

industry

industry

chemicals and petrochemicals

pharmaceuticals

textiles

food and beverages

advanced technology

mining, minerals and metals

general manufacturing

m Mott
MacDonald



skills & services

key engineering skills

business strategy

- acquisitions and disinvestment
- business and corporate planning
- emission trading advice
- environment policies
- inward investment advice
- market evaluation
- risk and opportunity management

facility planning

- EIA and planning services
- feasibility and concept design
- financial planning
- geotechnical and contamination surveys
- IPPC authorisations
- statutory approvals assistance
- surveys and site appraisals
- transportation and planning studies

facility construction

- architecture and landscape design
- civil and structural engineering
- construction supervision and management
- design planning and co-ordination
- electrical and instrumentation
- foundations and geology
- front end design and basic engineering
- inspection and expediting services
- mechanical and piping engineering
- plant layout and crantage
- process engineering
- procurement including EPCM
- safety audits
- testing and commissioning

facility management and operation

- asset management
- asset valuations
- contracts review

due diligence services

- EMS and environmental audits
- expert witness
- information data management
- operation and maintenance manuals
- owners' and lenders' engineer
- pollution control and waste minimisation
- safety assessments and audits
- solid waste management
- technical audit
- training

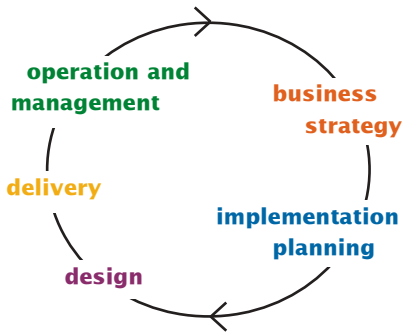
special skills

project management

- contract administration
- cost estimation and control
- planning and scheduling
- planning supervisor
- plant de-bottlenecking
- programme management
- site supervision, testing and commissioning
- supply chain logistics
- tender documents and negotiation
- value management

engineering and environmental

- building management systems
- clean rooms and sterile services
- combined heat and power
- control and SCADA systems
- cooling water systems
- effluent treatment systems
- energy conservation
- fire safety
- fuel oil and gas systems
- hazop studies and risk analysis
- HVAC and refrigeration
- material and energy balance
- materials handling
- scale-up from pilot plants
- steam generation and distribution
- stress analysis
- USFDA/MCA standards
- water supply and distribution



As well as winning Best Industrial Building in the UK's Structural Steel Design Awards, Motorola's state-of-the-art facility in Swindon won acclaim from the British Construction Industry Awards judges: "Form, structure and services have been excitingly united to create a landmark building of great clarity, adaptability and fitness for purpose." Our contribution as civil and structural engineer for phase one included all infrastructure design plus specialist soil stabilisation



(photograph courtesy of Richard Bryant/Arcaid)

Sterilisation extraction systems and process water cooling for injection moulds were among the highly specialist building services we designed for Adnip's new Abu Dhabi facility manufacturing disposable syringes and IV sets. Our multi-disciplinary role also involved feasibility studies, structural design and site supervision

your partner for total solutions

Across all sectors of industry – from biotechnology, chemicals and food to mining and metals, oil and gas, pharmaceuticals and textiles – we provide our customers with a range and level of service second to none, built on our proven track record in delivering complex, demanding projects around the world.

We take care of the entire project development cycle from business strategy to operation and maintenance. With our immense diversity of expertise we cover any aspect from process design to environmental compliance, bringing international best practice to every solution. And the scale of our resources means we respond to even the shortest lead times with a fast-track, quality-focused approach geared to exceed your expectations, not just satisfy your needs.

Thanks to our experience we've not only amassed vast knowledge of international and national regulations and standards, we've gained a deep understanding of the many pressures facing industry – not least maintaining competitive edge. More and more industrial players are seeking greater efficiencies by targeting regions where costs are lower and end users are concentrated, thereby minimising production and transport overheads. We're well placed to help through our key skill centres in over 50 countries worldwide – including specialist industrial hubs in the Gulf and Asia sub-continent which make us even more cost-effective.

We constantly strive to improve and expand the service we offer all our customers – giant multi-nationals, regionally-centred companies and smaller specialists alike. In exploiting the latest advances in technology we use project extranets to deliver time and cost efficiencies and nurture innovation through collaborative working. Our emphasis on partnering with our customers to maximise asset performance and return on investment earns us repeat business from many household name companies – they've all taken advantage of our ability to offer total solutions delivery around the world, around the clock.





For National Pharmaceutical Industries' new formulations plant in Oman we took care of aspects ranging from basic engineering design to project management – services we've also provided for other leading pharmaceutical companies such as Pfizer, Lupin, Rhone Poulenc, Novartis and Wyeth Laboratories

Cable & Wireless commissioned us to help develop and implement a new business planning and governance framework for controlling its annual capital expenditure programme



business strategy and advice

Demand modelling, opportunity scanning, corporate risk profiling, market evaluation, investment analysis, tariff and pricing studies – all feature in our whole-cycle portfolio of services designed to help customers develop new markets, sharpen efficiency, minimise risk and improve financial performance.

Our ability to provide such advice owes much to sound commercial acumen and deep insight into all the issues from environmental and financial to social and technological – fine tuned by our experience in planning, engineering and managing industrial development world-wide. We thus combine strategic analysis with total technical capability – adding value from day one.

Asset and portfolio due diligence is a key service helping customers make realistic business valuations and asset appraisals and prepare for acquisitions, mergers or demergers, disinvestment, insurance or liquidation, collaboration and joint ventures. Whatever the type or scale of facility, whether it's in operation or under construction, we can appraise any asset from technical, environmental and commercial perspectives. We take care of every aspect from evaluating asset condition in engineering terms to identifying key risks and costs and incorporating these to create viable business models.

Packaged flour for a million people is produced by this 300 tonnes a day mill in Oman boasting advanced grain cleaning and milling equipment plus a 16 000 tonnes silo complex. Our role for Salalah Flour Mills Company covered all design plus construction supervision and contract management



Planning groundwater supplies, designing infrastructure and developing effluent treatment solutions are some of the services we've provided for chipboard manufacturer Egger in England and Scotland



For Urenco, global supplier of uranium enrichment services, we provided cost management consultancy for the construction of its new product development facility at Capenhurst in the UK



We have an especially strong track record in India's synthetic fibres and polymers industry where we've engineered complex projects for leading companies such as Garware, Nova Petrochemicals, Modipon, Century Enka, Nuchem and Haryana Petrochemicals

When increased competition demands even more effective operation and optimised availability, we offer a specialist capability in managing risks affecting the safety, effectiveness and delivery of systems, plant and projects across all industrial sectors. Our experts also assess performance risks through availability, reliability and maintainability analysis and advise on mitigation.

To meet ever stricter environmental legislation and demands for greater public accountability – not forgetting the need to guard against potential liabilities – we help our customers develop long-term environmental safety and protection policies right from the outset. And with the value of reducing greenhouse gas emissions, we can assist energy intensive industries ranging from steel and aluminium to cement and caustic soda in identifying incremental technical improvements in the short and medium term. With our experience of working in the European and global economies, we understand the technical and financial risks involved in adopting clean technologies and the value of such transaction costs for our customers.

Our knowledge of global industrial business also equips us to advise foreign investors on specific markets in individual countries. In addition we can look after funders' and owners' interests from the technical perspective through all stages leading up to financial close – and continue monitoring progress and performance throughout the rest of the development cycle.

Our wide-ranging role for GlaxoSmithKline – one of the world's largest pharmaceutical companies – includes helping plan, develop and roll out new IT systems as part of its Manufacturing Enterprise Resource Planning programme



(photograph courtesy of GlaxoSmithKline)



Just 18 months after work started on site British American Tobacco's new factory in Uzbekistan was officially opened. We supervised construction of the 54 000 m² facility after completing all architectural, civil, structural, mechanical and electrical design in less than six months

implementation

Our track record in planning industrial developments right from inception means we can help ensure that the end result delivers the highest levels of quality control, reliability and safety – while optimising construction, operating, energy and maintenance costs. We fully understand the need to achieve performance targets and use space efficiently, at the same time providing a working environment conducive to enhancing productivity. Our planning services are thus geared towards achieving economical design solutions with materials and systems tailored to suit local conditions as well as relevant standards and regulations.

Choosing the right site is a critical step. Our skills extend from site surveys and appraisals to specialist geo-environmental and contaminated land studies – and we can go on to develop full ground remediation solutions if required.

We provided a portfolio of services to Brooke Bond India (Walls) for this frozen dessert plant at Nashik in western India



We were responsible for project management and design of an effluent treatment plant plus outfall for Ciba Specialty Chemicals' manufacturing facility on the UK's Humber estuary



A 600 tonnes/hour ship unloader able to serve 110 000 dwt vessels, a 90 000 tonne grain silo complex and a 1000 tonnes/hour infeed conveyor system are key features of a flour mill at Port Zayed we designed for the Emirate of Abu Dhabi General Industry Corporation



(copyright John Lawrence Photography)

From the mining of ores to the processing of metals, our experience covers projects as diverse as alumina extraction in Ireland, gold mine water resource studies in Tanzania and the project management and design of this high production steel tube mill in Oman

Equally crucial is the interface between planning and environmental issues. Our specialists in both fields work closely together to assist with planning applications and consult with relevant authorities and interested parties. In conducting environmental impact assessments to obtain statutory approvals we study a huge range of aspects to predict and assess potential problems and identify mitigation measures. By integrating environmental risk assessment and pollution control techniques with operational economics and production technologies we develop effective plans for controlling environmental impacts.

Another advantage we bring is that we take care of all associated infrastructure requirements too, from traffic impact studies to local authority consents. In developing concepts for site layouts, building schemes and plant configurations we use state-of-the-art computer modelling, GIS and visualisation techniques to present solutions and test options.

In Dubai Aluminium's latest expansion – providing a 35% capacity increase to make it one of the world's largest stand-alone aluminium smelters – we took care of many aspects, from engineering the power plant to managing 30 contract packages undertaken by a dozen main contractors at the height of the US\$725 million programme



Demonstrating our leading expertise in scaling up pilot processes for commercial operation are several agrochemical and pesticide plants we've engineered in India, based on technologies from research laboratories



(copyright British Steel)

For this six-strand bloomcaster at Corus's Scunthorpe steelworks in the UK we engineered the civil works covering all aspects of foundations for the building and plant

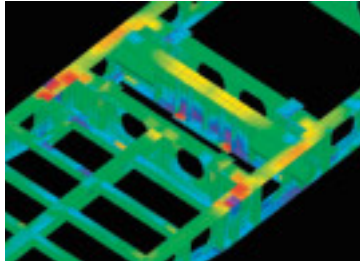
At Hindustan Petroleum Corporation's LPG bottling plant in India our specialists designed the LPG bullets plus the sprinkler system for fire and explosion protection

design

We offer a complete design capability for process, front-end, basic and detailed engineering, for mechanical, electrical, piping and instrumentation systems and for infrastructure elements such as foundations, structure and environmental services. Specialist fields range from contamination control for clean rooms serving pharmaceuticals, food and synthetic fibre manufacturing processes to the scaling up of pilot plants for commercial operation – always observing strict confidentiality to protect our customers' know-how and using the latest computer-aided analysis and design software.

Thanks to our flexible approach we can adapt our design service from outline to full detailed design according to your specific procurement strategy. Where appropriate we incorporate cGMP studies and mandatory reviews as part of the design phase. We also undertake hazard and risk assessments plus HAZOP studies during design to ensure compliance. And with cost control always a key concern, we integrate value engineering into the design process for all project elements to provide solutions giving optimal service life at the most economic operating cost, in line with business plan targets.





Meeting highly demanding loading and durability criteria is a key requirement of the advanced finite element analysis and design services we've been providing to Alstom Power UK for the manufacture of structural frames supporting gas turbine packages used on fixed and floating offshore platforms world-wide



Nissan's first UK inward investment was this US\$1.4 billion manufacturing facility in Sunderland for which we designed all mechanical and electrical services under a design-and-management contract led by Sir Robert McAlpine

Our role in project managing the Egypt Float Glass Company's US\$105 million plant near Cairo – in partnership with Arab Consulting Engineers – ranged from evaluating turnkey bids and reviewing designs to managing construction and co-ordinating a multi-disciplinary international team of contractors and suppliers



delivery

For decades we've been delivering projects to tough schedules under demanding contracts in the face of challenging logistics. We're ideally equipped to advise our customers on the most suitable procurement route – including EPCM – then oversee the bidding process and prepare the formal contract agreement. We're also experts in drawing up tender documents, incorporating appropriate contract conditions and cost control mechanisms to manage change and monitor capital expenditure. In short, we ensure a competitive process that will generate quality, value-for-money services and supplies.

Our all-encompassing capability in project management and supervision covers off-site services during component procurement, manufacture and testing – anywhere in the world – as well as the on-site role throughout construction, installation, in situ testing and final commissioning.

Strategic inspection of critical items and materials is a key service setting us apart from the rest. Our highly qualified experts make sure dimensional checks and hydraulic tests are undertaken properly and that non-destructive testing of equipment and materials is carried out whenever necessary for quality compliance. We monitor and expedite delivery of long lead items, ensure manufacturing schedule compliance and witness mandatory equipment and machinery testing. Another specialist field centres on validation services and guidelines for the qualification of critical manufacturing systems.





We surveyed more than 50 UK waste sites for electronic systems company Thales Group Four as part of developing its environmental management policy and system. We are also helping implement the company's ISO 14001 environmental management system



(copyright Doug Houghton)

Availability, reliability and maintainability (ARM) assessment, risk management, safety assessment and environmental engineering are among the services we're providing for UKAEA to assist with the decommissioning of Scotland's Dounreay nuclear power station and restoration of the site



For Pirelli Tyre's factory in Carlisle, UK, we developed and implemented a management information system to optimise productivity from existing plant

We have provided detailed engineering, project management, construction supervision and commissioning assistance services to Pasupati Acrylon Limited on this acrylic fibre plant in Thakurdwara, India

operation and management

We're here to help long after a new facility is up and running. As well as devising preventative maintenance regimes to extend service life and producing detailed operation and maintenance manuals, we can appraise business performance once a new facility is earning revenue, then advise on any operational changes – a role we're used to performing for 25 years or more on privately financed water and power plants. We also conduct management and engineering audits designed to guide future strategy by assessing operational efficiency and effectiveness and measuring performance against world-standard benchmarks.

To show shareholders and customers how they're controlling environmental impact, many industrial companies are turning to an environmental management system (EMS). We help develop bespoke EMSs with transparent, auditable criteria that meet ISO 14000's formal standards – and go beyond mainstream production to cover every other activity from office, planning and purchasing functions to public relations and promotion of energy efficiency.

Managing constantly changing information efficiently is vital for effective asset management and we've seen growing demand for our skills in collecting and integrating data for optimal decision making. It's where our asset information and management system AIMS comes into its own. After deriving, geolocating and thematically mapping the data, we build a bespoke integrated management system – with GIS mapping, drilldown facilities and maintenance programmes – which we install on our customers' host PC or network.





the difference

how Mott MacDonald makes the difference

- We have all the skills needed to manage the complexities of industrial projects from processing plants to handling and storage facilities – backed by the commitment to make sure each one is designed and priced to meet your business case.
- Unlike many consultants we provide total solutions delivery covering every stage of the project cycle from inception and planning through design and management to commissioning and operation.
- Our multi-disciplinary base is vast, ranging from virtual reality modelling, structural analysis and building services design to process control, detailed design, environmental planning and contract management.
- With our extensive capabilities we can undertake projects of any scale across industries as diverse as chemicals and petrochemicals, textiles, pharmaceuticals, food and beverages, advanced technology and mining and minerals.
- Our people make the difference – our experienced teams comprise highly talented, enthusiastic professionals.
- Because we've been in the business of delivering demanding projects for 100 years in 100 countries, we're unlikely to encounter situations we haven't dealt with before – so your project is in safe hands.
- In essence we give you confidence – confidence that your project will proceed smoothly, that you'll receive the best professional advice and that your objectives will be achieved to your satisfaction.

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