accuracy in the world today, they are free from sticking, wear and tear. ABB also supplies pneumatic positioners, as well as being the leading supplier of I/P converters in the world today.

- **Diaflex coating**
  - Large PillowBlock tensiometers are characterized by a deadband of just ±0.05 %, providing free operation. They feature an oil-lubricated spur gear of a highly efficient ball screw spindle. Contrac actuators, both mechanical and thermal, in an optimal way for creating the best possible flatness – running in automatic control all the time.

- **Diaflex coating**
  - Diametrical Actuators and positioners – plant-wide.

- **Diaflex coating**
  - Turbidity and Total Suspended Solids (TSS) sensor. ABB offers a versatile series of pneumatic and electro-pneumatic positioners, as well as being the leading supplier of I/P converters in the world today.
Measurement & Analytics
Service for the metals industry

Dedicated to optimizing your productivity and performance, ABB’s services enable improved utilization and performance of your automation equipment, processes and personnel.

ABB provides comprehensive support – from planning and commissioning, through to complete life-cycle services for all of its measurement solutions, including flow, pressure, temperature, level, thickness, flatness and tension measurement, valve automation, liquid and gas analyzers.
Your future in metals requires the right partner. International competition, fluctuating market demand, uncertain economic times and partial substitution processes are placing the steel and non-ferrous industries under enormous pressure.

Additionally, stringent environmental legislation and high expenditures incurred for restructuring and product innovation are raising costs and affecting operational efficiency in mills around the world.

Nevertheless metal has its future, they just need have the right partner – one with the experience, technology and know-how to help you meet and master the challenges ahead. That partner is ABB.

Solutions to help you succeed.
Deliver consistent quality
The use of digital data processing technology enables ABB systems to deliver tighter manufacturing tolerances while measuring and analyzing relevant quality parameters for product certification. In meltdches, correct alloying, accurate chemical analyses and temperature control ensure proper metallurgical quality of the steel casted. For flat rolling mills, uniform strip thickness, tolerances and physical properties are maintained. ABB's shape measurement and regulation system, combined with an exactly monitored and model-controlled rolling process, assures a rolled strip of consistent flatness.

Upgrade eco-friendliness
Cost-efficient, reliable and eco-friendly power generation is one of ABB's main activities. ABB also offers effective environmental control technologies for the metals industry including media and materials treatment systems for recycling processes.

By monitoring carbon-monoxide, NOx, dioxins, furans, and other contaminants with intelligent ABB systems, emissions can be controlled and greatly reduced. With the help of ABB instrumentation and automation solutions, the eco-friendliness of your mill is assured.

ABB – Partner for the metals industry
ABB offers a comprehensive range of equipment, systems, and services to optimize production processes, mill-wide. Innovative technology and years of process experience has resulted in proven electrical and mechanical solutions for steel and non-ferrous metals producers, worldwide.

ABB engineers input all their product and process expertise, gathered from new plant construction and retrofit projects from around the world, to ensure that our commitment becomes your success. Throughout the entire project, you can rely on ABB as your competent partner.

Complete equipment packages
ABB is one of the leading electrical suppliers to the metals industry offering reliable, state-of-the-art components and systems. From power generation, transmission and distribution systems, to power supply, control and drives technology. From complete meltdches, automation packages with instrumentation equipment, to the complete electrical infrastructure for your mill. ABB can provide individually customized total plant solutions to meet your requirements today, and tomorrow.

Process optimization
Process control systems from ABB enable you to increase plant efficiency, improve product quality, reduce costs, and conserve raw materials and energy. ABB systems can provide the process optimization you need to produce a broader range of products with shorter change-over times. Products that will help you succeed in increasingly competitive markets.

Measurement & Analytics Service
Dedicated to optimizing your productivity and performance, ABB's services enable improved utilization and performance of your automation equipment, processes, and personnel. ABB provides comprehensive support – from planning and commissioning, through to complete life-cycle services for all of its measurement solutions, including: flow, pressure, temperature, level, thickness, flatness and tension measurement, valve automation, liquid and gas analyzers.

Ferrous and non-ferrous metals
ABB offers the same range of proven products, services and systems solutions for both ferrous and non-ferrous metals producers. With a large number of installation references, including many of the world's leading steel and non-ferrous mills, ABB offers the highest quality products and services, as well as extensive process know-how, to increase plant efficiency and help you remain competitive in a changing global market.

ABB strengths
Operating at the leading edge of technology, ABB optimizes manufacturing processes in steel and non-ferrous metals industries. From large integrated plants to minimills, ladle metallurgy, hot and cold rolling mills (including flat mills and profile mills) and processing lines, ABB can draw upon its comprehensive process expertise and an application-matched range of electrical equipment. Open Control Systems for total plant process automation, measuring instruments, AC/DC drives, motors, environmental, control products, and other electrical and mechanical equipment from ABB can help you meet your targets.

Successful customers, including steel and non-ferrous metals producers around the world, confirm the high quality of ABB products and systems – proven solutions backed by extensive process know-how and decades of experience. To strengthen your future, contact ABB, your long-term partner in the metals industry.

Our solutions become standards.