
CHEMICALS AND REFINING

ABB in chemicals and refining

A proven approach for transforming your challenges into opportunities



ABB provides products, solutions and services that enhance the productivity and energy efficiency of a broad range of chemical processes, from the smallest batch plant to the largest continuous petrochemical complex. Our experience has enabled us to create long-term partnerships with several chemical and petrochemical companies across the globe. Whether you need chemical process consultants, batch control, modular systems, automation or electrical experts, ABB's global team and centers of excellence will together support you and will address your needs. Our integrated solutions offer the industry's best availability, quality, risk reduction and information flow.

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Using actionable insights to help you solve today's most complex challenges



Reduce your cost and risk

- Bi-directional **integration of instrumentation and electrical** reduces total engineering costs upto

25%

ABB as a **main automation or electrical contractor (MAC/MEC)** of the project can reduce capex costs by

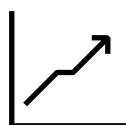
20%



Maximize your plant's efficiency

- Complete **integrated electrical project solutions**
- Integrated **process automation** and electrical control/ power management systems (PMS) **reduces energy** usage by up to

10%



Improve your operational gains

- ABB **Advanced Process Control** reduces opex costs

3%-9%

- Asset information effectively organized through **ABB Ability™ 800xA**
- Improved return through process, instrumentation and automation expertise
- **Increased operator situational awareness** by implementing state-based control strategies



Improve your profitability

- A complete scalable portfolio to **maximize** your **profitability** by up to

9%

- ABB's **total plant reliability** improvements

return **3 to 1** on investment

ABB has the ability to execute complex chemical projects across the globe

With comprehensive experience from many international large scale chemical projects, we can be your trusted partner

Global responsibility

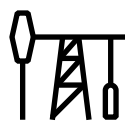
ABB is a global organization with an extensive network of resources. With a firm focus on health, safety, security and the environment, we strive to provide the chemical industry with technology and services that have a positive effect on the world we all live in. With significant application knowledge developed over many years in this industry, we can improve your productivity and reduce environmental impact.

Life cycle enhanced return on capital

Our services and products enhance your project from first concept to decommissioning. We operate locally while drawing support from ABB resources around the globe. A partnership with ABB provides world class expertise and continuity. As the project develops from one phase to the next, we're able to capture lost profit opportunities (LPO) that would otherwise be missed.



Refining



Speciality Chemicals



Base Chemicals



Petrochemicals



Distribution

Multiscope risk management

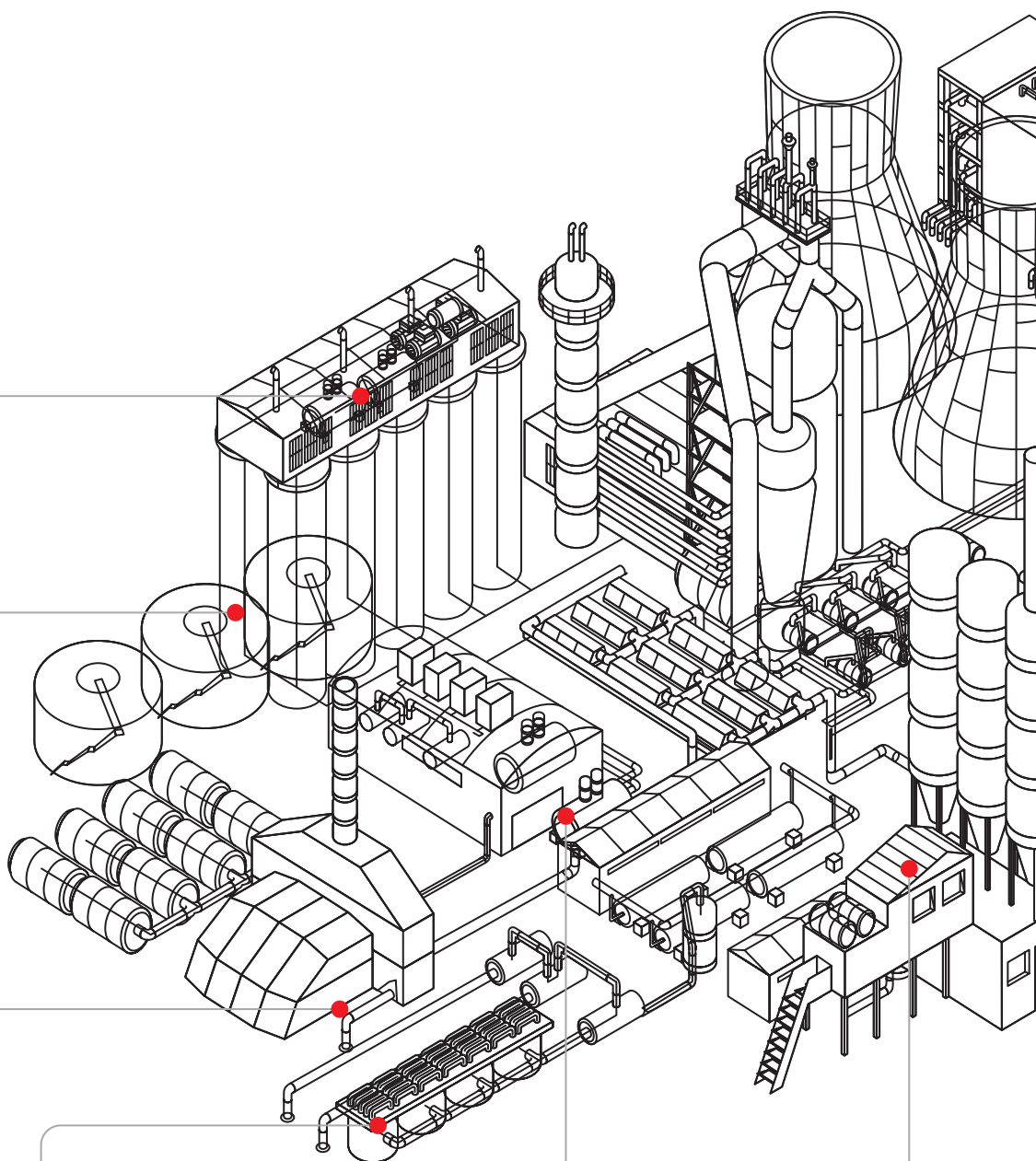
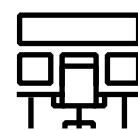
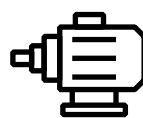
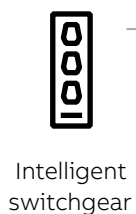
ABB provides a wide portfolio of products and services for chemical processes either directly to the end user or via an engineering company. In many cases ABB is responsible for the integration of the composite solution to reduce client risks and project delivery time, and to optimize the operational benefit of the installed system. Your risks can be further reduced by strategic partnerships or framework agreements.

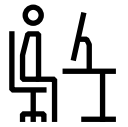
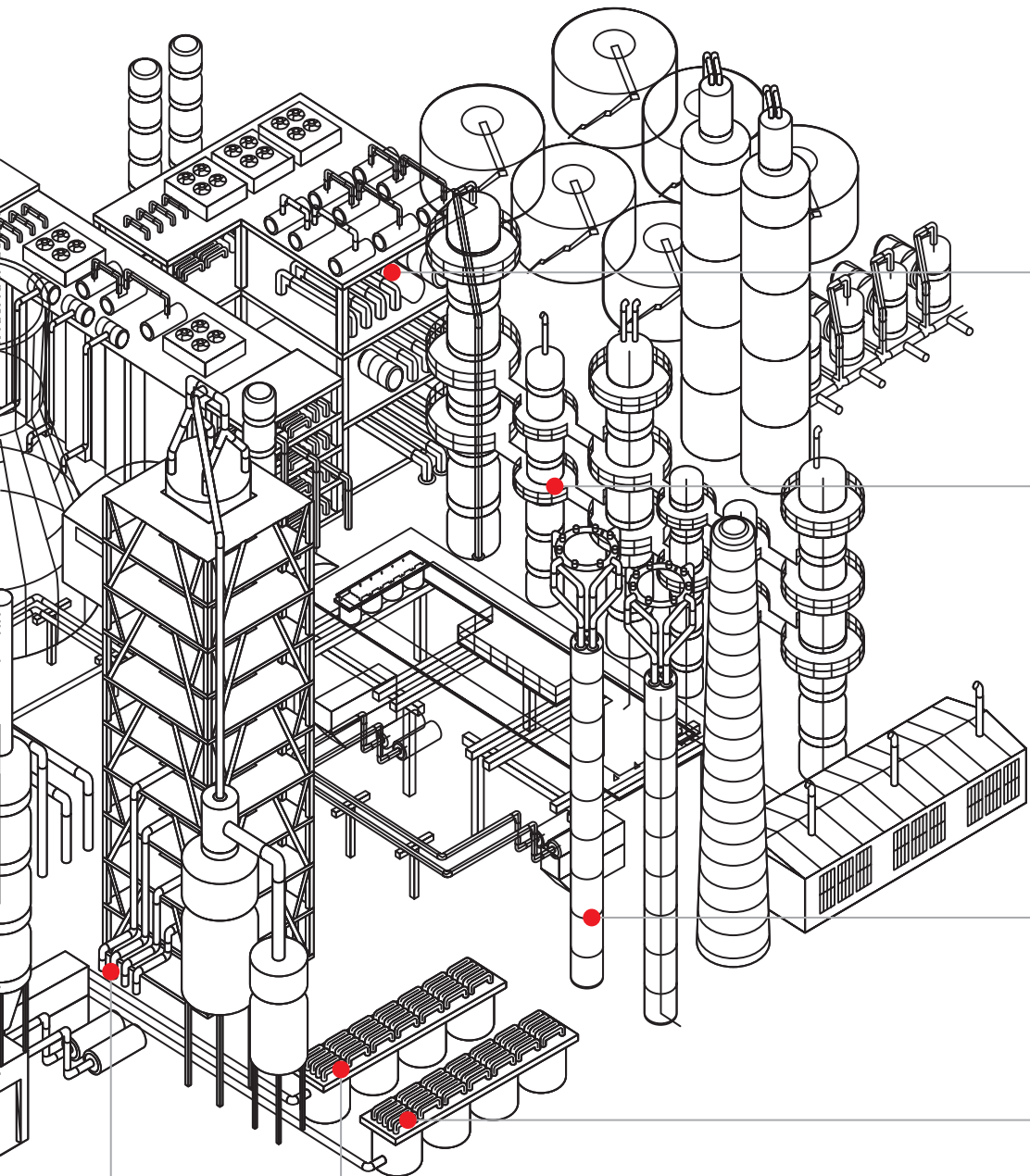
Enabling technologies for operational profitability

ABB Ability™ System 800xA provides fully integrated power, automation and safety solutions with open interconnectivity to business and expert systems. We offer a single system solution providing integrated batch and manufacturing management through to electronic records supporting all five IEC 61131 languages and all major fieldbus technologies.

Collaboration across all fronts to ensure success

ABB's integrated power and automation solutions





Operator mobility



Third party equipment



Analyzers



Intelligent field instruments



Safety systems



Telecommunications systems

A strong track record in project execution



50+

years of experience in the delivery of complex projects within the chemical industry



~6,000 employees
In over **40** countries



Over
2,000
Installation across the world



8 regional centers of expertise for global project execution paired with local service support

Sadara

\$20 billion project with a number of integrated systems to power, automate and manage the entire facility, which contains more than **26** manufacturing plants producing **3 million** metric tons of plastics and high value added chemicals every year

The project involves over **19** different EPCs from all over the world

Wacker

Integrated approach saved **35** days of analysis time, facilitated faster corrective action with less downtime risk, and delivered **20%** opex savings

Enhanced problem solving through **24/7** visualization and analysis of about **100** control loops at one site

Trinseo

Over **30** sites around the globe,

Migration of more than **100,000** input/output devices that are integrated with production management, and business processes and systems low cost of ownership with limited impact on business key performance indicators (KPIs)

6 years of collaboration with the customer

Integration that transforms digital opportunities into reality

The integration of engineering and operations has paved the way for digitalization in the chemical industry. Businesses large and small will only succeed at generating significant value from these technologies if they can apply abstract data analysis to their daily operations efficiently, consistently and continuously.

The rising prominence of information

Digitalization is rising as a strategic imperative for both reactive and proactive reasons. The need for continuous cost improvement, safety and speed are some reactive considerations; proactive reasons include harnessing new possibilities in analytics, prediction and decision-making. The availability of data across company value chains has reached an unprecedented level, and harnessing this wealth of data for improving operations holds considerable value.

ABB at the forefront with ABB Ability™

ABB Ability™, ABB's comprehensive portfolio of digital solutions, includes an installed base of more than 70 million connected devices, 70,000 digital control systems and 6,000 enterprise software solutions. By bringing together all of our digital products and services in one interoperable end-to-end platform that leverages Microsoft's Azure cloud solution, ABB is dramatically expanding the business value we have always generated for our customers.



Digitalization in the chemical and refining industry

Build

ABB's integrated automation and electrical solutions reduces risk and enables savings.



20%

savings from integration

Plan/design

An Intelligent Projects approach improves speed and quality of project execution through single source supply and total cost of ownership.



25%

Faster schedule completion

Engineering

Infrastructure

Intelligent Projects

Creating one common offering for digital end-to-end solutions



Enterprise dashboard



Performance optimization



Predictive maintenance



Condition monitoring



Mobility



Advanced Process Control



Batch analytics



● Operate and maintain

Collaborative Operations transform existing operations through actionable insights to optimize performance in real time.



upto **30%** maintenance savings

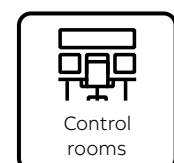
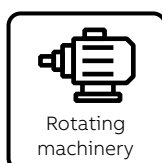
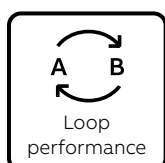
Over **1800** service professionals

in **28** countries to keep plants running and optimizing performance.

Applications

Services

Collaborative Operations



Future development

Our customers' needs and challenges have always influenced the future direction of ABB. Increased information flow and more stringent environmental requirements will certainly influence our future developments in the oil refinery, downstream and chemical sector.

The growth of data source devices will have significant impacts in areas such as alarm systems and operator interfaces. A major challenge with data source devices will be to avoid "data overflow" while taking advantage of the benefits of increased information flow. Including more automation, optimization, remote control, remote support and improved diagnostics. Developments like the use of wireless and Ethernet technologies, modular automation, process analytical technology (PAT) and use of ABB's extended operator workplace provide better integrated visibility of the entire process plant and increase productivity.

As the needs of the oil refining downstream and chemical industries evolve, ABB will continue to be the leading automation, electrical, instrumentation and telecommunication partner for the chemical industry.

ABB employs hundreds of engineers and scientists in our corporate research laboratories and in addition has co-development activities with 50 universities.

As a leading technology provider, ABB is actively involved in industry forums to contribute to and monitor trends in industry, markets and technology. This, along with direct input from our customers and consultants, shapes our development of new products and solutions for the oil refining, downstream and chemical industries.





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