Projects and engineering
Engineering expertise to enhance your operations
Overview

Do you need to deliver plant upgrades but find them disruptive and lack the resources?

Are you concerned about your safety systems and their ability to cope with a major plant upset?

Do you need to resolve operational issues but lack the in-house, technical expertise to comprehensively diagnose the root cause of the problem?

ABB provides project and engineering services to improve performance in the areas of compliance, operations and engineering to its customers in the chemical, petrochemical, oil & gas, power and pharmaceuticals industries worldwide.

For many of our clients maintaining a multi-discipline in-house engineering capability is becoming increasingly difficult to justify in today’s business environment, particularly for those areas of expertise that are only required intermittently. ABB recognises this and offers an efficient alternative.

Our services have been specifically configured to provide support to organisations operating in the process industries. From resolving operational problems, upgrading aging plant and verifying safety systems through to conceptual studies, scoping projects and managing your engineering contractor, we offer a wide range of services to enhance your in-house capability.

Unique perspective

ABB is unique amongst engineering consultancies based in the UK in that it brings an operational perspective to the work it undertakes. Our heritage as an engineering department for a large multi-national chemical company means our engineers take a pragmatic approach to the engineering challenges facing process plant operators today, using their engineering judgement instead of wholly relying on codes and standards. This approach has repeatedly realised cost savings for our clients and is what differentiates our services from others.

We are conscious of the challenges faced by operating companies in the UK and instinctively seek to provide solutions that deliver both assurance and value.
What ABB offers

Projects and engineering’s service offer is broken down into seven separate areas.

**Project Management Consultancy (PMC)**

ABB has a long history of providing PMC services to its clients, to ensure their projects meet business objectives and are delivered safely, within budget, to schedule and in accordance with the stated quality standards.

We provide a range of services from full project management through the provision of an owner’s engineering team to the supply of skilled individuals to fill capability gaps in client project teams. Our preference is to work collaboratively with our clients in a combined team. The additional resource and collective delivery expertise we can contribute ensures a focus is maintained on key objectives throughout all phases of the project; from initial feasibility study, through front end, detail design, management of procurement and construction to plant commissioning and start up.

**Front end services**

ABB has extensive experience in conceptualising and scoping projects during the front end phase. We work closely with our clients to identify and develop the most appropriate option. In addition to conceptual studies and FEED, we provide other high value services which enable our clients to:

- Quickly and inexpensively generate sanction estimates
- Identify the appropriate contracting strategy
- Manage risk throughout the project cycle
- Assess and score the robustness of FEEDs and sanction estimates

The front end services we offer are:

- Process conceptual studies
- Front End Engineering and Design (FEED)
- Rapid and Accurate Project Development (RAPID)
- Contracting strategies
- Value analysis
- FEED health check
- Risk management

**Operations support**

ABB’s heritage as an engineering department for a large multi-national chemical company means it has experience of taking a practical and pragmatic approach to the challenges faced by process plant operators. Our engineers have experienced first-hand the commercial constraints present in a manufacturing environment and as such instinctively make best use of existing equipment, rather than simply reverting to replacement. This approach has repeatedly realised cost savings for our clients and is what differentiates our services from others.

We offer a wide range of services under operations support which can be supplied on a flexible, as required basis:

- Fitness for service assessments
- Equipment failure investigations
- Design of equipment repairs
- Design verification
- Plant optimisation
- Specification of replacement equipment
- Structural integrity inspection
- Electrical power system studies

**Interim management**

Where requested, ABB provides experienced personnel to supplement client project and engineering organisations. The skills and experience of each assignee is carefully matched to the position specification with assignments lasting from anywhere between a number of weeks to a number of years. We offer personnel in project management, project controls, construction and all of the engineering disciplines relevant to the process industries.
Detailed engineering
ABB provides detailed engineering services tailored to its clients’ requirements, be it for new build or modifications to brownfield plant, based at a client location or in our own offices. We have a strong team of experienced engineers and designers in the following disciplines: projects, process, piping, control and instrumentation, electrical, civil and structural, vessels, rotating equipment and fired equipment.

Working closely with our clients, we accept responsibility for either the delivery of large, discrete projects or a programme of small projects (the latter typically under a term service agreement). We also provide engineering support to select technology partners, an arrangement which has proven beneficial to both parties.

The detailed engineering services we offer include:

- Term service agreements
- Technology alliances
- Debottleneck
- Revamp
- Automation hot cut over

Process engineering and process safety engineering
ABB has the capability to undertake process design from conception through to commissioning for customers in the process industry sectors worldwide.

Developing new process designs, whether greenfield plant or revamps of existing assets, can present difficulties for operating companies as they do not necessarily carry the required skill sets. A successful design harnesses the experience of both the operator and the designer to realise an efficient, safe and compliant process plant which performs to specification.

ABB has a strong team of process engineers with a broad range of both design and operational experience. We have particular expertise in:

- Concept development
- Process option generation and development
- Process option costing
- Revamp and debottlenecking
- FEED
- Detailed design
- Commissioning and site acceptance tests

Process engineering also plays a vital role in ensuring safe and environmentally sustainable operations. It makes a major contribution to risk management across all phases of a process plant’s lifecycle. Our operational experience means ABB can offer practical, safety related advice to process operators; turning recommendations into beneficial and pragmatic solutions. Our process safety engineering services include:

- Hazard identification (HAZOP, PHR, PHA, LOPA)
- Pressure relief validation
- Flare assurance
- Safety action close-out
- Process safety verification
- VOC abatement and vent collection system safety
- Safety case support
- Gas and dust explosion protection studies
- Electrostatics hazard protection
- Effluent and water treatment studies

Construction consultancy
Today’s construction projects must run to compressed timescales and budgets whilst still meeting the ever greater demands of health, safety and environmental legislation.

Compounding this many companies have little or no in-house construction management capability, yet are still required to conduct global operations that entail building process plant in countries with inferior safety standards and low construction skills.

ABB offers a range of services and expertise to support clients with the construction of new builds or modifications to existing plants. These services are of highest value during the crucial early stages of projects, at the point where the decisions made invariably determine the success of the overall outcomes.

The construction consultancy services we offer include:

- Constructability studies
- HAZCON safety analysis
- Contracting strategy
- Auditing
- Construction management support
- Construction and demolition estimates

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How we deliver

We use robust, state of the art engineering tools and project delivery systems tailored to meet our clients requirements.

**Project management process**

ABB has a comprehensive quality management system which governs the way we deliver projects. Central to this is a proven, gated process for the development, execution and management of projects. Each project is broken down into a number of phases which culminate in stage-gates. The purpose of the stage-gates is to formalise the reviews that should be undertaken at key stages of a project. The reviews are designed to test the progress made to date and identify shortcomings before the project moves to the next phase. The key metrics tested across the stage-gates include: business and project objectives, feasibility, project scope definition, contract strategy, engineering completion, supply chain engagement, estimate accuracy, project planning, construction strategy, ready for start-up requirements and acceptance criteria.

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**Engineering tools**

ABB uses a range of advanced, software based tools which span across all of our functions to engineer the complex designs required by today’s operating companies. The engineering tools are backed up by a suite of project management and planning programs we use to track progress and measure productivity. Our promise to our clients is to effectively combine both sets of tools to engineer high quality solutions within agreed budgets and timescales.

**Process software**

- ASPEN
- Flarenet
- HYSYS
- Aspen plus
- Checked and approved spreadsheets
- API 520 sizing methods

**PEL**

- PhysPack
- Fluid Flow
- CAPRE
- PEW
- VisualFlonet
- VisualAdrian
- VisualPiper

**Civil and structural software**

- STAAD / Pro
- TEDDS

**EC&I software**

- AMTECH design suite
- Protection against lightning risk management software

**Piping software**

- Autocad
- Autopipe
- PDMS and E3D
- Navis Works

**Vessels engineering software**

- Finglow

**Planning software**

- Primavera P6
- Microsoft project

**Document control**

- PDC
Why choose ABB?

ABB’s operational heritage allows us to understand the practicalities of operational environments so we can offer pragmatic solutions.

Our experience
ABB’s unique capabilities stem from a proven track record in project development and design coupled with the fact our staff have an in-depth understanding of the operational issues faced by manufacturing organisations; indeed many of our engineers have worked on live assets for much of their careers. We work across the majority of sectors within the process industry and as such are familiar with the codes, practices and plant operations in each. This leaves us well placed to apply the best practice and learning gained from cross sector working to the benefit of all of our clients.

ABB’s experience is that long term working partnerships work best, as this promotes both efficiencies in service and mutual trust. Our commitment to our clients is to provide a high quality service that doesn’t disappoint.

Benefits
The benefits of working with ABB are:

- Services specifically configured to support organisations operating in the process industries
- Collaborative working arrangements with our clients retaining control
- Focus on delivering business benefits from an operator’s perspective
- Flexible provision of resource to match both task and budget
- Access to a wide range of technical expertise enabling whole solutions
- Engineering specialists with the knowledge and experience to make pragmatic, cost effective decisions based on engineering judgement
- Efficient design methodologies using modern design tools
“Thanks to ABB for the effort in bringing this work to completion in a safe and effective manner. The professional manner with which you completed the work, in trying and sometimes frustrating conditions and circumstances, was good to see”