ABB Measurement Products
Global Measurement Solutions
ABB Measurement Products

In space, on the ocean floor & everywhere in between

orbiting the earth and working beneath it

above the waves and on the ocean floor

in production plants and remote locations

generating power and cleaning water
ABB Measurement Products
Over 100 years of experience

- First automated pasteurizer
- First steam meter
- First venturi gas meter
- First A2 long range venturi recorder

1900-1920

- First boiler load indicator
- First X/CD weir recorder
- First safety boiler control
- First mass-produced variable area flowmeter

1920-1940

- First wedge-type DP flowmeter
- First stall-proof electric valve actuator
- First roll force measurement system
- First commercial on-line Gas Chromatograph

1950s

- First on-line dissolved oxygen electrodes
- First flatness measurement system
- First computer controlled analyzer data system
- First electromagnetic flowmeter for short lay lengths

1960s

- First Swirl-type flowmeter
- First Solid State pH/ORP Sensor
- First Head-mount temperature transmitter
- First microprocessor based on-line gas chromatograph

1970s

- First In-Situ Magmeter Calibration Verification
- First fully digitized on-line multiwave process photometer
- First abrasion-resistant pressure sensor
- First stainless steel digital valve positioner

1980s

- First SIL2 Pressure Transmitter
- First field-mount videographic recorder
- First Head-mount intrinsically safe temperature transmitter
- First thickness gauging system with pulsed eddy current

1990s

- First solar and wind powered flowmeter
- First SIL2 guided-wave radar level transmitter
- First gas chromatograph with distributed multi-oven control
- First remote-mount digital positioner

2000s

- First SIL2 Pressure Transmitter
- First field-mount videographic recorder
- First Head-mount intrinsically safe temperature transmitter
- First thickness gauging system with pulsed eddy current

2010s
ABB Measurement Products
Providing solutions and improving performance

- Key supplier of analytical instruments used in space by the Canadian Space Agency for over 10 years
- Solved mining company’s need for pressure sensors that could survive highly abrasive applications
- Managed entire water system upgrade project for City of Detroit
- Electric actuator technology saves chemical company $100,000s per year in fuel and maintenance costs
- Measurement solutions as part of the automation of the world’s largest alumina plant
- Provided measurement solutions to largest reverse-osmosis desalination plant
- Provide 90% of Continuous Emission Monitoring Systems in civil incinerators in Italy
- Enabled London to significantly reduce water loss from their 100 year old water system
- Helped automate largest chemical cellulose plat
- Enabled one of the largest gas processing plants in the world to operate more efficiently
- Enabled one of the largest gas processing plants in the world to operate more efficiently
- World’s largest Pressductor roll force load cells installed in a heavy plate steel mill
- Providing solutions to 90% of India’s cement plants to run more efficiently
- Unique rugged pH sensor technology enables mining operator to minimize downtime
- Upgraded Riyadh’s water system to secure their most precious resource
- Helped automate largest chemical cellulose plat
- Unique rugged pH sensor technology enables mining operator to minimize downtime
### ABB Measurement Products

Unrivaled scope and application expertise

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ABB Measurement Products
Serving a full range of processes…

- Chemical & Petrochemical
- Power & Steam
- Oil & Gas
- Water & Wastewater
- Pharmaceutical
- Food & Beverage
- Metals & Mining
- Pulp & Paper
Products
Force Measurement...

Markets served
- Rolling mills & processing lines
- Pulp & paper industries
- Printing, converting, finishing
- Diesel engines for propulsion & power
- Ship owners & shipyards

Market drivers
- Quality improvement
- Productivity improvement
- Pollution reduction

Key deliverables
- Flatness control systems
- Web tension control systems
- Combustion optimization systems
- Thickness gauges
- Roll force measurement systems
- Strip tension control systems
- Weighing systems
Stressometer Flatness Control Systems

Features
- Flatness Control of metal strips in rolling mills
- Outstanding measurement density
- Automatic identification of control loops
- Outstanding reliability with Pressductor sensors

Benefits
- Reduction of flatness rejects
- Productivity increase due to shorter pass times
- Reduction of strip breaks
- Increased value and quality of the rolled strip
- Lowest cost of ownership
Features
In line measurement of metal strip properties based on Pulsed Eddy Current technology:
- Thickness
- Edge position
- Width
- Conductivity

Benefits
- No influence from harsh environment
- Contact-free measurement
- Inherently safe for people and other equipment
- Material-independent
- Superior long-time stability
- Minimum of maintenance
- Increased mill uptime
Rolling Mill Products
Millmate Roll Force - Millmate Strip Tension

Features
Force Measurement in flat rolling mills and process lines based on Pressductor technology:
- Roll Force
- Strip Tension

Benefits
- No influence from harsh environment
- Excellent to impact loads
- Superior long-time stability
- Minimum of maintenance
- Lowest cost of ownership
Web Tension Products
PillowBlock tensiometers - Radial tensiometers

Features
Web Tension Measurement in paper machines and web converting machinery based on Pressductor technology

Benefits
- No influence from harsh environment
- Excellent to impact loads
- Superior long-time stability
- Maximize mill up time and product quality
- Minimize OPEX, reduce costs for maintenance and spares

Pulp & Paper
Other-Web Converting
Weighing Systems
Weighing systems for heavy industries

Features and Benefits
- High accuracy and reliability
- Customized solutions, high modularity
- Freely programmable controllers
- Load information available at all time
- Rugged design and tried-and-tested reliable technology
- No mechanical modifications necessary
- Specially adapted to harsh environment
- Experience and know-how
Products
Analytical measurements and systems...

Markets served
Chemical, petrochemical, refining & LNG; semiconductor; electric utilities; pharmaceutical; metals & minerals; emission monitoring, water and waste water quality

Market drivers
- Health, safety and environment
- Process optimization & productivity

Key deliverables
- Process gas chromatography & photometers
- Reid vapor pressure analyzers
- Continuous gas analyzers
- BTU Analyzers
- Metallurgy quality analyzers
- Continuous emission monitoring systems
- FTIR & FTNIR lab & process analyzers
- Remote sensing & spectra radiometers
- Liquid analytical and monitoring systems
- System integration & fabrication
- Engineering, application & support services
pH & Conductivity Transmitters
AX400, TB8X and ENDURA AXA592

Features
- Up to 2 inputs on the AX400 series
- Single input AX400 with PID control incorporated as standard
- TB82 two-wire version FM, CSA and ATEX approved
- Extensive transmitter & sensor diagnostics
- AXA592 hazardous area flame/explosion proof

Benefits
- Provides main indication of product quality, environmental compliance and an excellent indicator of dissolved corrosive chemicals
- AX400 panel version with shortest depth profile to replace competitors’ ¼DIN panel-mount instruments
- Through Glass Programming for AXA592
- Integral sensor cleaning control to reduce sensor maintenance
AP, 7600 & TB(X)5 Series pH Systems
AC200, TB2 Series Conductivity Sensors

**Features**
- A comprehensive range of versatile sensing systems for Power, Water and Process applications
- Extremely wide range of sensor systems suited for most pH & Conductivity duties
  - In-line, Flow-through, Immersion and Retractable
  - Polypropylene, PPS, PVDF, St/Steel, Titanium, etc
  - Contacting and Inductive Cell technologies

**Benefits**
- Comprehensive pH sensor technologies specifically designed for aggressive media
  - Low maintenance combination electrodes
  - High stability, pure-water pH sensing systems
  - Longest sensor life in hazardous area with patented solid reference
- Conductivity cell with fast temperature response T90 < 30 secs
- Toroidal (inductive) conductivity sensors providing immunity to high process contamination
Advance Optima – Continuous Gas Analyzers

Features
- Integrated system concept with standardized analyzer modules
- Multi-analyzer system with up to 4 analyzer modules
- Distributed analyzers, connected to one central unit
- Broadest selection of different analyzer technologies
- Measures simultaneously up to 6 gas components
- Automatic calibration without test gas cylinders for most applications
- Digital interfaces for DCS and maintenance
- Ethernet for integration with PC and maintenance network, Profibus and Modbus fieldbus coupling, OPC-Interface for direct integration to DCS
- Full Remote Control for worldwide access on Ethernet
- Available for hazardous locations Category II2G, II3G
- International certifications according ATEX Europe, CSA US/Canada, GOST Russia

Benefits
- Advanced and reliable technology
- Integrated system solutions – for added flexibility
- Multi-analyzer systems – (up to four analyzer modules)
- Unlimited connectivity
- Integrated control and monitoring
- Simple, user-friendly operation
- "Packaging" that fits right in
- Reliable and powerful
- Always the right analyzer for the job, whatever the measuring task!
EasyLine – Continuous Gas Analyzers

Features
- IR-, UV photometer, paramagnetic-O2, electrochemical-O2, trace-O2 and thermal conductivity analyzers with automatic calibration, proven calibration cuvettes, extensive self-diagnosis and integrated gas feed
- Measures up to 5 gas components in one unit
- Option of two sensors in one enclosure
- Measuring of flammable gases, suitable for use in Zone 2
- menu-driven via five buttons
- Information presentation in several languages, including Asian Clear-text status messages
- Individual configuration of the inputs/outputs
- RS232/RS485 interface with Modbus or PROFIBUS protocol for networking with a PC, PLC or process control system
- Integrated drift and precision monitoring according to EN 14181, QAL3Data storage for one year minimum

Benefits
- Compactly built
- Easy to combine
- Easy to install
- Easy to operate
- Easy communication
- Unrivalled economy
- Nevertheless advanced and reliable technology
EL3060 – Continuous Gas Analyzers

Features
- One enclosure with control unit and integrated analyzer
- Infrared photometer built into a separate flame-proof enclosure
- Combination of two analyzers with up to 5 components
- Uras26 can be combined with Caldos25/27 or Magnos206
- Flameproof enclosure, no purging required
- Easy and safe connection, no need for opening the flameproof enclosure
- All Ex d wiring made ex works
- Operation directly through a flameproof glass pane with touch-sensitive keys
- Safe and reliable operation at any time, without opening the housing
- Multi-lingual, menu-driven operating interface
- Menu structure according to the EasyLine series
- Different interface options for reading, archiving, visualization and configuration of data on a PC, PLC or DCS
- Ethernet and common interfaces as standard
- Optional Profibus / Modbus interface

Benefits
- Compactly built
- Easy to combine
- Easy to install
- Easy to operate
- Easy communication
ACX—Analyzer System for the extractive continuous gas analysis

**Features**
- Continuous measurement of a maximum of six sample components
- Up to four analyzers including IR/UV photometer, paramagnetic/ or electrochemical O2 analyzer and FID analyzer
- Appropriate gas sampling and gas conditioning included
- Operation via the operator panel in the front door
- Available in sheet steel or glass-fiber cabinet or on a mounting plate
- Automatic calibration without test gas cylinders using internal calibration cells
- Integrated diagnosis functions for continuous self-control from probe to analysis
- Worldwide access for remote service possible
- AnalyzeIT Explorer visualization software for continuous monitoring and maintenance via Ethernet
- Modbus, PROFIBUS or Ethernet for networking with PC, OPC connection to PLC and Process control system or for integration in Windows applications.
- Gas ports and digital interfaces are accessible from the outside

**Benefits**
- ACX – the complete system
- Always the right analyzers with proven and reliable measuring technology
- Convenient external operation
- Compact and innovative standardized design
- Self diagnosis for easy service and maintenance
- Process industry interfaces
ACF-NT—Multi-component Analyzer System for emission and process monitoring

Features
- Measuring up to 15 components continuously
- Powerful FTIR technology, proven hot/wet extractive measurement
- Integrated VOC & O2—measurement
- Highest Reliability, system availability up to 99%
- Self monitoring with clear text warnings and alarms
- Completely pre-engineered compact and modular design
- A single sample inlet for all sample gases with a unique air-driven maintenance free aspirator pump
- Communication, control and maintenance via PROFIBUS, Modbus, Ethernet for modem connection to DCS or DAHS for CEM reporting
- Remote Control operation through standard Ethernet and PC

Benefits
- ACF-NT offers the longest maintenance intervals in the market
- State-of-the-art digital communication
- ACF-NT allows unattended operation through remote monitoring via standard Ethernet and PC and so reduces cost for routine maintenance
- ABB’s FTIR technology allows adding further components without adding hardware as required for photometer based systems.
- ACF-NT monitors all analyzers and peripherals (e.g. temperatures and flows) Self monitoring with clear text warnings and alarms
- Highest system availability proven by stringent TÜV field tests
- Manufacturer certified ACF-NT service technicians worldwide
**Features**
- In line oxygen analysis
- Integrated auto-calibration system
- Extensive range of system configurations
  - Up to 4 meters (157 inches) insertion
  - Wide range of mounting flange options
- Fully site serviceable
- Continuous measurement with fast response time
- High temperature variant to 1400°C
- Exd IIB ATEX and IEC hazardous area certified

**Benefits**
- Ultra Low-drift sensor less than 0.2% of O2 range per month
  - Generally only needs a 1-point calibration and longer time between scheduled maintenance
- Requires no sample handling system
  - Reduced costs for installation and maintenance
- Easy compliance with emissions monitoring regulation
- Reduced on-site installation engineering
- Improved asset availability
  - Short repair cycle times
  - No need to return to manufacturer for routine maintenance
- Compatible with closed loop control systems
PGC5000 Series – Process Gas Chromatograph

Features
- Identical Local and Remote User Interfaces
- LCD Display with Universal Keypad and Touch-Pad Mouse
- Intrinsically Safe Fiber Optic System Communication providing Redundant Ethernet and MODBUS Connections
- Multiple Smart OvenTM Support
  - Faster speed of analysis
  - Isolate and backup for the most critical measurements
- Smart OvenTM Serviceability
  - Increase reliability with minimal hardware in oven
- Comprehensive I/O options
- Multiple oven sizes for greater application flexibility and capability

Benefits
- Highly graphical, easy to use local and remote user interface software
- Localization with multiple language support
- Reduced installation costs and increased application capacity in analyzer shelter design
- Analytical methods with multiple sequences for better application understanding and maintenance
- Greater application capability using multiple, simultaneous and/or independent oven and detector processing
- Flexible analyzer platform for product expansion and feature enhancements
- Easy to troubleshoot
ABB Multiwave Photometers
(PIR3502, PUV3402, POF3372)

Features
- Configurable to operate in the IR, NIR, VIS or UV spectral region
- Can utilize fiber optic sample probes
- Multi-component analysis
- Can make measurements in either liquid or gas samples
- Continuous measurements
- High temperature heated sample cell
- Ability to make measurements in corrosive streams
- Ethernet connectivity thru VistaNet 2.0
- Measurements at high sample pressures

Benefits
- Reduced costs from single platform across spectral regions
  - Common operation and maintenance training
  - Common spare parts
- Faster process control from continuous analytical results
- Reduced SHS complexity by making measurements hot and wet
- Sustainability: sample can be returned to process rather than drain or flare
- Designed to operate in hazardous areas
FTPA2000-HP260X Process FT-NIR Analyzer

**Features**
- Fully Integrated Multi-channel fibre-optic FT-NIR analyzer in EEx enclosure
- ATEX Category II 2G (EEx pem[ib] II C T4)
- Best in Class performance
- Up to 8 separate analysis channels with capability for different flow-cell temperatures, pathlengths, ranges and detectors for each channel
- TE-cooled detectors for maximum sensitivity and fastest response

**Benefits**
- Intuitive, easy-to-use interface and application set-up
- Fully integrated, with in-built control I/O for external and internal sample system control – no need for additional PLC controllers or interfaces
- Multi-stream and multi-property analyses of refinery hydrocarbon streams with fast response (less than 1 minute per stream)
- Field-proven robust analyzer package for reliable 24/7 operation
- Flexible analyzer platform for multiple refinery hydrocarbon applications including heavier unit streams such as CDU feed & rundown, base oils, VGO and HGO applications etc

**Key Applications**
- OFFSITES – multistream gasoline blending with blend components
- CDU – feed and sidedraws
- HCK – feed and rundown
- FCC – Naphtha / Distillate split
- Base Oils – Fractionator rundown
RVP4500 Series – Reid Vapor Pressure Analyzer

Features

- Reid Vapor Pressure (RVP) is a vapor pressure measurement of gasoline that is measured at a constant set of conditions that is used to monitor the quantity of light compounds in the gasoline.
- Air saturation option automatically saturates the sample with air to follow the manual lab method
- Ethernet and Modbus Connectivity
- Designed for hazardous areas without safety purge
- Easy to read vacuum fluorescent display
- No calibration required

Benefits

- This measurement is used to reduce the amount of pollution from light compounds such as butane from escaping into the atmosphere and also to make sure there are enough light compounds to make sure car engines will start in cold temperatures.
- Refinery wants to maximize the amount of light compounds such as butane in the gasoline to maximize profits.
- Air saturation step allows process analyzer and lab results to more closely match and thus refiners can blend closer to the “sweet spot” for maximum profitability
FTPA2000-HP460 Process FT-NIR Analyzer

**Key Features**
- Fully integrated ATEX / C1D2 stand-alone analyzer in IP54 enclosure
- Best in Class performance
- Dual Cell upgrade capability for stream separation
- Full DCS connectivity via ModBUS RTU and OPC
- Calibration and Validation procedures to ASTM D6122 / E1655

**Key Benefits**
- Intuitive, easy-to-use interface and application set-up
- Fully integrated, with in-built control I/O for external and internal sample system control – no need for additional PLC controllers or interfaces
- Multi-stream and multi-property analyses of refinery hydrocarbon streams with fast response (less than 1 minute per stream)
- Field-proven robust analyzer package for reliable 24/7 operation

**Key Applications**
- OFFSITES – Main Fuel Blending optimization
- OFFSITES – Final Blended Gasoline / Diesel & Blend Components
- CCR / ISOM – naphtha feed and reformate / isomerate rundown
- OLEFINS – naphtha feed for PIONA and C-number for Steam Cracking
FTPA2000-HP360 Process FT-NIR Analyzer

Key Features
- Field-mountable ATEX / C1D2 analyzer in IP65 enclosure
- Best in Class performance
- Suitable for light hydrocarbon liquid and vapour process streams
- Full DCS connectivity via ModBUS RTU and OPC
- Calibration and Validation procedures to ASTM D6122 / E1655

Key Benefits
- Reduced overall project installation cost – simple shelter required for weather protection
- Intuitive, easy-to-use interface and application set-up
- Multi-stream and multi-property analyses of refinery hydrocarbon streams with fast response (less than 1 minute per stream)
- Field-proven robust analyzer package for reliable 24/7 operation

Key Applications
- Naphtha Conversion Applications – CCR / ISOM / OLEFINS steam cracking
- Hydrotreating Applications – HCN, LCN, HDT, Distillate Hydrotreater
FTPA2000-HP20: Process FT-NIR Analyzer for Alkylation Unit Hydrofluoric Acid Catalyst Recycle

Features
- High-integrity, safety-engineered sample flow system, customized for 24/7 operation with HF Acid Recycle
- Unique Analyzer application with welded sample flow-system sub-assembly for reliable and safe field operation.
- Completely pre-calibrated for HF%, ASO% and Water% in Alkylation Unit HF Acid Catalyst recycle stream
- Adaptable to additional HF Unit streams: iC4 Recycle, Olefin Feed, Alkylate
- Full DCS connectivity via ModBUS RTU and OPC Full external sample system control
- Internal HF leak detection, auto-shutdown alarm and visible beacon display
- Fully-featured FTSW v2.71 Process FT-IR software

Benefits
- Robust on-line continuous analysis of HF Acid purity in HF Unit
- Real-time feedback to HF Unit advanced control system with early detection of HF acid impurities and process upsets
- Mitigates risk of HF runaway, excess corrosion due to low acid strength and optimizes Alkylate RON through direct measurement and control of HF acid water content.
- Allows HF acid regeneration runs to be selected only as needed – minimising energy usage and maximising overall HF Unit throughput
- Field-proven robust analyzer package for reliable 24/7 operation
- Clear visual indication of proper operation, with large fastloop flow meter, low-flow alarm on flow-cell, visible HF leak -indicating paint and beacon alarm on cabinet HF detector
ABB VistaNET².0 Communications

**Features**
- Uses industry standard Ethernet compatible communication equipment
- Supports OPC and MODBUS protocols to DCS
- Ability to interface legacy analyzers and current analyzers on the same network
- Runs on all current Windows Operating Systems
- Easy to use graphical user interfaces
- Redundant Ethernet communication links supported
- OPC Server Foundation DA-3.0 certified (pending)

**Benefits**
- Ability to use existing physical infrastructure with modern technology
- All analyzers are connected on the same physical infrastructure
- Ability to support legacy DCS interfaces
- Common ABB Analytical Gateway to the DCS
- Flexible network architecture
Features

- Exceptionally robust laboratory FT-NIR analyzer for hydrocarbon analysis method development and routine analysis
- Solid state laser referencing with > 10 year laser lifetime
- TE-cooled InAs detector for maximum sensitivity and fast response
- Best in Class performance
- Suitable for Gasoline, Diesel, Naphtha, Reformate, Crude Oil and other applications
- Wide range of sample cell and flow-cell options available
- Horizon-QA software provides simple operation for routine analysis
- Pre-calibrated with ABB global models for basic hydrocarbon properties
- Calibration and Validation procedures to ASTM D6122 / E1655
- Direct Calibration Transfer from Lab FT-IR unit to HP Series on-line process FT-NIR analyzers fully enabled

Benefits

- Intuitive, easy-to-use interface and application set-up. Very simple to use.
- Guaranteed long-term stability and repeatability allows for quick and reliable calibration and method development
- Suitable for use with multiple hydrocarbon types and for multiple applications
- Laboratory FT-NIR analyzer software compatible with multiple industry-standard chemometric packages – Unscrambler, Pirouette, GramsIQ and Horizon MB Quantify
- Field-proven robust analyzer package with exceptionally low maintenance requirements
- Small footprint
MB3600-CH10 – Oleochemicals Analyzer

Features
- Bench top FT-NIR analyzer for liquid oils and fats and oleochemical feed stocks
- Designed for laboratory QA/QC, at-line process monitoring and verification
- Pre-calibrated for iodine value (IV) and %trans fat determination
- Universal sampling compartment
- Non-hygroscopic ZnSe optics
- Innovative metrology design
- Rugged aluminum casting
- 3-year warranty on complete hardware

Benefits
- Fast turnkey solution for iodine value and %trans fat determination, as alternative to lengthy laboratory methods
- Enables multi-property analysis (iodine value, acid value, moisture, melting point, free fatty acids, saponification number, peroxide value) with low cost of analysis
- Rugged and intuitive software interface
- Versatile (sampling options to analyze liquids or solids)
- State of the art analytical performance
- Low cost of ownership (10 years maintenance-free)
- Minimal footprint
- Transferability of calibrations to other ABB laboratory and process analyzers
MB3600-CH20 – Chemicals Analyzer

Features
- Bench top FT-NIR analyzer for polyols, derivatives and general chemicals
- Designed for laboratory QA/QC, at-line process monitoring and verification
- Flexible sampling options for liquids, powders, pellets and gels
- Non-hygroscopic ZnSe optics
- Innovative metrology design
- Rugged aluminum casting
- 3-year warranty on complete hardware

Benefits
- Enables multi-property analysis (OH value, acid number, isocyanate content, moisture, TDI isomer ratio, unsaturation) with low cost of analysis
- Demonstrated to produce highly stable OH-value calibrations
- Can be used for all chemicals
- Extensive experience and installed base
- Rugged and simple software interface
- State of the art analytical performance
- Low cost of ownership (10 years maintenance-free)
- Minimal footprint
- Transferability of calibrations to other ABB laboratory and process analyzers
MB-Rx – Reaction Monitor

Features
- In-situ chemical reaction monitor designed for laboratories and pilot plants in chemical, petrochemical, pharmaceutical and biopharmaceutical industries
- Provides chemists with real-time insight into chemical or biochemical reaction kinetics and key parameters (intermediates, products, by-products).
- Experiment data collected with a rugged ATR insertion probe and analysed on-the-fly via an intuitive software interface.
- Rugged aluminum casting
- 1-year warranty on complete hardware

Benefits
- Plug-and-play solution that does not require any consumables or maintenance.
- Reduced footprint and upwards fiber launcher provide convenient access to reactors.
- Non-hygroscopic optics do not require desiccant cartridges.
- The MB-Rx operates with room-temperature detector → No need to worry about nitrogen supply for cryogenically cooled detectors or regular refurbishment constraints associated with Stirling cooled detectors.
- Key spectral and chemical properties trended in real time
- Ergonomic software interface allows for rapid set-up of new experiment templates.
Features

- One to six stream capability
- Windows™ menu system
- Web & ftp enabled
- Automatic cleaning and calibration
- Temperature controlled measurement
- Profibus DP V1 option

Benefits

- Enables careful control of the water chemistry to achieve peak efficiency and minimise downtime due to excessive boiler corrosion or scaling
- Cost of ownership – up to 90% lower reagent consumption compared to competitors’ analyzers
- Up to six months unattended operation
- Small footprint
- Extensive diagnostics
- Continuous measurement
7835 Hydrazine

Features & Benefits

- Low maintenance requirement
- pH and temperature compensated
- Re-furbishable electrode
- Simple buffering system
- Fast response
8037 Sodium

Power & Steam

Features
- Pumpless liquid handling
- Sample temperature compensation
- Wide measuring range
- Reservoir fed reference electrode option

Benefits
- Wide measuring range – covers all power applications
- Lo-maintenance requirement
- No diffusion tube
- Small footprint
9437 Dissolved Oxygen

Features
- Measures both hi and lo dissolved oxygen concentrations
- Comprehensive diagnostics
- Long-life disposable sensor
- Fast response

Benefits
- Lo cost entry measurement system
- Lo running costs, virtually no maintenance!
- Small footprint
9438 Dissolved Oxygen

Features

- Automatic calibration
- Measures both hi and lo dissolved oxygen concentrations
- Comprehensive diagnostics
- Long-life disposable sensor
- Fast response
- Thermal protection

Benefits

- Lo running costs, virtually no maintenance!
- Small footprint
AK100 Hydrogen Purity & Purge Gas Analyzer

Features
- Extensive range of system configurations
- High sample pressure variant to 10 bar gauge
- Intrinsically Safe Analyzer panel
- Multiple sensors
  - Increased accuracy, sensitivity and stability
- Sample flow rate alarms

Benefits
- Correct system to suit local requirements
  - Low cost single three range Analyzer
  - Safety critical, fully redundant duel three range analyzer
- Lower installation costs
  - Less ancillary equipment required for system implementation
- Suitable for installation in Zone 0 locations
- Increased calibration intervals reduces cost of ownership
- Signals sample stream failure
  - Enhanced measurement security
AZTEC 600 Colorimetric Analyzers

Features
- A compact, reliable range of on-line colorimetric analyzers designed to meet the needs of the water industry
- Common platform for Aluminium, Iron, Manganese, Ammonia, Phosphate or Colour
- Capable of measuring up to 3 sample streams
- Self-cleaning measurement cell
- Automatic 2-point calibration
- Automatic sample dilution to maximize range
- Data trending and analysis
- web- and ftp-enabled for easy data file access, remote viewing and configuration

Benefits
- Easy to operate with familiar Windows™ menu system and context sensitive help
- Easy to maintain with modular design and helpful maintenance diagnostic screens
- Low cost of ownership due to reliable measurement and simple-to-perform annual preventative maintenance schedule
AZTEC 600 Ion-Selective Electrode (ISE) Analyzers

Features
- A compact, reliable range of on-line Ion-Selective Electrode analyzers designed to meet the needs of the water industry
- Common platform for Ammonia and Fluoride
- Temperature-controlled cell improves measurement stability and accuracy
- Automatic 2-point calibration verifies performance
- EcoMode reagent consumption setting
- Data trending and analysis
- web- and ftp-enabled for easy data file access, remote viewing and configuration

Benefits
- Continuous ISE measurement technology provides updated measurement result every 2 seconds
- Enables quicker reaction to process changes to save energy and optimise plant performance
- Up to 3 months continuous measurement between routine buffer replacements with EcoMode
- Easy to operate with familiar Windows™ menu system and context sensitive help
- Easy to maintain with modular design and helpful maintenance diagnostic screens
- Low cost of ownership due to reliable measurement and simple-to-perform preventative maintenance schedule
Features

- EPA180.1 & ISO 7027 Compliant versions
- Ultralow back scatter ensures high accuracy without zero solution
- Auto-clean system overcomes optical cell fouling
- Flow & dip systems
- Dry secondary standard, factory-calibrated and certified against primary formazine standard
- On-line diagnostics for both sensor and transmitter
- Typically 90% step change in <45 seconds

Benefits

- Very low-maintenance requirement
- Bubble rejection function minimizes spurious readings from degassed processes
- 75% faster response due to minimum sample residence time offers improved process control
- Quick & simple calibration minimizes downtime and cost-of-ownership
AW400 Free and Total residual chlorine monitors

Features & Benefits

- **Proven, open measurement-cell technology**
  Fast response time, able to measure free and total chlorine, chlorine dioxide or ozone

- **Self cleaning sensor assembly**
  Prolongs sensor life and maintains sensitivity

- **Reagent-less operation**
  Reduced operating costs at pH 7.5 or less

- **Optional reagent feed assembly**
  For the measurement of total chlorine or free chlorine in waters with a pH >7.5

- **Integral pressure regulator**
  No additional plumbing required to ensure optimum sample delivery rate and pressure

- **Multiple sensor input capability**
  Reduced installation costs for up to 3 monitoring points

- **Optional PID control**
  Allows direct control of dosing pump

- **Low maintenance design**
  Simple to install, use and maintain
Features
- Up to two-inputs
- Integral PID on single input version
- Profibus option
- Auto-clean function

Benefits
- Very low-maintenance requirement
- Bubble rejection to minimize spurious readings
- Automatic calibration
- Simple disposable long-life sensor
- Kit versions available for ease of shipment

Features
- Clippir: no wetted parts sampling
- Multiple sample points on several tools
- Wide variety of standard and custom chemistries can be monitored
- Stable, reliable and drift free 24/7 operations
- Minimal preventive maintenance
- No sample handling system, no sample preparation and no sample conditioning is required

Benefits
- Easy of installation with local talent, tool maker services are not required. Impossible to contaminate the processing bath.
- Enables process control for dosing or bath termination, reducing chemical costs and waste treatment costs
  - 20% reduction in chemical usage
  - Minimizes chemical induced million dollar process excursions
  - Reduces chemical waste treatment
- Low price solution for monitoring 3 or more sample points
- Monitored chemistries can be changed easily to extend the life of the analyzer
- Enables process control for dosing or bath termination, reducing chemical costs and waste treatment costs
- Easy to maintain in the field, sending to factory for preventive maintenance is not required.
- Tool makers are not required to add expensive sample systems, no sample heating and no costly reagents are required.
Features
- Versatile FT-IR platform for QA/QC, formulation, R&D, counterfeiting detection
- New compact interferometer design and signal sampling algorithm
- Universal sampling compartment
- Non-hygroscopic ZnSe optics
- Innovative metrology design
- New generation of laboratory software designed for use in CFR21 P11-compliant environment
- Rugged aluminum casting
- Complete IQ-OQ documentation
- 3-year warranty on complete hardware

Benefits
- Flexibility and ease of use
- State of the art analytical performance
- Compatibility with standard mid-IR sampling accessories for liquids, solids, gases (ABB + third party)
- Low cost of ownership (10 years maintenance-free)
- Minimal footprint
- Extensive built-in health monitoring
- Flexible configuration
MB3600-PH – Benchtop FT-NIR Analyzer

Features
- Versatile FT-NIR platform for QA/QC analysis, raw materials qualification, at-line process analysis and method development
- New compact interferometer design and signal sampling algorithm
- Universal sampling compartment
- Non-hygroscopic ZnSe optics
- Innovative metrology design
- Rugged aluminum casting
- Software designed for use in CFR21 P11-compliant environment
- Complete IQ-OQ documentation
- 3-year warranty on complete hardware

Benefits
- Rugged and simple software interface
- State of the art analytical performance
- Supports wide range of sampling interfaces (Universal vial holder, hand-held probe, powder sampling vial, fiber optics launcher, transflectance cup)
- Low cost of ownership (10 years maintenance-free)
- Minimal footprint
- Transferrability of calibrations developed on ABB legacy laboratory FT-NIR instruments
- Transferrability of calibrations to ABB process analysers
- High stability and reproducibility
Features
- Multi-channel instrument for remote analysis with fiber optics
- Can use room-T or TE-cooled detectors
- FTSW100 control software
- Full connectivity to DCS and PLCs
- Option for upgrade to X-purged cabinet (ATEX)
- Option for upgrade to Z-purged wall-mounted cabinet (C1D2)
- Accessories supported:
  - Flow-through cells
  - Transmission probes
  - Transflectance probes
  - Diffuse reflectance probes

Benefits:
- Enables remote multi-property analysis up to 300 m
- Multi-channel capability (up to 8 sampling points)
- No opto-mechanical multiplexing
- Full connectivity to DCS or PLC
- Software FTSW100 enables fully automated operations
- Calibration transferability
Multi-stream ambient air monitor

Features
- On-line FT-IR ambient air monitoring for asset productivity, advanced leak detection and personnel protection
- Customizable configuration including:
  - 9200 FT-IR spectrometer (DTGS detector)
  - Gas cell
  - DCS communication interface
  - Multi-stream heated sampling system manifold made of anodized aluminum & 316 stainless steel
  - Calibration loop with pump and septum injection port.
  - Sample lines pressure gauge and flow indicators
  - Application-specific FTSW100 configuration

Benefits
- Multi-stream capability (up to 40)
- Faster than traditional GC – Approximately 90 seconds / sampling point
- Real-time detection of potentially harmful chemical vapors
- Extended diagnostics capability thanks to full spectrum analysis
- FT-IR precision and accuracy eliminates or reduces risks of false positives (can reach detection limits at ppb levels depending on application)
- On-board health monitoring
Features
- Laser used to monitor height of operation, thus no float required
- Ultra-capacitors used, thus no need for batteries to change
- Robust probe seal
- Robust in-probe thermocouple assembly
- Robust maximum immersion detector
- Modular design

Benefits
- At-line and real-time inclusion measurement
- Inclusion size distribution and inclusion concentration trend
- Integrated to the process for simpler operation
AlSCAN™ – Hydrogen Analyzer

Features
- Continuous monitoring capabilities
- Probe failure detection
- Data analysis software

Benefits
- Direct measurement of dissolved hydrogen gas in liquid aluminum
- Accurate on-line quantitative measurement
- User-friendly and designed for long-term functioning on the shop floor
- Easy to use by non-technical floor personnel
- Single measurements or repeated automatic measurements
- Once started up, the unit operates autonomously and requires little or no attention
Prefil-Footprinter® – Liquid Metal Quality Measurement

Features
- Simple to use and designed to survive the foundry floor
- Rugged construction based on an open architecture
- Easy routine measurement by shop floor personnel
- Low cost per measurement with reusable crucibles

Benefits
- Direct measurement of inclusions in liquid aluminum
- Aluminum residue for metallographic analysis
- Process control and process optimization
PoDFA – Inclusion Identification and Quantification Analysis

Features
- List of all inclusion types in each of samples
- Concentration expressed in mm²/kg of aluminum
- Total aluminum cleanliness level
- Key residue pictures
- Inclusion description and their possible source
- Results presented in tabular and graphical form

Benefits
- Provides information on the composition and concentration of the inclusions in molten aluminum
- Process characterization and optimization, product improvement
- Quickly and accurately assess the effects of various operating practices on metal cleanliness or identify filtration efficiency
- Statistical process control
SCK– Gas sampling unit
for cement kiln and calciner gas exit

Features
- Delivered as 3 pre-mounted and tested functional units (retraction unit, cooling unit, control unit) for easy installation
- Easy connection to ACX or 3rd party analyzer system
- Automatically driven oven flap for safety
- Probe 60: reduced costs for purging effort by unique two sample inlets to minimize clogging.
- Probe H: uninterrupted measurement and self-cleaning in presence of sticky dust due to worldwide unique plunger design.
- Designed for hardest process conditions
- Increase the availability and reduce maintenance costs!
- ABB is the only manufacturer with a free software package for a completely remote diagnosis and operation
- Touch Panel operation with trend display and configurable alarm limits
- Remote access through Ethernet network

Benefits
- Unrivalled experience with more than 500 installations worldwide!
- Saves 2 man-days! On site installation in typically 2-3 days as opposed to 4-5 days of main competitors Maximum safety for your personnel
- Sample probes for every application. Probe H increases data availability, saving 3 days/month for maintenance
- Remote Access for predictive maintenance at your fingertips
Products
Field Instruments & Devices...

Markets served
- Power & Steam; Chemical & Petrochemical; Water & Wastewater; Oil & Gas, Pulp & Paper; Minerals & Mining; Food, Beverage & Pharmaceutical

Market drivers
- Improved productivity
- Energy efficiency
- Health, safety and environment
- Process optimization and productivity

Key deliverables
- Pressure, temperature and level products
- Actuator & positioner products
- Recorders, controllers and data acquisition products
- Engineering, application and support services
Pressure Products

Features
- Intuitive LCD with multi-language menu and Easy setup procedure
- HMI with keypad and TTG
- In-field replaceable, plug-in terminal block and communication board with auto-configuration capability
- SIL 2 Certification
- All welded diaphragm seals
- Wireless Hart solution enables diagnostic data acquisition even with old analogue DCS

Benefits
- Full transmitter configuration @ closed covers even in Hazardous Areas reduces commissioning and Opex.
- Long term stability reduces need for periodic recalibrations
- Increased plant availability thanks to the predictive diagnostics features (PILD)
- Suited for SIS applications up to SIL3 in 1002D architecture.
Multivariable Transmitter 266Cxx/Jxx

Features
- Mass flow measurement with dynamic compensation AND level measurement with density compensation, Calculation of energy flow for steam and water
- Binary output for flow impulse/frequency or status
- Integrated totalizer
- Plugged Impulse Line Detection (PILD)
- EN/IEC61508 certification, issued by TÜV NORD, allows installation up to SIL2 (1oo1) and SIL3 (1oo2)

Benefits
- A 266 Multivariable instead of 3 separate transmitters reduces both Capex and Opex by 50%
- Reduction of potential leaking points leads to an OPEX saving for the plant and increases plant safety.
- The in-field communication board replacement with automatic configuration capability reduced plant down time in case of failure.
- The Easy Set Up functionality combined with the TTG (Through The Glass) HMI makes commissioning a matter of seconds without even opening the transmitter housing
- Coupled with ABB primary flow elements deliver a fully compensated, ready-to-install flow measurement solution.
FieldKey WirelessHART upgrade adapter

**Features**
- No Battery (Uses Energy harvesting)
- Small size
- Just two wires to connect
- Use with any 4-20mA HART Instrument
- WirelessHART standard

**Benefits**
- Quick and simple installation reduces costs
- Add point by point for asset monitoring often without the need for a plant shutdown
- Use for process monitoring where it is difficult or too expensive to run wire
- Can be used in any WirelessHART network
Temperature Transmitters

Features
- Transmitters for head-, rail- and field-mounting.
- Supporting HART, FF-H1 and PB-PA Protocols.
- Simplifying operation to due standard communication
- SIL 2/3 certification
- Wireless HART solution with Field-Key enables diagnostic data acquisition even with old analogue DCS

Benefits
- Full transmitter configuration via the HMI without DCS or handheld reduces commissioning and Opex.
- Simplifying operation to due standard communication
- Easy to maintain to due diagnosis information
- Increased plant availability thanks to the redundant sensor connection
Temperature Sensors

Features
- Wide Range of applicable temperature sensors
- With and without thermowells
- Supporting HART, FF-H1 and PB-PA Protocols via integrated head mounted transmitter
- HMI integrated into the sensor head
- Sensors are selectable via selecting tool PSA
- SIL2 Certification

Benefits
- Full sensor configuration via the included head-mounted transmitter with HMI without DCS or handheld reduces commissioning and Opex.
- Simplifying operation to due standard communication
- Easy to maintain to due diagnosis information
- Increased plant availability thanks to the redundant sensor connection
Smart Positioner portfolio
Excellent performance…

- <10 days delivery time, 24h fast delivery
- World spanning EX-approvals
- Mounting brackets for any valve
- Fast and easy commissioning
- One stock-item replaces up to 6 competitor stock items
  - Double acting = single acting
  - Linear and part-turn actuators
  - Best in class pneumatic span
  - Large variety of feedback options
- Excellent positioning performance
- Robust, durable and hard-wearing
- But the most important is… It runs, and runs, and runst, and runs, and runs…
Lower expenditures on energy
- Reduce emissions

- Save $300k & 46kt CO2 per anno for a 700 MW fossil steam boiler

- Take one invest once for a plant’s entire life-cycle.

- Save operational expenditures by a once per 10 years maintenance period.

- Best in class positioning performance

- Robust, durable and hard-wearing

- But the most important is… It runs, and runs, and runst, and runs, and runs…
Features

- Custom made design for float and chamber per process conditions and material compatibility
- Non-Contact visual indication
- Hermetically sealed indication
- Extruded outlet process connections
- ASME Code Facility with U, UM & S Certificates
- Wide range of temperature and pressures (1000°F/538°C and 5000 PSI / 316 Kg/cm²)

Benefits

- Custom engineered floats ensure accurate indication and reliability
- Lowest installation, maintenance, and engineering cost
- High visibility
- Extruded outlet does not allow “sink in” distortion in the chamber that can interfere with float path
- Safe installation and operation
- All welding is performed by code certified welders
- 5 year warranty on chamber, float and indication assembly
AT100 – Insertion Magnetostrictive Level Transmitter

Features
- 0.01% accuracy and 0.005% repeatability
- Update Rate of up to 10 updates per second
- No field calibration required. Device is calibrated at factory
- Floats can be custom designed for specific applications.
- Certified SIL2 and SIL 3 capable
- If modular electronics ever require replacement, all calibration settings automatically upload

Benefits
- Highly accurate and repeatable for critical level measurements
- Quick update rate allows for use in fast changing level and small vessels
- Quick commissioning, no technical background required, Decreased project costs
- Application flexibility and optimal accuracy of measurement
- Certified as safe and reliable
- Auto-calibration
MT5000 Series – Guided Wave Radar Level Transmitters

Features
- Unaffected by common process conditions such as vessel shape or material, turbulence, foam, dust, rain, changes in temperature, density or pressure
- Total liquids, liquids interface or solids level measurement
- On board interactive waveform display and HMI
- Probes can be changed or cut in the field
- Certified SIL2 and SIL 3 capable
- If modular electronics ever require replacement, all calibration settings automatically upload

Benefits
- Allows for installation and application flexibility
- Users can apply in several applications and stock minimal spare parts
- Not calibrator or computer required. Easy setup
- Application flexibility. No need to return device to factory if changes are required
- Certified as safe and reliable
- Auto-calibration
TX Thermal Dispersion Switch
For Level, Flow and Temperature

Features
- Can be used as a Level, Flow or Temperature switch.
- FM, CSA Class 1 Div. 1 EXP. Enclosure
- Rated for High pressures up to 10,000psi and temperatures up to 900 F
- Available in a variety of process connections and exotic materials
- No moving parts
- Optional continuous mV output
- DPDT 8 amp relay
- Stainless steel enclosure option

Benefits
- Versatile switch for multiple applications.
- Compact design fits where space is limited
- Unaffected by process changes in specific gravity, dielectric constant or viscosity
- Suitable for interface level applications
- Pump protection
Features

- Accurate volume estimation of bulk material stockpiles
- Elimination of artifacts from volume estimate (structures, vehicles …)
- Multiple scanners can be combined to track a single large stockpile
- Designed for outdoor operation from -20 to +50C
- ATEX dust certified

Benefits

- Provides accurate inventory of raw materials at a fraction of the cost of a surveyor
- Eliminates systematic inventory errors introduced by load cells and other devices measuring in and out flow of bulk materials
- Availability & Pricing
- Planned product release Q4, 2012
- Preliminary end user pricing
  - $15500 for the first scanner
  - $12000 for additional scanners
  - $6000/year for data analysis service
Hand-held Communicator DHH805

Features and capabilities
- Suited for configuration and calibration of ABB and third party HART devices
- Supporting Analytical, Flow, Level, Pressure and Temperature transmitters
- Easy-to-read dot matrix graphic 6 lines display with backlight and contrast adjustment
- Off-line mode for developing / reviewing configurations
- Dedicated PC-tool for managing up to 200 device configurations and up to 1000 DDs
- On-board 2 GB SD card memory
- ATEX, FM and IECEx certifications

Benefits
- Cost-effective device
  - Allows communication with devices from every manufacturer and all products inside our BU.
  - No expensive license renewal required.
- The only competitive and easy-to-use, all-in-one configuration tool.
- 80 hours batteries grant long-time operation in the field.
- Intrinsic robustness allows problem-free operation even in harsh environments.
- Forget about license expiration dates! DHH805 provides life-time free upgrades and DDs import license.
- DHH805, one version, one model fits all and includes the needed accessories and certifications for global use.
Products
Flow Measurement...

Markets served
Power & Steam; Chemical & Petrochemical; Water & Wastewater; Oil & Gas, Pulp & Paper; Minerals & Mining; Food, Beverage & Pharmaceutical

Market drivers
- Improved productivity
- Energy efficiency
- Health, safety and environment
- Process optimization and productivity

Key deliverables
- Flow metering systems and products
- Flow Computers for custody transfer
- RTUs for low power, programmable I/O needs
- Remote Automation solutions
- Production enhancement applications
- Engineering, application and support services
Lifecycle Services
Supporting all ABB products and solutions...

Market drivers
- Maximize asset lifecycle
- Improve plant performance
- Value-added service solutions

Key Deliverables
- Upgrades, migration planning
- Spare parts & repair services
- Professional training programs
- Flexible service agreements
- Field Engineer services
- Subscription Services
- Remote Services
- Corrective / Preventive maintenance
- Optimization and advanced services

Scalable delivery model aligned to the customer’s maintenance strategy
ProcessMaster
The First Choice for Industrial Applications

Features
- Through the glass (TTG) Configuration
- Easy set-up function
- Fault-finding HELP texts on display
- ScanMaster in-situ verification
- Enhanced diagnostics
- Wide meter size range DN10-2400
- Choice of certificates and approvals
- HART. Profibus PA, Foundation FieldBus

Benefits
- Covers virtually any application
- Superior Control of your process through advanced filtering technology improving efficiency by up to 60%
- Diagnostics that tell you how your plant is performing
- Parameterization of the device without opening the housing
- Stand alone Batch functionality with the ProcessMaster 500
FSM4000
Unsurpassed Measurement Performance in Heavy Duty Applications

Features
- Unrivalled flow signal stability
- Extremely fast response time
- Measurement of high pulp stock with consistencies up to 15%
- Ideal for two phase flow and non-homogenous fluids.
- DN1-100 for Hygienic applications
- DN3-1000 for Process applications

Benefits
- When all other meters fail, award winning FSM4000 still measures with unrivalled flow signal stability and a very fast response time.
- Backwards compatible with older sensors installed in the field.
- High measurement accuracy (0.5%) even in most demanding applications!
HygienicMaster
The standard flow solution for hygienic applications

**Features**
- Through the glass (TTG) Configuration
- Easy set-up function
- Fault-finding HELP texts on display
- ScanMaster in-situ verification
- Wide size range DN3-100
- Variable Process Connections
- Choice of electrode materials and shapes
- HART, Profibus PA, Foundation FieldBus

**Benefits**
- Excellent measurement performance
- Superior Control of process through advanced filtering technology
- Enhanced diagnostic functions
- Parameterization of the device without opening the housing
- Stand alone Batch functionality with the HygienicMaster 500
WaterMaster
The perfect fit for all water industry applications

Features
- Through the glass (TTG) Configuration
- Easy set-up function
- Fault-finding HELP texts on display
- VeriMaster in-situ verification
- Wide meter size range DN10-2400
- HART, Profibus DP and MODBUS
- Buriable sensors eliminating the need for costly chambers

Benefits
- For use in all water and waste water applications
- MID and OIML R49 approved with R49 Self checking
- Parameterization of the device without opening the housing
- Revolutionary data storage enables transmitter interchange and commissioning without the need for reconfiguration
AquaMaster
The smart solution for water leakage and remote monitoring & irrigation applications

Features
- Leakage Management and Irrigation
- Mains, Battery and Renewable energy power supply options
- Remote access via mobile phone technology
- Patented reduced bore rubber lined flow sensor design
- Pressure measurement
- Buriable sensors eliminating the need for costly chambers
- Up to 5 year battery life
- MID and OIML R49 approved

Benefits
- A truly wireless product
- Early leakage detection in District Metering Areas (DMA’s)
- Remote access to logged flow and pressure data
- The ideal product for water distribution and irrigation flow measurement
AquaProbe
Budget solution for clean water applications

Features
- Available with either WaterMaster or AquaMaster Transmitters
- Permanent or temporary installations
- Unrivalled insertion technology accuracy (± 2%)
- Large choice of communications
- Mains, Battery or renewable energy power supply options

Benefits
- A cost effective alternative to a large size full bore flow meter
- Ideal for remote applications
- Low cost installations without breaking the line
- Install without interrupting the normal water supply with its ‘hot tap’ capability.
- A mobile product that can be used for surveying flow conditions
PARTI MAG II
Wastewater flow-metering in full and partially full pipes

Features
- Inlet / outlet Wastewater treatment, Retention basins, Storm water reservoirs
- Measurement in partially filled pipes
- Short inlet and outlet sections
- Sizes DN150-1000
- Choice of liner and electrode materials

Benefits
- Measurement in partially full pipes
- Installation without the need of a syphon saving installation costs
- Short inlet and outlet sections eases installation
Variable Area Flow meters

Features
- ATEX / IECEx / FM approvals
- Armored meter with 4-20mA, HART & graphical display & SST housings
- SIL approvals
- Up to 400 bar and 400°C medium
- Pressure regulators for stable flow conditions
- More than 60 years experience in VA applications

Benefits
- Meters can be easily adjusted on different flow conditions by tube / float / scale exchange
- Highest reliability, flexibility and robustness for most of flow applications
- Usable from simple flow monitoring up to process control applications
**FV4000 Vortex Flow meters**

**Features**
- Digital signal processing for highest metering performance
- Dual Sensor solutions
- Integral temperature metering and compensation
- High temperature option up to 400°C / 750°F medium
- Profibus PA, FF & HART

**Benefits**
- Can handle most demanding applications by smart signal filtering
- Direct Steam Mass flow possible without add. instruments
- Robust, non-clogging sensor design
- No maintenance, no wear
FS4000 Swirl Flow meters

Features
- Digital signal processing for highest metering performance
- Unique sensor design requires shortest/no upstream/downstream sections at highest accuracy of 0.5%
- Dual/Triple Sensor solutions
- ATEX / IECEx / cFMus approvals
- Integral temperature metering and compensation
- Profibus PA, FF & HART

Benefits
- Very compact installations possible, saving up to 80% pipe run and space
- Tripple sensor installation with one device possible for critical applications
- No pipe reduction necessary, save pipe rework costs
- No maintenance, no wear
CoriolisMaster

### Features
- Wide meter size range: 1.5 … 150mm (1/16..6”)
- High accuracy for liquid flow and density of 0.1%
- High accuracy for gasflow of 0.5%
- Simple to use transmitter with common look & feel and sensor memory
- Hygienic approved version available
- Special material (HC4) available

### Benefits
- Save cost by making several measurements with one device
- Reduce flowmeter maintenance by up to 90%
- No mechanical wear and minimize installation issues
- Save up to 25 % on pump power through low pressure drop
- Save critical installation space by using one of the most compact meters on the market
Thermal Mass Flow meter Sensyflow FMT...

Features
- Huge meter size range up to DN200 (3/8”.. 8”) and larger with weld-on adapters, reliable hot tap fittings
- High accuracy & wide measuring range < 1% o.R.
- 100% factory calibration, DAkkS / ILAC certificate or Process gas calibration optional
- ATEX / GOST / FM approvals
- Hygienic approved version available
- Analog HART, PROFIBUS DPV1

Benefits
- Direct gas mass flow metering
- Modular meter & piping concept simplify the commissioning and spare part handling
- Best in class accuracy and response time save up to 10% gas consumption and improve process quality
- Dynamic and sensitive low pressure measurements
- Negligible pressure drop & high turn down ratio up to 1:150 save up to 50 % piping cost & compressor power
- No moving parts, no wear, maintenance-free
Energy meter SensyCal FCU…

**Features**
- Quantity, volume, and energy counter
- For liquids, steam, gases, and compressed air
- Data logger function and billing date recording
- Electrical isolation of inputs and outputs
- Up to 4 active current outputs
- Up to 6 current inputs with transmitter supply
- Up to 12 voltage / current inputs without supply
- Pulse and frequency inputs
- M-Bus, MODBUS, PROFIBUS (via converter)

**Benefits**
- Aproved multifunctional-, precise-, compact-design
- Calibrated measurements for flow, energy balancing and accounting purposes
- Highly-precise differential temperature measurement (chemical processes, brine, and temperature monitoring)
XSeries – RTUs

Features
- Suitable for outdoor installation without shelter
- Low power, battery operated
- Modular and Extendable hardware and software
- Hybrid Flow computer, RTU and PLC functionality in one device
- Common hardware and software platform across all products (minimize training and maximize re-use)
- Flexible, configurable “built-in” applications for measurement, automation, alarming and long term data logging

Benefits
- Maximize oil & gas production volumes
- Increase overall recovery of oil & gas over life cycle of assets
- Minimize downtime
- Decrease expenses
- Reduce truck rolls
microFLOG4 (μFLOG4) Flow Computer

**Features**
- Fast 203 Mhz 32bit processor
- Standard Ethernet port, USB port and one RS232/RS485 communications port
- Class 1 Div 2 CSA hazardous area certification
- Custody quality measurement that meets API 21.1 and API 21.2 standards for electronic gas and liquid measurement

**Benefits**
- Low cost, easy to install
- Sensor and electronics are individually replaceable
- Extremely accurate and reliable
- One unit that can measure both gas and liquid
- + 30 years of custody measurement history
Power and productivity for a better world™