ABB INDUSTRIAL AUTOMATION, POWER GENERATION & WATER

A world where every drop counts

Water plants and networks

Water market trends: flexible electrical and automation solutions required for a changing landscape

By 2025, **1 billion** more people will demand for reliable, affordable and sustainable water

Total world consumption expected to increase by **40%** by 2025

Volume of earth
1.083.319.720.000 km³

Total volume of water on earth
1 386 000 000 km³
(0,1%)

3,5 %
Drinking water

96,5 %
Salty water

Demand on all continents, but with different needs:

- In India, the Middle East and Africa: strong demand for desalination, water transfer schemes and distribution solutions
- Emerging countries: focus on waste water treatment, water supply schemes and water distribution
- Med region: focus on waste water treatment, water transfer schemes and water distribution
- Europe & North America: focus on aging infrastructure (rehabilitation & maintenance), operational cost reductions and water scarcity
- South America: focus on rapidly growing markets, insufficient infrastructure and demand of water for mining industry

Water key drivers

Presently water business is driven by multiple strategic and tactical issues, varying from region to region;

However a common requirement is represented by improved infrastructure management and optimization, driven by the need for:

– Quality
– Sustainability
– Cost control

Quality

Regulations: are adding pressure to operation. Better monitoring is critical to delivering the water quality required while minimizing costs, and better control comes through better measurement.

Safety: Mismanaged water treatment can seriously impact people's health and the environment. It's essential to monitor and manage contaminants and ensure safety through optimal treatment.

Risk: The potential impact to the business of mismanaged water and wastewater can be huge. This means getting on the front foot to install processes and procedures that don't allow room for error.

Sustainability

Energy efficiency: Against a backdrop of increasingly stringent regulation, and with corporate governance driving cost reduction, energy efficiency is key to both a successful plant and a sustainably managed water supply.

Conservation: Protecting the environment, conserving existing water resources while sourcing new ways to deliver clean water is a responsibility for every municipality and industrial user.

Reusage: Better management of the water cycle, and the processes within it, is critical to optimal use of this precious resource.

Cost

Leakage: There may be costs associated with detecting and mitigating leaks, but the cost of leaks is greater. For example, in the U.S., over $4 Billion of treated water is lost every year due to leakage. In other countries, such as the UK, leakage is monitored and fines are levied to water producers.

Higher costs for clean water: Declining water quality due to pollution and increased demand lead to a premium on clean water. Municipalities and industrial users need to monitor and control wastewater discharges and conserve quality of water sources.

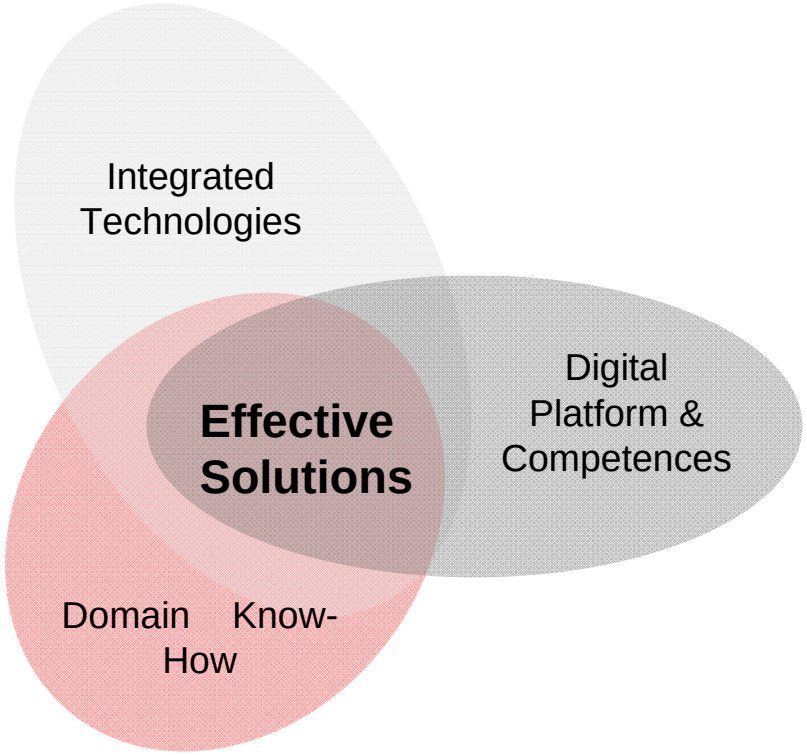
Adapting to data: Data analysis and the insights generated are becoming increasingly important to a more cost effective and sustainable water-cycle. An holistic approach to automation is the most effective way to optimize operations, reduce costs and manage maintenance.

A comprehensive approach

Vertical Solutions

Strategic Points

- Powered by the 4th Industrial Revolution, market and end-user needs and expectations are evolving
- Providing excellent devices and best-of-breed, state-of-the-art technologies is no more enough
- Customers request solutions to their operative problems, based on **Vertical Integration**, from field device to automation up to Big Data and AI
- This requires:
  - Increase specific **domain know-how**, so to be able to understand customer constraints and objectives and cooperate effectively to overcome them
  - Ability to master and blend very different technologies into **seamless solutions**
  - Have the **vision, the capability and the platforms** for exploiting efficiently digitalization-induced opportunities

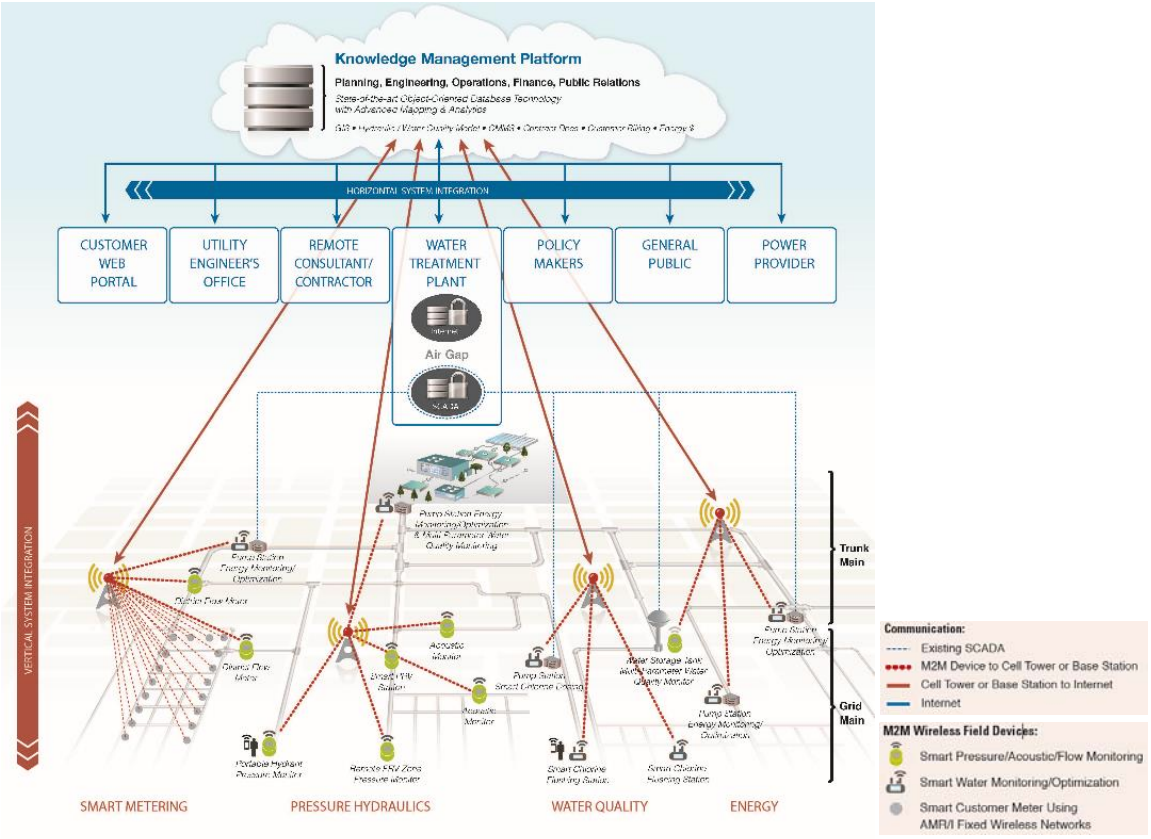


Symphony Plus for Water

Water distribution: impact of digital revolution

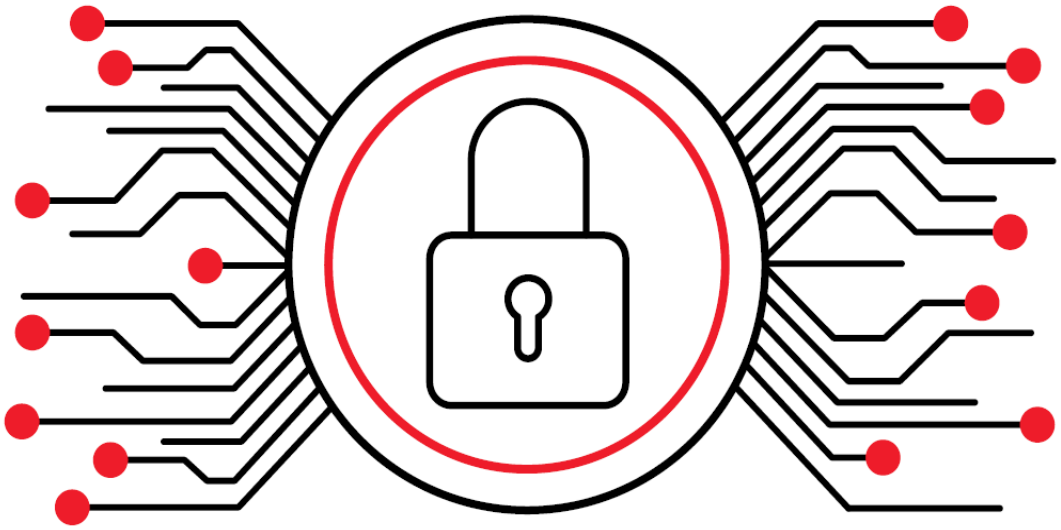
The need for Smart Water Networks

- Water Utilities have invested heavily to address issues like aged water infrastructure, non revenue water reduction, water pollution and rising energy cost
- Water Digitalization promises to solve most of the problems, allowing:
  - Real-time monitoring and diagnosing, determination of maintenance priority and historical data management
  - Remote monitoring and control of the whole water supply and distribution process
  - Provision of information to customers (e.g. Water use pattern)
- Yet difficulties in acquiring, storing and sharing proper and reliable data are still the main bottleneck for effective network optimization



Cyber Security on Water

How to protect a critical infrastructure



Increased usage of technological advancements in automation by water industry (SCADA systems, RTUs, smart sensors, PLCs) has opened a new frontier about protection of ICS (Industrial Control Systems) from individuals or organizations acting with malicious intent.

Concept of ECI (**European Critical Infrastructure**) defining a list of 11 critical areas under EC Directive COM (2006/787) that encompasses Water, ranked in 2nd position just after ICT.

What we can do for our customers in this area:

- ABB Ability™ Symphony Plus® system is certified Level 1 ISA Secure™ and IEC 62443 4-1 and 4-2 level 1
- ABB products are designed to increase the integrity and availability of all system functions, and help prevent unauthorized control system access
- Network Management solutions developed with best in class companies shield the entire OT infrastructure
- Partnership with Genoa University grants a productive exchange of information and up-to-date status on latest academic researches on this subject

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