

# ABB Instrumentation

SOLUTIONS PORTFOLIO



The experience  
of many  
makes us  
**stronger as  
one.**

ABB Automation



# The Next Way of Thinking.

Bailey. Fischer & Porter. Hartmann & Braun. Kent. Sensycon. Taylor Instrument. TBI and K-Flow. Some of the most respected names in worldwide process instrumentation now have one very important thing in common.

They're all part of the powerful, global ABB Instrumentation team. A team focused on complete customer satisfaction and dedicated to combining world class products with unmatched application expertise and industry knowledge. ABB Instrumentation offers one of the most extensive portfolios of HART®, FOUNDATION Fieldbus and PROFIBUS compatible field and control room instrumentation.

In recent years, ABB Instrumentation has proudly integrated the products and process knowledge of these industry leaders with our own, to create one of the world's largest application focused instrument manufacturers of pressure and temperature transmitters, controllers and recorders, magnetic, differential pressure and coriolis flowmeters, analytical products and control valves. Our company is also a leading provider of PC-based distributed control solutions, including multi-loop controllers, I/O products and application software used for continuous and sequential control.

At ABB, leadership isn't just about getting bigger...it's about getting better, a commitment to our customers that is embodied in a concept we call The Next Way of Thinking.

The Next Way of Thinking reflects ABB's ability to be incredibly customer focused by anticipating our customer's business and process needs, rather than reacting to them.

And that takes a special combination of process knowledge and technological innovation that separates us from even our most worthy competitors.

From chemical and petrochemical processing to food, dairy and beverage...from pulp & paper to metals & mining...from pharmaceutical processing to wastewater treatment - there's an ABB Instrumentation solution that can help ensure process integrity, product quality and manufacturing productivity. Put The Next Way of Thinking to work for you.

*The Next Way of Thinking*





# ABB Flow Products. Always the best choice.

No matter how challenging your flow application, ABB has an efficient and effective solution to meet your measurement needs.



ABB manufactures the world's largest and best selection of electromagnetic flowmeters including MAGMASTER™ models for hygienic/sanitary and

hazardous applications. MAGMASTER's unmatched accuracy of  $\pm 0.15\%$  provides the highest level of confidence in flow monitoring and control.

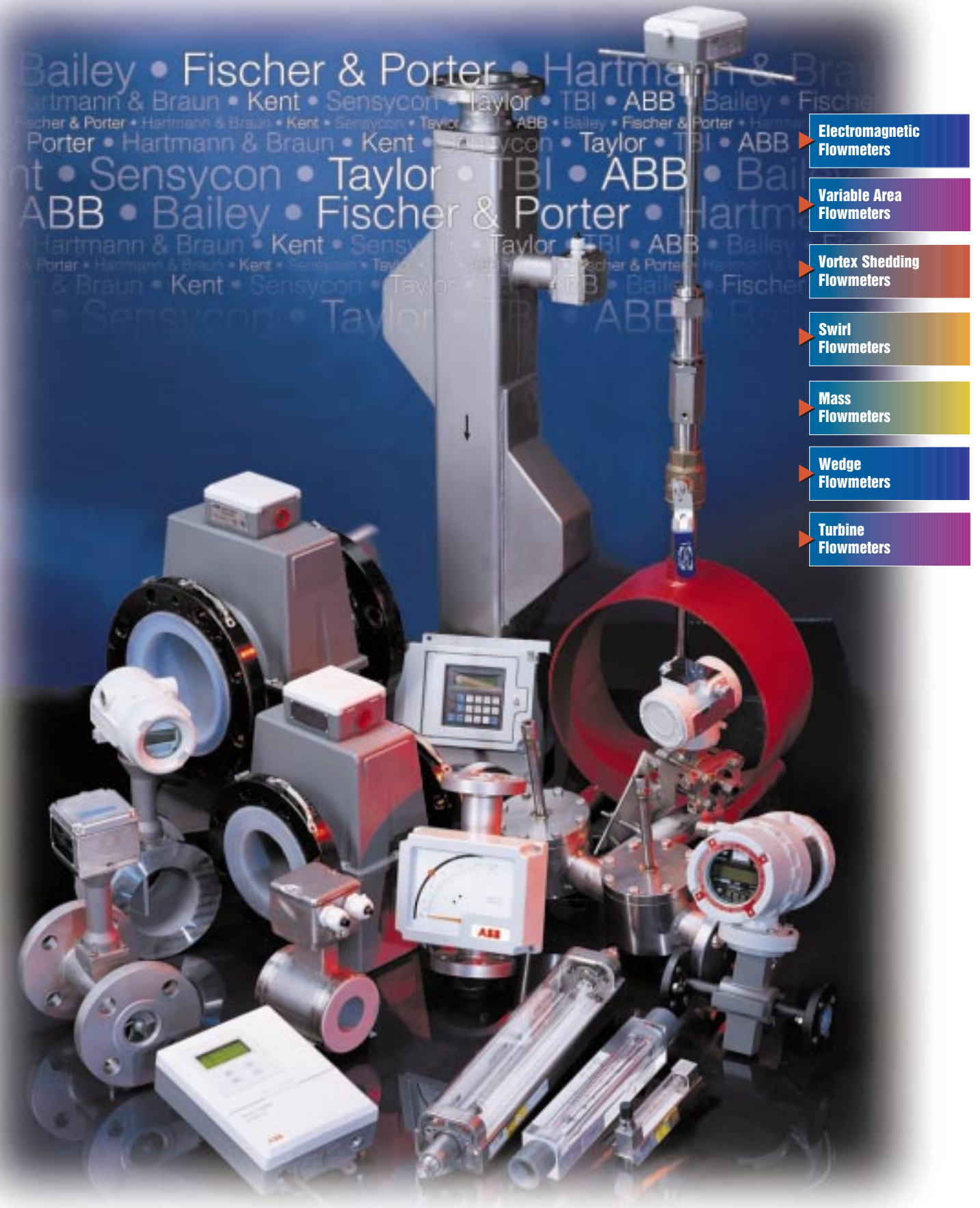
Specialized flowmeters can be ordered to overcome the measurement limitations that often cripple standard magnetic measurement devices.

For example, MAG-SM delivers superior performance in handling heavy slurries associated with pulp and paper and mining applications. MAG-CM provides highly accurate measurements of low-conductivity fluids, providing a maintenance-free solution in applications where the product tends to coat a pipe. COPA-XT™ 2-wire magnetic flowmeters dramatically reduce wiring requirements to lower installation costs by as much as \$4,000 per meter.



While FILL-MAG™ is a maintenance-free replacement for high-speed mechanical filling machines.

In addition, PARTI-MAG™ outperforms existing technologies, such as flumes and weirs for partially filled pipes, while our stainless steel DM 21 flowmeter is designed to withstand the caustic washdowns found in the pharmaceutical and food and beverage industries.



Electromagnetic  
Flowmeters

Variable Area  
Flowmeters

Vortex Shedding  
Flowmeters

Swirl  
Flowmeters

Mass  
Flowmeters

Wedge  
Flowmeters

Turbine  
Flowmeters



# ABB Flow Products. Sometimes the only choice.

ABB's WEDGEMASTER™ flowmeter is the only device that can make accurate, stable flow measurements for viscous fluids and slurries with Reynolds numbers as low as 500. No other flow device can make this claim. (In the delayed coker process, for example, high temperatures and pressures, combined with high viscosity and the plugging characteristics of the fluid, eliminate all other measurement technologies.) The WEDGEMASTER is virtually maintenance-free, features no critical surface dimensions to wear out, and is supported by an industry-best, seven-year warranty.



Compact and affordable ABB MASSMETERS feature faster response times and a proven record of success in fast-filling and batching applications. Three-

sensor design helps eliminate unstable zero caused by pipeline vibration. By balancing the phase shift of the coils, improved zero enhances performance while providing tighter process controls.

For applications suitable for vortex technology, ABB's unique VORTEX METER design places the sensor behind the shedder bar to significantly decrease the effects of water hammer. In addition, the use of four balanced piezo crystals limits the consequences of outside vibration, which interfere with the flow signal.

ABB's innovative and industry-exclusive SWIRLMETERS solve upstream and downstream piping problems often associated with vortex meters. Higher accuracy and increased rangeability make SWIRLMETERS extremely effective for steam and natural gas measurement.

As the pioneer of modern variable area flowmeter technology, ABB Instrumentation's brand of ROTAMETERS provides a highly economical solution to a wide range of low-flow liquid, gas and steam applications. Our glass tube technology is uniquely capable of handling very low flows to less than 50 scc/m air or less than 0.5 cc/m water. Today, more ABB Instrumentation ROTAMETERS are still in operation than any other brand.

# Going to the extreme in performance and selection.

ABB Temperature Transmitters are designed for intended purposes, including extreme applications within a wide range of industries, such as power and utilities, chemical and petrochemical, glass and ceramics, food and beverage, HVAC and automotive. Other units are tailored for engine, bearings and surface temperature measurements. For the automotive industry, ABB provides sensors for temperature measurement of catalysts,

the only manufacturer who can meet this challenging requirement.

Our highly accurate, compact designs last longer and are easy to maintain – just what you would expect from the world's largest supplier of temperature products. Newly designed sensors cut mounting time in half, featuring quick-fit connectors and ABB's patented Quick-On system.



Temperature Transmitters

Temperature Sensors

Handheld Infrared

Interfaced I/O Modules

Configuration Software



The world's #1 supplier  
of severe-service smart  
pressure transmitters.

ABB Smart Pressure Transmitters offer an unmatched combination of stability, reliability, accuracy and value. Design and performance superiority is especially evident in high vacuum and high temperature severe-service applications, and in any applications where silicone fill fluids are not permitted.

Unlike competitive units, all 600T Transmitters share the same electronic modules. The "hockey puck" can be changed in the field in just five minutes to help you protect your initial investment, without altering the performance of the instrument. No recalibration is necessary. Plus, GeminiConfig™ enables you to retain your application-specific configuration. In addition, our transmitters allow you to adjust zero, span, damping and square root function locally, without a hand terminal.

Three-tier performance is available in a choice of base accuracies, including 0.075%, 0.1% and 0.2%. Units feature 0.05% 12-month stability and a three-year stability guarantee.

ABB Smart Pressure Transmitters let you choose among HART, FOUNDATION Fieldbus or PROFIBUS. They also give you the option to communicate with the ABB hand-held communicator, HART model 275 universal communicator, PCs using ABB's Smart Configuration Program or any host interface supporting the HART protocol. Transmitters can be easily upgraded to PROFIBUS and FOUNDATION Fieldbus at your site.

Dual seal containment between the process and conduit connection reduces installation costs. All-welded remote seals offer superior reliability in a wide range of diaphragm materials and fill fluids.





Field upgradeable design  
plus more standard features  
put you in control.

ABB COMMANDER™ Series process controllers and recorders offer unmatched functionality to meet the requirements of a wide range of applications, without requiring you to pay extra for options that come standard on our units. In addition, our field upgradeable design helps protect your recording and control investment, simplifies modifications, and eliminates the need to keep multiple units on hand.



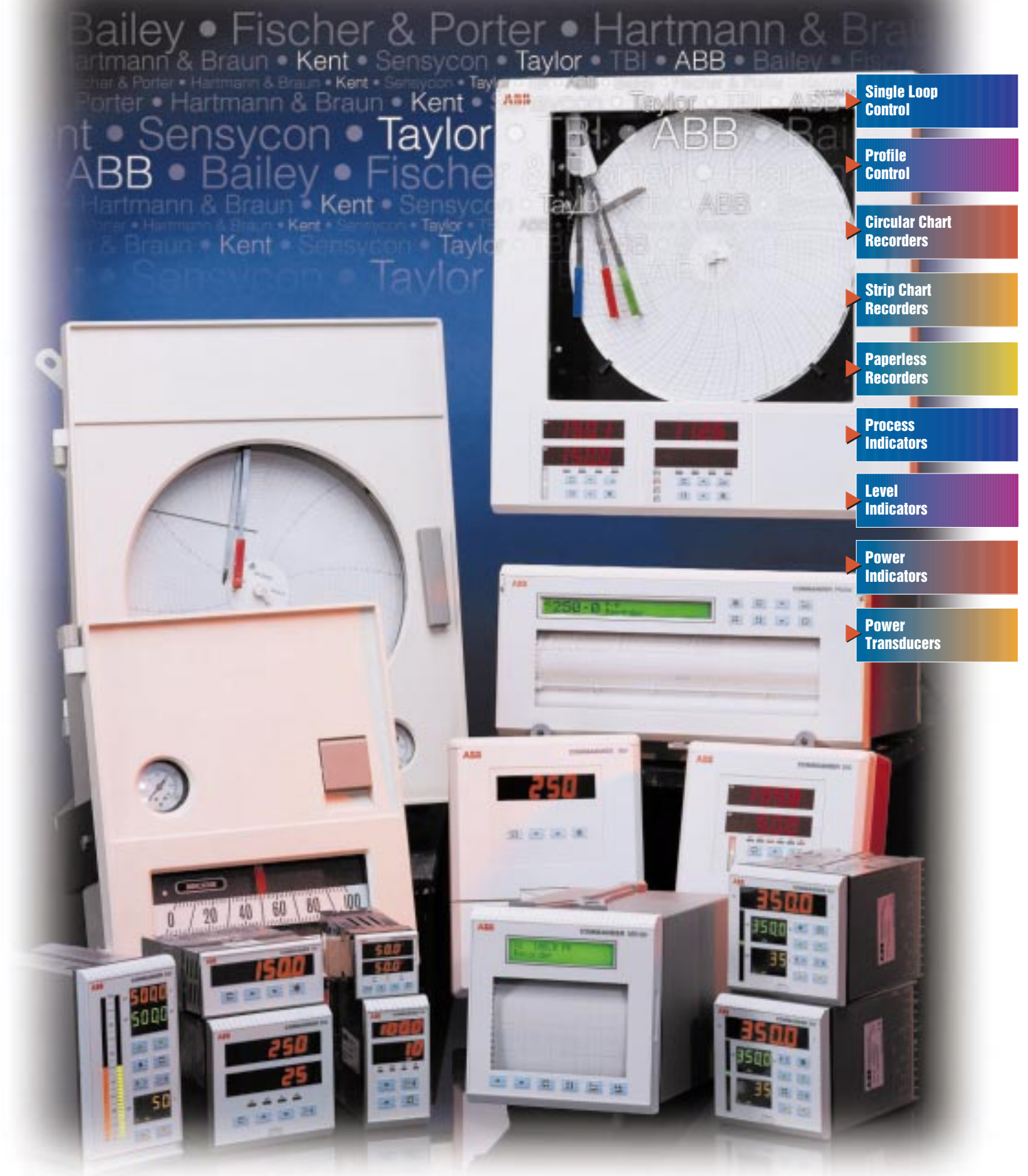
Intuitive, easy-to-use Windows-based software package enables rapid configuration via a PC, and is ideal for ISO requirements and

maintenance records. The COMMANDER PC configuration package permits both uploading and downloading of configuration data, while incorporating storage and report functions.

Application-specific models for retorts, pasteurizers and motorized valves feature customized displays that help operators easily adjust the process response. Universal models provide superior flexibility and can be customized within minutes to meet your specific control needs.

The COMMANDER range, with its open industry standard communication, is an integral component of ABB's single-source total loop solution linking control and measurement elements to plantwide systems. In addition, ABB is one of the few remaining sources for a complete pneumatic solution as part of our long-standing tradition of leadership in pneumatic measurement and control with the FULSCOPE series of products.

Discover how COMMANDER and FULSCOPE controllers and recorders can meet your most challenging application requirements.





# Advanced profit protection.

From engineering to operations to information integration, ABB's Advanced Controllers have the tools and features to help you obtain energy savings, reduce material costs, and achieve consistent quality in food processing, industrial boilers, chemical manufacture, water/waste treatment, and a host of other applications.

## Operations Efficiency

Flexible, high-visibility front panels provide application-dependent displays with the information an operator needs to react quickly to changing process conditions, including control loops, batch sequences, and discrete devices, as well as complete and comprehensive alarm information.

## Control Flexibility

An unbeatable combination of on-board, modular and remote I/O allows you to fit the controller to the process...instead of fitting your budget to the controller. And powerful control algorithms provide PID, sequence, and logic control, as well as calculations and lookup tables for cost-effective unit control strategies.

## Process, Personnel and Profit Protection

Built-in features such as cut-wire and short-circuit detection, and per-point power recovery and failsafe settings alert operators before a situation gets out of

control, permit the process to come back on line quickly and safely after a power outage, and reduce overall downtime. A Portable Memory Module stores the controller configurations and is updated every 50 milliseconds with current process data, reducing downtime and helping prevent loss of product.

## Engineering Simplicity

Reduce overall configuration and commissioning time with powerful, easy-to-use Windows NT® programming tools. From Flexible Control Strategies for single and multiloop PID applications to user-defined, function-block based programs for sequencing, batch functions, and advanced control, online debug and simulation capabilities, dynamic process symbols and embedded tuning windows further simplify the engineering process. Custom PROMs can be created to store proprietary algorithms developed by users, consultants and OEMs.

## Maximum Connectivity

Communications options include Modbus® RTU, peer-to-peer networks, a HART interface option for analog or multidrop communications, and a PLC/Printer interface option for direct connection to many common Programmable Logic Controllers. OPC (OLE for Process Control) servers provide connection to any client package, eliminating the need for custom drivers.





# No matter how you analyze it, no company gives you more than ABB.

For over half a century, ABB Water & Industrial Analysis has developed, manufactured, marketed and installed analyzers for process, environmental, steam and power industries. Today, we're an industry leader providing the world's best selection of measurement, monitoring and analytical solutions to meet the exacting quality requirements of our customers. (In fact, one of the leading manufacturers of SO2 scrubbers for the power industry will not guarantee the performance of its products unless ABB pH equipment is part of the system design). Innovative technologies, coupled with full on-site serviceability, help make our analyzers the most reliable, cost effective and flexible units available. In particular, ABB pH/ORP sensors featuring NEXT STEP and NEXT STEP ADVANTAGE technologies significantly outperform the competition in the most challenging high pressure, high temperature and high solids applications.

### Process Industries

ABB's unique sensing technologies provide superior performance in measuring pH, ORP, and Conductivity for the most challenging processes. Systems for pH utilize patented sensor technologies which accommodate the widest range of process conditions, including high temperatures and pressures. Conductivity sensors are available in two or four electrode and toroidal designs. In addition, all measurement loops are supported by a wide selection of instrumentation

that meets all hazardous and general purpose approvals.

### Water & Waste Water

ABB's robust product offering encompasses the complete hydrological cycle, delivering the highest quality and efficiency. Instruments are available to measure ammonia, conductivity, dissolved oxygen, fluoride, nitrate, turbidity, phosphate, pH, and dissolved organics. Well-proven sensor technologies and designs are combined with flexible microprocessor instruments and sample handling systems.

### Steam and Power

ABB's extensive portfolio of water and gas analysis solutions includes an in-situ oxygen analyzer, as well as a close coupled, extractive oxygen and combustibles analyzers for stack gas monitoring and combustion control. Our hydrogen purity analyzer provides superior control on hydrogen cooled generators.

ABB is the only company that can provide a complete boiler feedwater and water analysis package that reflects over 35 years of application and design experience. In addition, our extensive selection of water analyzers includes pH, ORP, conductivity, dissolved oxygen, hydrazine, phosphate, ammonia, silica and sodium.





# Models of performance.

The ABB Valve Automation product offering includes I/Ps, digital positioners, pneumatic actuators, digital based electrical modulating and ON/OFF actuators.

In vibration applications, ABB I/Ps feature our patented low-mass flapper nozzle system that's inherently insensitive to shock and vibration. Plus, we offer the world's largest selection of intrinsically safe, non-incendive and explosion proof models, not to mention the industry's only stainless steel I/P.

The family of ABB positioners includes a full range of conventional and digital devices featuring the TZID-C - the digital solution at a conventional price. The TZID-C standard offering, with mechanical position indicator and LCD display, can be specified for both linear and rotary applications in single and double acting modes, in either fail-safe or fail-in-place designs. Integral position feedback options can be easily upgraded in the field. The TZID-C can be completely configured by use of local keys and can be set-up and calibrated utilizing the Autostroke function in less than three minutes. All units are HART compatible and can also be monitored by either a hand-held terminal or PC.

All ABB positioners feature field-proven SENSYCON I/P technology. TZID models incorporate a non-contact position sensor that make them the ideal choice for severe service, high vibration applications. In addition, all are HART compatible. The high-gain version of our AV positioner delivers 28 SCFM air throughput for large volume applications, eliminating the need for air volume boosters required on competitive units. Our conventional TZIM positioner offers a cost-effective solution for basic applications.

Within our TZID series, external local operator keys and "bullet proof" glass for viewing the LCD indicator are standard on the explosion proof unit. The TZID series also includes the industry's only stainless steel digital positioner. Solutions for linear, rotary, single or double acting units and fail-safe or fail-in-place are available with integral position feedback options, diagnostics and enhanced digital control and communications. The new TZID-F provides fieldbus solutions now existing for PROFIBUS and soon to be released FOUNDATION Fieldbus.

Set-up algorithms determine both the size of the valve assembly and the best control parameters for operations. Configurable parameters include a 22-point transfer characteristic in both the x- and y-axis.

ABB's CONTRAC Electric Modulating Actuators are simply the most technically advanced devices of their kind, featuring digital control, diagnostics, data logging, and digital communications. For high-torque applications, an extended range from 75 ft/lb to nearly 12,000 ft/lb far outdistances competitive specs that often fail to exceed 5,600 ft/lb. CONTRAC actuators have proven to be a vital system component in meeting EPA NOX reduction program mandates in damper drive applications.

The ABB UP pneumatic drive units have been the standard for pneumatic and electro-pneumatic damper drives. UP drives are now available with digital control and communication capabilities utilizing the TZID positioners.



Actuators

Positioners

I/Ps and P/Is



# The number-one choice for compliance and performance.

ABB offers a unique combination of the world's best selection of control valves and responsive technical support in 50 countries to ensure compliance with local regulations, as well as global industry standards. ABB's WorldValve modular design and the industry's largest complement of body styles, trim types and materials lets you select the trim, body and end connection to match specific process conditions.

Control valve products from ABB are available to meet a broad range of industry and project applications. This selection includes Severe Duty Globe models for low-noise and anticavitation petrochemical applications; Rotary model for anticavitation liquid applications; Desuperheaters for temperature and pressure reduction of steam; and Severe Duty Choke Valves for oil and gas production, among others.

Our AB1000 GENERAL DUTY family of products features one of the widest ranges of trim designs and body sizes for standard applications, including low-noise and anti-cavitation solutions – applications that other standard duty valves can't handle.

AB2000 HIGH DUTY valves include additional sizes, designs and materials which are suitable for virtually any industrial application, while AB3000 HIGH DUTY POWER valves are engineered to operate at the high levels of energy common in advanced power applications, such as feedpump recirculation, boiler blow down and minimum flow recirculation.

AB7000 CHOKE DUTY family of valves include unique solutions for oil exploration, meeting stringent performance requirements at 5000 feet below sea level.

AB5000 DESUPERHEATING and AB6000 STEAM CONDITIONING valves include the industry's widest range of solutions, combining superior design technology and the latest advancements in metallurgy.

The self-contained AB5100 provides the efficiency of steam control and the automation of a control valve in a single package, while the AB6500 incorporates modular construction with advanced material selection, such as ASTM A182 F91, to meet the reduced footprint requirements of today's turbine bypass systems, as well as the increasing temperature and rangeability demands of high-efficiency power plants.

# Dedicated to defeating your downtime in the following ways.

When you partner with ABB, you have the added assurance of knowing our high-quality products are supported by factory-trained ABB Service Engineers who will install and configure your instrumentation to optimize your application. We'll also train your staff to maintain instrument accuracy and performance. And if problems do arise, we respond faster than anyone to keep downtime to a minimum.

Here's how ABB is better:

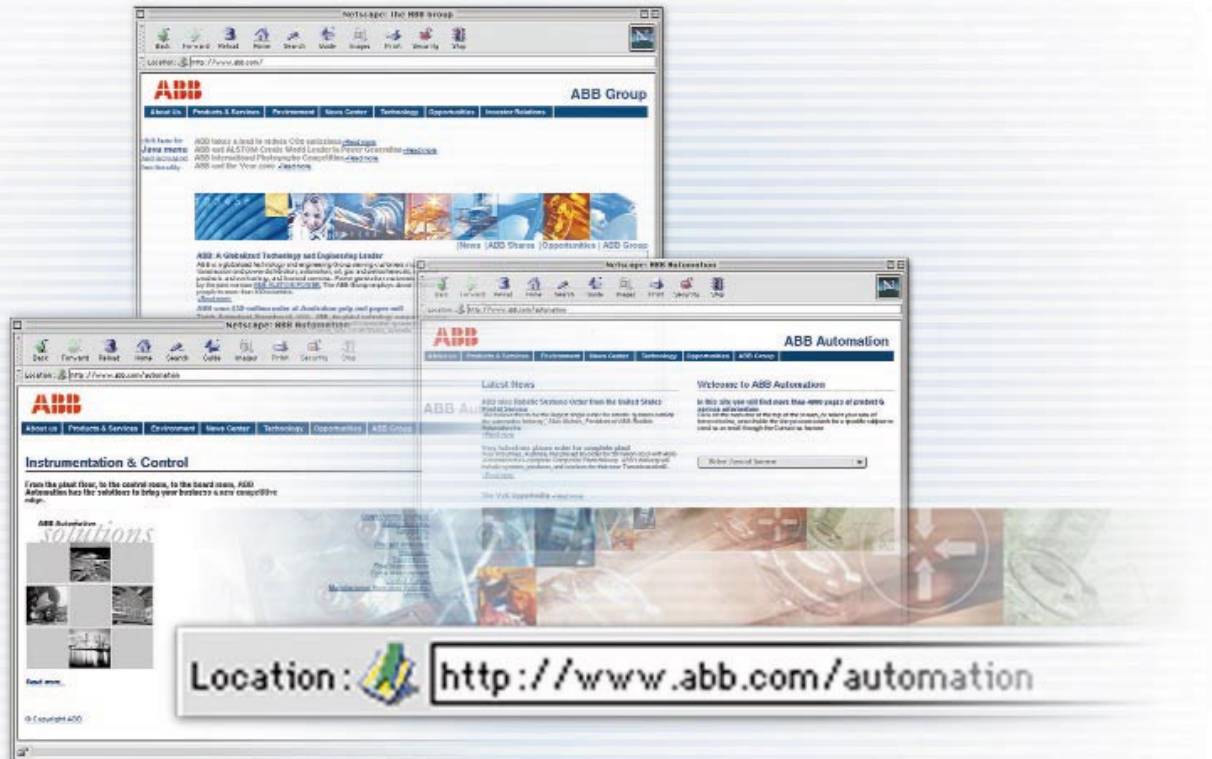
- On-site customer training
- ISO validation services
- Demand & maintenance service agreements

- 24/7 emergency service support through a single toll-free number
- Installation, commissioning and start-up
- Instrumentation and systems upgrades
- Configuration services
- Extended warranty programs
- ISO 9001 and NIST-certified technicians and equipment
- Factory and on-site product calibrations, evaluations and service
- NIST-certified flow calibration laboratory





# The Next Way of Thinking is now on the web.



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