



Products and solutions for water in the  
process industries  
Enhanced plant performance, efficiency  
and reliability

Power and productivity  
for a better world™





# Water management to increase plant efficiency



## Improve Industrial Water Management

Industry is responsible for over 20% of annual global water use, also accounting for 7% of global energy consumption for its distribution and treatment. Water plays an essential role in process industries. Electricity generation, process heating and cooling, raw material transport and dilution, reaction medium, product formulation, process cleaning, environmental control are just a few examples of how water is used.

Despite limited availability in many locations, growing environmental constraints on abstraction and discharge and rising costs of treatment, water systems are frequently poorly managed. This has a major impact on product quality, production efficiency and plant reliability which hit the bottom line directly.

ABB has been providing customers with specific solutions to improve industrial water management for over 50 years, ABB's electrical and automation systems add value to industrial companies through extending asset life, increasing productivity and reducing the cost of using water.

- Improve Industrial Water Management
- Latest technological innovation for water players specific requirements

## Technology and process know-how: A perfect combination for profitable solutions

ABB, as a pioneer in promoting and implementing Energy Efficiency through all the industrial sectors, has the experience, the know-how and the solutions to help the major water market players benefit from the latest technological innovations.

The ABB portfolio includes products and solutions covering the entire electrical and automation scope of industrial water treatment plants and pumping stations:

- drives and motors
- instrumentation and analytical devices
- Control products and PLCs (programmable logic controllers)
- low voltage, medium voltage and high voltage switchgears and components
- transformers
- SCADA systems (Supervisory Control and Data Acquisition)
- DCS (Distributed Control Systems)
- communication networks
- optimization and Asset Management solutions

We specialize in providing state-of-the-art engineered packages, turnkey solutions and related professional services for water treatment plants and industrial pumping stations based on our extensive experience of field applications.

With our range of products and services, our customers can have confidence that ABB will be able to recommend and provide the optimum solution for their specific requirements.

# From Products to Turnkey Projects



## A Leader for Integrated Applications

As a leader in process automation, ABB provides class-leading solutions to meet the needs of customers and OEM's.

Its wide experience as an EPC contractor allows to integrate industrial water units in the global process layout to reach an overall level of integration and optimization not achievable if water plants are designed, operated and maintained as stand-alone units.

ABB's areas of experience include:

- [Oily Water Treatment Plants](#)
- [Pumping Station for Water supply to Industries](#)
- [Industrial Waste Water Treatment and Reuse](#)

From consultancy, design and engineering through procurement and construction to operation and maintenance, ABB is your ideal partner to provide flexible and adaptive solutions for large industrial water distribution and treatment systems.

## Professional Services for Optimal Operations

ABB has a dedicated consultancy team with extensive experience of industrial water treatment capable of tackling complex issues to provide our customers with practical, cost saving solutions.

We can apply our full service engineering expertise to assess existing processes, re-engineer more effective operations, control plant and provide optimal preventive maintenance plans, leading to major improvements in plant efficiency and productivity.

Whatever your problem - from troubleshooting existing systems to specifying and designing new systems to defining optimized operating strategies – we have the skills and experience to tackle the most difficult challenges.

- Integrate industrial water and process units for overall plant optimization
- Field-proven experience to increase plant efficiency and productivity



# Increase Process Performance and Plant Safety



## Instrumentation, Control and Electrification

Have you ever wished that all your systems could talk intelligently to each other?

ABB IndustrialIT is state-of-the-art technology for process automation and management. IndustrialIT assures a seamless link among multiple systems, from field devices up to enterprise level and allows full Information Integration guaranteeing total unconditioned information availability.

The 800xA Distributed Control System (DCS) is the core of IndustrialIT and provides an innovative, consistent and comprehensive water plant information management platform. The 800xA controls all plant operations in a single powerful and reliable information management platform capable of integrating process information with electrical equipment and sub-systems. The 800xA platform integrates process control, historian and archiving, reporting and plant performance calculations, SCADA for industrial water pipelines, safety, batch control and remote monitoring.

The ABB portfolio includes a wide range of IndustrialIT accessible instrumentation field devices including flow, pressure and temperature measurement and quality analyzers such as flowmeters, temperature sensors, ammonia and phosphate monitors, seamlessly integrated into the process control system, addressing all the water cycle needs.

In addition to being IndustrialIT accessible, ABB's latest generation drives, motors and switchgear provide excellent reliability and performances. Our soft-start drives and motors reduce the stress on the main process equipment during transitory operation while delivering reductions in energy consumption. ABB electrical components play a key role in reducing energy consumption and improving the energy efficiency of water processes.

## Energy Efficiency

Energy Efficiency is a crucial factor for all process industries in the present competitive environment. The application of this approach and best practice promises major benefits for the Water sector.

**- Unleashing energy efficiency benefits to the water sector**

# From Challenge to Projects



## Bir Berkine Water Injection Project

In Oil and Gas processing, the utilization of produced water either to support hydrocarbon production or reduce the possible environmental impacts is an essential element.

ABB was selected as main EPC contractor for the Engineering, Procurement, Fabrication & Construction, Commissioning & Start-up of a Crude Oil and Gas Processing facility in Algeria - Bir Berkine Nord Oil Field whose capacity is 25,000 Barrel of Oil per day and 2.4 million Nm<sup>3</sup>/day of Gas. In addition to the process units, the water re-injection is of particular relevance, because of its crucial role in supporting the production rate during the whole exploitation period.

Scope of supply included also the following systems:

- Pipelines- Gathering
- Gas Dehydration
- Gas Lift systems
- Oil Export Units
- Flaring Systems
- Electrical Distribution and control System



## Strategic Consultancy for Major Steel production site, United Kingdom

This major steel production site is among the most efficient water users in the industry, abstracting water from 5 different sources for the complex manufacturing processes and utility operations. Already close to abstraction limits imposed by the regulators and projecting an increase of 30% in production, the site asked ABB to develop a strategic plan to meet production targets.

The result from the study was a staged plan embracing all aspects of water supply and demand across the site, to match increases in production, including

- Improved monitoring and control of the site water network
- Improvements in the reliability and flexibility of the abstraction and distribution system
- Greater efficiency in water use in the manufacturing process
- An emergency plan to safeguard production in the event of partial loss of supply
- Enhanced water recovery for reuse from distributed treatment plants
- The identification of an alternative source of water

The strategy has been accepted by the Company management and is in the process of being implemented.



# From Challenge to Projects



## Operation & Maintenance Contract of Oily Water Treatment Plants at Hassi'R Mel Gassi Touil, Algeria

Plant efficiency and environment care are the key points for Oil and Gas End User; as well as oily water treatment especially in a desert area and in the sea water. To fulfill these requirements, ABB/Sarpi were awarded by Sonatrach for a 5 years contract to perform the following services on 4 Oily water treatment Stations:

- Engineering
- Global Revamping
- Commissioning & start up
- 5 years Operation & Maintenance
- Water Quality Monitoring
- Training to Client's personnel

ABB expertise assesses and finalizes a patent pending innovative process for Oily Water treatment. Process strategies and Operation methodology, obtain low hydrocarbon concentration (HC) and low suspended solid concentration (TSS) from oily salty water coming from oil and gas production plants. The treated water can be reused for other process duties or discharged without pollution.

The methodology and the strategy designed have potential to be used mainly for difficult target application as:

- acid water
- water with high salt concentration (higher than sea water)
- water coming from oilfield

## Extended automation to increase efficiency at SCA pulp mill in Ostrand.

After investments for more than 1.5 B\$, SCA Ostrand pulp mill, in Sweden, is now one of the most modern in the world. As part of innovation project, there was the need of a new integrated control system which main requirement was to merge electrical generation and instrument operations in the most advantageous possible way. Both the recovery boiler and the water treatment system, key units of the plant, are controlled using ABB's IndustrialIT Extended Automation System 800xA, ensuring production stability and efficiency to the highest standards. The new recovery boiler enables a doubling of present biomass-based electricity-production. As result external electricity requirements are drastically reduced thus the kraft mill actually make a net contribution of "green" power to the electricity grid.

The system delivered by ABB included nine operator stations and seven processing stations for control of the recovery boiler and the water treatment plant. It also includes a control system simulator for the boiler with two operator stations also acting as training system.

# From Challenge to Projects



## Ultrafiltration for Water Treatment in P&P at Shandong Huatai Paper Co. Ltd.

Ultra-filtration (UF) is considered as one of the best practices available for the treatment of coating effluents in papermaking. The UF solution offered by ABB is based on the cross-flow filtration technology for liquid-solid separation with ceramic membranes. The principle consists in concentrating the solid contents in order to recover and re-use clear water as rinsing or process water and raw materials in small quantities in the coating preparation, at pre-coating or pigment grinding stages. For a recent project, at Shandong Huatai Paper in China ABB supplied two UF units run in parallel for the treatment of 250 cubic meters per day in total, with an effluent concentration of 1 percent and a retentate concentration reaching up to 40 percent.

The UF technology allows significant reduction of COD in waste water and helps in reducing the operating costs of the water treatment station. The return on investment is approximately two years thanks to the savings made by recycling solids when pre-coating and to the reduction of effluents to be treated. ABB provide for the engineering, procurement and commissioning of the plant, including electrical and automation systems which ensure process high availability and operational safety.



## Best-in-class Process Automation for the whole water units at Repsol YPF La Plata Refinery in Argentina

ABB with his large experience in Oil and Gas projects has the market leadership as automation system supplier in Argentina and is the main automation solution provider for Repsol YPF (Yacimientos Petrolíferos Fiscales). ABB was awarded by YPF a project for the supply of a large automation system covering several water related units at the La Plata Refinery (near Buenos Aires) in Argentina.

Included in a very wide scope of supply was the automation of three water treatment plants, two mud treatment and water filtering plants, four boilers and several water utilities belonging to different process areas. ABB solution was based on AC800 F Freelance which main strength points are the modularity and the architecture topology based on peer to peer technology. ABB system included 10 Operator station, 6 Engineering Station, several I/O modules and 7 couples of redundant controller modules. A step by step approach has been adopted and has started to provide benefits since early 2008.

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