



Power

Power

Skills and services

Sector skills

Biofuels
Biomass
Carbon capture and storage
Coal
Combined cycle gas turbine
Combined heat and power
Communication systems
Desalination
Diesel
Embedded generation
Energy from waste
Flue gas desulphurisation
Gas turbine
Geothermal
Hydropower
Nuclear
Offshore/onshore wind
Petrochemical plant electrical systems
Pumped storage
Renewable energy
Solar
Substations
Traction power supplies
Transmission and distribution
Wave and tidal
Wind

Key services

Asset integrity management
Carbon finance
Civil design
Commercial agreements
Commissioning
Concept design
Construction monitoring
Decommissioning management and implementation
Detailed design
Due diligence
Energy economics
Engineering and specification
Environmental assessment
Feasibility studies
Financial analysis
Inspection analysis
Intake and outfall structures
Interface co-ordination
Investment and acquisition appraisal
Jetties and offshore structures
Lenders' engineer
Lifetime studies
Market and strategic advice
Operational engineering
Owner's engineer
Planning and permitting
Project development
Project management
Regulatory development and analysis
Rehabilitation
Remediation studies
Re-powering studies and implementation
Site selection
Site supervision
Technical advisory services
Tender adjudication
Testing and inspection
Warranty management

Comprehensive power consultancy

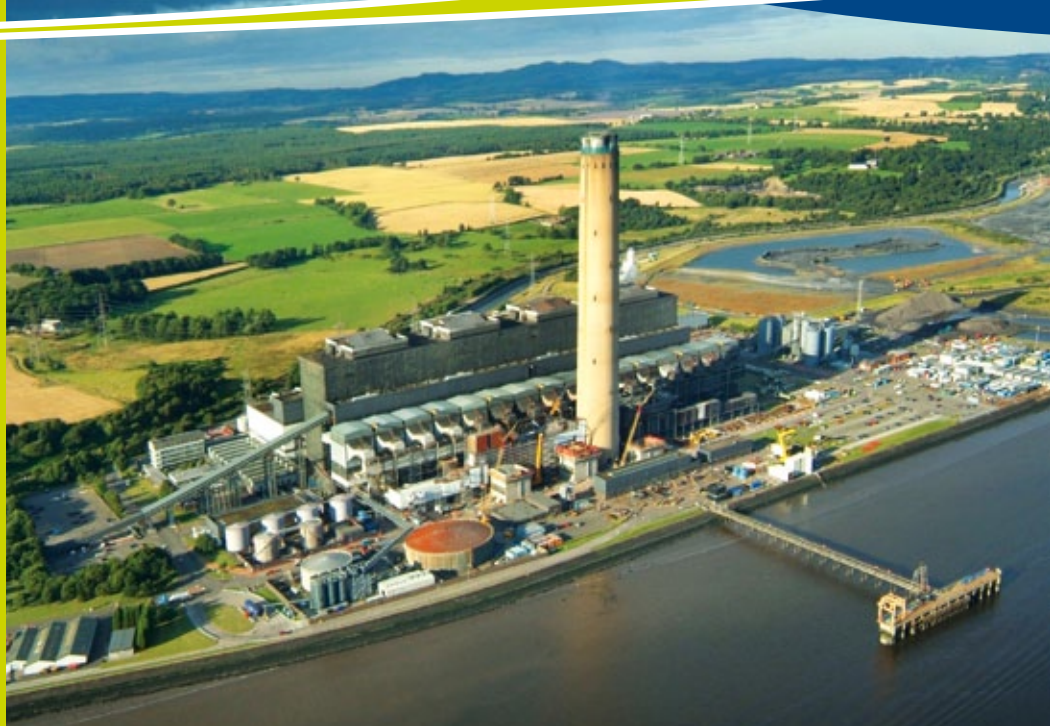
Mott MacDonald is an international, multidisciplinary management, engineering and development consultancy. It is one of the foremost consultancies in the global energy market and, according to New Civil Engineer Consultants File, the leading power sector consultant in the UK.

Experienced in all types of power generation and transmission technologies, we work in partnership with our customers, ensuring through our total commitment that we add maximum value to every project. We take pride in each assignment and our reputation for delivering an authoritative quality service is demonstrated by the prestigious and challenging projects entrusted to us.

From our early power projects in the late 1890s through to our current portfolio, Mott MacDonald has played a leading role on some of the world's milestone energy projects. Around the world we serve national governments, utilities, industrial companies, investors, developers, contractors and funding agencies.

Our complete service extends from the macro level of national energy policy or major project activity to the detailed analysis or investigation of single issues. Whatever the task, our clients benefit from an all-embracing service from experts who have an extensive and wide ranging understanding of all matters associated with the development and operation of power generation and transmission and distribution facilities.

Mott MacDonald is assisting ScottishPower as part of a UK government carbon capture and storage (CCS) demonstration competition at Longannet Power Station. We are responsible for integrating the carbon capture plant with the power plant, and co-ordinating the design of the overall end-to-end solution with the consortium members.





The Ras Laffan B power and water plant in Qatar produces 1025MW and 60 million imperial gallons per day (MIGD) of drinking water. Mott MacDonald was owner's engineer, providing design review, manufacturing inspection, construction supervision, testing and commissioning. The plant features Qatar's largest gas turbines, steam turbines and desalination units.

Thermal generation

Mott MacDonald is one of the world's leading experts on thermal generation. Our services cover all aspects of new build and retrofit plant development for projects ranging from 0.5MW to over 4000MW. We have experience in all types of generating technologies including:

- Conventional coal and oil fired steam plant
- Combined heat and power (CHP)
- Diesel
- Energy from waste
- Integrated gasification combined cycle
- Open cycle gas turbines
- Combined cycle gas turbines

For thermal projects our power teams carry out pre-feasibility and feasibility studies, owner's engineer and technical advisory services and lender's engineer and government advisory services for project development and execution. We also provide detailed design services to turnkey contractors and are involved with the tender evaluation, project planning, programming, cost engineering and supervision of construction and commissioning of all types of thermal generation projects.

We have developed a full technical, commercial and environmental advisory capability in pollution control technologies and are at the forefront of new developments such as clean coal technology and carbon capture and storage projects. Mott MacDonald also has proven capability in energy from waste plants. Assignments in this area have ranged from fuel supply chain studies through to cutting edge pilot scale technologies to implementation and full owner's engineer services.



Investment in energy from waste (EfW) technologies is taking place worldwide. We have developed full capabilities to support EfW projects. We provided re-design and modification services to incorporate new equipment at the Marchwood EfW plant in Hampshire, UK and carried out an assessment of the load that the plant could handle.



Power and desalination

Mott MacDonald is renowned internationally for actively promoting the development and application of desalination plants. We have engineered more than 25% of the world's seawater desalination capacity. We provide a fully integrated service covering technical, commercial, regulatory and environmental aspects of desalination as well as combined power and desalination projects. Our expertise covers all the latest desalination technologies, including multi stage flash (MSF), multiple effect distillation (MED) and reverse osmosis (RO).

Our water treatment and desalination specialists are committed to providing innovative, efficient, sustainable and cost-effective solutions while minimising environmental impacts. Our in-house software tools can model and optimise thermal and membrane processes, groundwater/surface water/seawater feed systems and brine discharge systems, resulting in an efficient, environmentally acceptable water treatment project.

The independent water and power project at Umm Al Nar in Abu Dhabi involved extending existing facilities to provide a 1550MW power and 113,600m³/day new desalination plant. Mott MacDonald provided technical advisory services during the tendering phase and was then engaged as owner's engineer for the implementation phase providing environmental support, engineering co-ordination, design review, construction monitoring and commissioning services.



To tackle a potable water shortage crisis in Jeddah, Saudi Arabia, an innovative scheme involving the development of the world's first commercial barge-mounted seawater reverse osmosis desalination plant was initiated. Mott MacDonald provided comprehensive detailed engineering services for this project, which won the 2008 British Expertise International Award for Innovation.



Steven's Croft is the UK's largest dedicated biomass power station. We gave full project management engineering support to E.ON UK for the project, which was named Best Renewable Project at the 2007 Scottish Green Energy Awards.

We've provided comprehensive development and design support for both onshore and offshore wind farms worldwide, including full electrical systems development and design for Noble Environmental Power's wind farm in New York State, USA.



Renewables

Mott MacDonald has developed a world class reputation supporting all aspects of renewable energy, from formulation of national policies to the development, design and engineering of projects. This capability embraces the full range of technologies including:

- Biofuels
- Biomass
- Geothermal
- Hydro
- Onshore and offshore wind
- Solar thermal and solar PV
- Wave and tidal energy

Our services include resource assessment, concept development, technology selection and design, civil, mechanical, electrical and C&I design, procurement, costing support and complete environmental services. We also provide social and health impact studies, electrical network studies and design, financial and economic modelling, carbon monetisation, project and programme management and construction supervision.

For project developers we bring a full understanding of the business drivers coupled with comprehensive technical capabilities to achieve successful project outcomes efficiently and effectively, anywhere in the world. For investors and financiers we bring rigorous and informed appraisal for both new build and acquisition projects. For governments we bring deep knowledge of all sector issues to the delivery of effective policy and projects. For utilities and the supply chain we combine all these capabilities with proven engineering and project management skills.

Carbon management

Climate change has provoked a series of international measures to reduce greenhouse gas emissions. These range from encouraging companies to act as good corporate citizens to monetary mechanisms to incentivise low carbon projects. Mott MacDonald provides a range of services to help achieve these objectives, including:

- Carbon capture and storage
- Carbon credits/CDM/JI
- Carbon financing
- Carbon management policies and plans
- Emissions inventory and benchmarking
- Sustainability assessments and sustainable design
- Structuring of projects to achieve financial benefits
- Project concepts to fully constructed and operational solutions
- Project registration

We can undertake this work as an integrated part of an overall energy development project or on a stand-alone basis, depending on your requirements.



For Iceland's national power company, Landsvirkjun, we were lead consultant in a joint venture to oversee construction of the dam and tunnel on the Kárahnjúkar hydropower project. Comprising a 190m high concrete faced, rockfill dam, 60km of tunnels and a power station, the facility was built to supply energy to US company Alcoa's new aluminium smelter.

Mott MacDonald's solar technology services range from the detailed assessment of technology options through to development, design and construction support. We also undertake feasibility studies, conduct technical and environmental due diligence and provide technical and commercial support to investors in the solar market.



As part of an international joint venture, we provided mechanical and electrical services for the feasibility study, design and construction supervision for the 1450MW Ghazi-Barotha hydropower project in Pakistan. Winner of the Energy Institute's International Platinum Award 2006, the project benefits Pakistan's economy by enhancing power capacity and reducing dependence on limited fuel imports.

Utilising the results of subsea surveys, we provide feasibility studies, route selection, preparation of technical specifications and optimal cable installation method for submarine cable projects. Our services also include cable inspection during manufacture and supervision of installation.



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Wind farms are presenting new challenges to the electrical systems they connect to and even to the systems required to interconnect units within a wind farm itself. Mott MacDonald has the expertise to ensure that these issues are properly addressed to provide wind farms with cost effective electrical systems.

Transmission and distribution

Mott MacDonald has expertise in all areas of electricity transmission and distribution (T&D) and provides services through all stages of project development from conceptual/feasibility studies and advisory services through design and optimisation to construction supervision and commissioning. Areas covered include:

- AC and DC subsea and onshore cabling
- Grid connections and collector systems
- HVDC and FACTS, SCADA, SmartGrids
- Industrial networks including on and offshore petrochemical facilities
- Overhead lines and substations
- System analysis and master planning

Our expertise covers 750kV developments down to MV distribution systems, subsea interconnection projects, HVDC systems, offshore substations and subsea interconnections for large 500+MW wind farms. Our capability and experience is unparalleled in terms of transmission design, refurbishment, load growth and connection engineering involving substations and overhead lines from 11kV to 400kV and extra high voltage (EHV).

Whether acting as owner's or lender's engineer we bring a full understanding of relevant business drivers coupled with complete technical, commercial and project/programme management to achieve successful outcomes efficiently and effectively, anywhere in the world.

We provide a wide range of master plan and conventional power system analysis studies, including generation and transmission planning, fault level modelling, stability studies and dispatch modelling, demand forecasting, quality and security of supply, protection and system loss assessments, plant assessment and capital investment plan creation and financial analysis. We also have strong expertise in modelling and measuring various aspects of power quality, including harmonics, fast transients (spikes), voltage dips and over-voltages and other supply interruptions. Our system analysis capability also includes complete configuration studies for industrial systems such as aluminium smelter plants, iron and steel plants, cement plants, LNG liquefaction plants, oil refineries and oil and gas platforms.

Our expertise covers 750kV developments down to MV distribution systems



Electricity market services

Mott MacDonald prepares grid codes, quality of supply standards, performance standards, security standards, grid connection requirements, power purchase agreements and benchmarking studies in any part of the world.

We help governments and electricity utilities move to a system of competition, advising on institutional framework, company organisation, financial performance, training and preparation of companies for sale, reviews of business plans, strategic planning and corporate development.

We provide advice on grid connection charges, pricing methodologies, electricity market design, balancing markets, regulatory set-up and capacity building. Our technical advisory services also include electricity policy and legislation development and analysis, regulatory price review studies and market price forecasting.

National Grid has six five year alliance contracts to upgrade and develop the electricity transmission network across England and Wales. Mott MacDonald is a member of two of these alliances. In the south east region we're helping develop and construct substations and connect new infrastructure such as wind farms. And in the western half of the transmission network we're developing, enhancing and constructing overhead lines and cable projects.



At West Bay in Qatar, we provided complete services from conceptual design to commissioning for nine new indoor GIS substations and the extension of an existing 220kV substation.



We fully appreciate the drivers and legislative requirements appropriate to a nuclear facility

Mott MacDonald delivers comprehensive services to any nuclear development programme, providing design solutions and cost consultancy services for the nuclear island, power generation and power transmission systems. We are providing commercial management support to the Olkituoto 3 project in Finland.



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Nuclear power

New nuclear power is now seen as a long-term source of low carbon base load electricity and an economically viable alternative to fossil fuel's uncertain prices and supply issues. Many countries have made commitments to new construction and the global supply chain is having to respond to major increases in future demand.

Mott MacDonald has a 35 year track record in the nuclear sector. We offer a comprehensive service to clients involved in the development of nuclear power programmes encompassing technical and regulatory advice, cost consultancy, design of new process and treatment facilities, decommissioning and demolition projects plus refurbishment and life extension studies. We fully appreciate the drivers and legislative requirements appropriate to the development of a major nuclear facility and, above all else, the paramount need for safety first.

We use all our skills gained through conventional generation and complement these with our knowledge and experience of the nuclear sector to deliver a complete solution for new nuclear power plants, from project development and cost engineering to detailed design – including civil – and site supervision. Through industry partnerships we also provide leading edge services in reactor specification and licensing.

For the first stage in the decommissioning of Sizewell 'A' nuclear power facility in the UK, we carried out a baseline decommissioning plan. This comprised an initial survey, technical review and cost estimate of the work involved in shutting down the facility, demolition and placing the remaining structures in a state of care and maintenance.

Mott MacDonald – multisector, multiskilled, multinational

Buildings

Communications

Construction economics

Education

Water

Environment

Health

Industry

Management consultancy

Planning

Project finance

Project management

Transport

Urban regeneration

Energy

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