



OIL, GAS AND CHEMICALS INDUSTRY

## ABB in oil, gas and chemicals.

A proven approach for minimizing cost, schedule and risk across the full hydrocarbon chain.

abb.com/oilandgas abb.com/chemical

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## **Turning chaos...**

## ...into clarity

Recalibrating to the post-boom environment will challenge every sector of the oil, gas and chemicals industry.

Adjusting to flattening economic growth across many markets and significant margin pressures caused by uncharacteristically low prices – expected to continue for the foreseeable future – has created a perfect storm of problems to derail performance.

Against this backdrop of macroeconomic uncertainty, business operations are trickier than ever before:

- Deposits are increasingly hard to reach both technologically and geographically
- The explosive rise in unconventional deposits is forcing industry players to chart new territory
- Growing complexity caused from data streaming in from multiple sources and disparate systems is overwhelming employees' ability to make optimal decisions
- Experienced workers are retiring and new employees are well-educated but lack practical experience
- Environmental and safety legislation is more and more stringent

## With great challenges, come extraordinary opportunities

Increasingly affordable sensors, exponential growth in computing power and ubiquitous connectivity are driving a fourth industrial revolution which promises a transformational increase in productivity of 30 percent or more.

However, without the infrastructure and support to harness the ever-increasing reams of statistics now available to operators and to turn data points into actionable insights, the potential benefits of digitalization will remain theoretical for many.

## ABB empowers you to turn opportunity into reality

We help reduce complexity by simplifying processes and improving the flow of information by ensuring that the right people have the right information at the right time.

We turn dumb data into analytic intelligence. Our technology sifts through the extraneous detail, leaving operators free to focus on what matters – taking the decisions which will optimize operations, improve reliability and generate competitive advantage.

Partnering with ABB not only gives operators a fully integrated automation and electrical solution but also one which, uniquely incorporates all telecoms integration requirements from the same provider.

Our approach is proven to result in up to 30 percent lower costs, reduced risk and more predictable project execution. And, we do this while simultaneously ensuring that your most important assets – your people and your information – are protected through coordinated safety and cybersecurity systems that improve work environments and protect against external threats.



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## Collaborative operations.

## Delivering actionable insights to optimize performance in a digital world.

Ensuring companies take the correct actions at the right times is critical for success. That is why ABB has partnered with Microsoft to develop one of the world's largest industrial cloud platforms giving customers new insights to empower faster, more astute decision making. Only when things, services and people are in sync will real change occur - all three matter and ABB has a proven track record of bringing these elements together seamlessly.

With an installed base of more than 70 million connected devices and more than 70,000 digital control systems across a range of industries and its deep understanding of the oil, gas and chemicals (OGC) industry in particular, ABB makes it possible to "see, hear and feel" industrial processes like never before.

# Collaborative operations: A proven four-angled approach to cut costs, reduce schedules and minimize risk through properly integrated digitalization

ABB's collaborative operations approach addresses the need to use big data and data analytics to realize the potential of the industrial internet of things. We consolidate data to manageable levels whereby people can take decisions, helping to improve coordination between functional silos

by providing greater visibility and real-time system integration.

Our approach is scalable such that companies can join in where it makes sense – though full benefits will only accrue to those opting for the totally integrated solution.

The first two phases provide the foundation on which performance improvement and cost containment rely while the other elements ensure that initial engineering and infrastructure investments continue delivering the desired results over the long term.

### 1 Intelligent engineering

Typically, power and automation projects in the OGC industry involve many packages such as drives, control systems and telecoms being put to bid. The more vendors are involved the greater the complexity, the larger the footprint required, the bigger the risk of human error and the increased likelihood of cost and time overruns.

ABB's intelligent engineering approach covers the processes, tools and standards that take project execution from a traditional multi-vendor method

to one which streamlines the equipment mix to reduce human error, risks and labor costs. This also provides single-source accountability for extra peace of mind and shortens completion. Beyond initial project design, ABB can optimize customer objectives throughout the rest of the life cycle right up to decommissioning and end of life.



Up to 50% fewer man hours and four months quicker start-up

20% to 30% less OPEX and CAPEX

and up to 60% space savings



50% reduction in alarms and significant productivity improvements

## **3** Intelligent applications

Intelligent applications are software solutions and system components that help improve efficiencies and optimize performance across the enterprise. They ensure the intelligent infrastructure reaches its full potential to deliver sustainable profitability.

To that end ABB offers a comprehensive suite of applications designed to enhance day-to-day equipment efficiency, promote safe, secure production and make it easy to access expert quidance whenever and wherever required.

## 2 Intelligent infrastucture

While intelligent engineering simplifies and accelerates project execution, having an intelligent infrastructure which seamlessly integrates process control, safety, power automation, telecoms and electrification systems into one collaborative environment is the backbone of daily operations.

By optimizing the manner in which machines, applications and people communicate through an expert single-source supplier, ABB has proven that companies can significantly reduce capital (CAPEX) and operating (OPEX) expenditures while simultaneously improving production.



20% improved uptime and 20 years extended lifetime

/×



## **4** Intelligent services

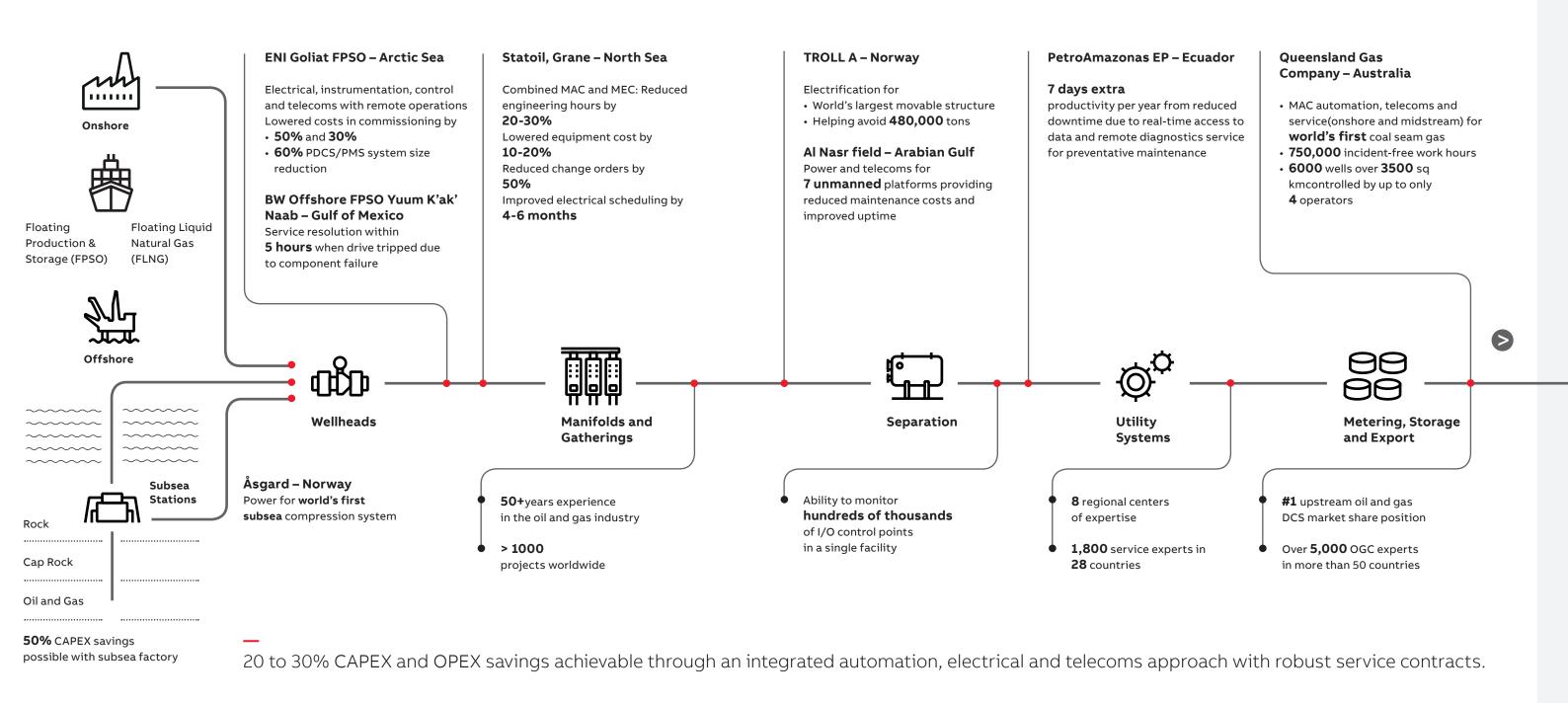
Even the best systems need upkeep to minimize downtime and employees benefit from training to improve their effectiveness. Intelligent services enable companies to move from costly reactive or unnecessary time-based maintenance to planned and predictive interventions based on actual equipment needs to ensure a cost-efficient, extended life cycle for equipment.

Through a range of OGC care contracts and service agreements, training programs and advanced capabilities, ABB helps operators ensure maximum performance of their equipment, people and processes by combining its considerable global experience with an extensive local presence.

## ABB provides a proven track reducing cost,

minimizing risk and keeping customers on schedule across the entire hydrocarbon chain – worldwide.

## Upstream



#### Midstream Downstream **Trans-Anatolian Natural Gas Pipeline** Ormen Lange - Norway (TANAP) Automation, electrification, simulators, safety and information SCADA, telecoms, pipeline monitoring systems with remote monitoring and security systems across 20 districts and **1850km** of pipeline providing and service **5%** of Europe's gas demand • Uptime over 99% most months • Over **\$1million** USD saving • 300 fewer person-on-board days and 300 fewer site nights **Gas Pipelines** 99 and Risers Markets Petrobras YPF - Argentina Sappi Saiccor - South Africa **Gas Plants** Storage **Liquid Natural** and Gas Gas (LNG) ServicePort increased plant Power and automation of world's Compression **Production** availability and **improved** largest chemical cellulose plant LNG and Regasification energy efficiency **Terminals** Gas BP Baku-Tiblisi-Ceyhan pipeline Oil Petrochemical Integrated control and system to enable real-time control of all process and safety Gasco – Middle East functions across **14** parallel projects with **8** EPC and \$9 million USD Wacker Chemical - Germany **Dow and Saudi Aramco Sadara** 1780km of pipeline project - Saudi Arabia saving through control ServicePort integrated approached room redesign saved 35 days Automation and instrumentation for of analysis time, facilitated faster largest chemical complex 99 corrective action with less downtime ever built in a single risk and 20% OPEX savings phase – over **50** production lines **Gas Pipelines** Storage and Risers Potential to save Scope to reduce motor 50,000 engineering energy consumption by **20-50%** using ABB's hours by using ABB's integrated equipment variable speed drives Refinery approach

Markets

ABB IN OIL, GAS AND CHEMICALS

## Collaborative operations in practice.

Using digitalization to enhance integrated power, automation and telecom solutions to transform OGC projects and operations.





#### Gas cycling plant, Alaska

Project design

**FEED studies** 

**Evolution** 

Delivery

Start-up

End of life

ABB was the main automation and electrical contractor (MAC/MEC) and delivered cost savings of 10 to 15 percent even without adding in EPC overall savings. Additionally, lead times were 15 to 20 percent quicker on all packages. This was achieved through streamlining the overall design and modifications, leading to shorter cycle times on procurement and engineering. Supplied were: a process control system, a safety instrumented system, low and medium voltage switchgear, motor control centers, relays, transformers and a power management system. Service-wise we provided FEED studies, system integration, installation and commissioning. Motors for compressors and generators for gas turbines were supplied to original equipment manufacturers.



## Intelligent infrastructure

## **Barents Sea**

**ELECTRIFICATION** 

Substations

ф̂

MV/LV swtchgear

Drives

Transformers

Motors

**AUTOMATION** AND TELECOMS

Measurement, instrumentation

Automation control and telecoms

management



## ENI Norge AS Goliat FPSO -

ABB provided a fully integrated power, automation and telecoms solution capable of remote operations and incorporating a full suite of applications to optimize performance. In addition to installing the platform's transformers, drives and motors, we supplied all field instruments and fire and gas equipment. ABB's 800xA control system helps technicians manage the Goliat from on and offshore. In addition to lowering commissioning and engineering costs significantly, the rationalized infrastructure reduced complexity and footprint. PDCS/PMS system size was cut 60 percent and system/FTC cabinets decreased 30 percent. And, given they only have to oversee one system, Goliat benefits from lower ongoing costs.

## Intelligent applications

## Statoil Peregrino FPSO - Brazil

As part of a project where ABB was both MAC and MEC supplying a complete power distribution solution and a fully integrated safety and automation system for the FPSO's entire production process, we provided two System 800xA simulators. These have helped Statoil overcome the difficulties of recovering and processing some of the heaviest and most challenging crude oil on the planet. One is used for training and the other for process studies and engineering support. Statoil call them "life cycle simulators" since they deliver benefits from initial stages and throughout the life cycle of the field and production process. Within the first two years, the simulators helped double the recovery factor from 10 to 20 percent.

production

Equipment efficiency

Expert anywhere

## Intelligent services

#### Petroleum Refinery - Middle East This refinery's comprehensive security

includes military guards and advanced cybersecurity measures. It wanted to ensure the same level of cybersecurity was applied to its process control systems. ABB's non-invasive Cybersecurity Fingerprint service reviewed existing measures by gathering data from all relevant computers and personnel and comparing this against best practices using ABB's proprietary, software-based analysis tool. Detailed recommendations to reduce vulnerability were made. For example, security patches were found to be missing while outdated and unnecessary software was running. The depth of the report convinced the company to, not only act on the findings, but also schedule periodic Cybersecurity Fingerprints to ensure it remained on track.







contracts Service

agreements

Automation

Condition management

Maintenance and reliability

Training

