RAMBOLL IN THE MIDDLE EAST

MAKING CITIES LIVEABLE, THROUGH INNOVATIVE ENGINEERING

MEA.RAMBOLL.COM
Ramboll is a leading engineering, design, environmental and consultancy company employing 16,000 experts. Our presence is global with a strong representation in the Northern Europe, North America, Europe, Middle East, India and Asia-Pacific. In the Middle East and Asia region, we constantly strive to achieve inspiring and exacting solutions that make a genuine difference to our clients, the end-users, and society as a whole.

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BUILDINGS
Buildings form a fundamental part of our lives by shaping our communities and daily activities. As one of the top eight building designer’s worldwide (ENR 2017), we have designed inspiring, efficient, and award-winning buildings for several decades and we are the preferred partner for some of the world’s leading architects and developers. Our design philosophy is to always consider the human experience and we challenge assumptions to create the most practical and economic designs.

TRANSPORT
Mobility fuels economic and social development and with 50% of the world’s population now living in urban areas, efficient and reliable transport systems are essential. To meet this need, Ramboll has been working on some of the world’s largest, most innovative infrastructure projects and is the leading consultancy in the Nordic market. We create value for transport authorities, contractors and local authorities by providing multidisciplinary technical excellence and minimising resource usage.

WATER
Water is essential to life and one of our most precious resources. Working with municipalities, utilities, and industrial clients Ramboll draws on proven multidisciplinary expertise to manage the most challenging water resources, wastewater, and storm water issues. We integrate treatment process selection and engineering, operational services, and regulatory management and planning to deliver innovative solutions that gain both industries and society.
ENERGY
With security of supplies, climate change, energy efficiency and resource scarcity as top priorities on the global agenda, there is a general push towards renewables, although conventional energy will continue to play a significant role in the energy mix in the coming years. As a consultancy, Ramboll is at the forefront of addressing the green transition and offers a holistic approach to energy that supports the sector on the journey towards more sustainable solutions.

ENVIRONMENT & HEALTH
As a globally recognised environmental and health consultancy, we have earned a reputation for technical and scientific excellence, innovation and client service. Advances in science and technology and evolving regulatory, legal and social pressures create increasingly complex challenges for our clients. We evolve to keep pace with these changes – by adding new services, contributing to scientific advances or expanding geographically.

MANAGEMENT CONSULTING
National, regional and local authorities are responsible for issues that affect us all, from health care, education and day care to strategic planning of infrastructure and climate initiatives. Drawing on 500 management experts, Ramboll acts as a trusted partner to public administrations, creating the insights needed to make informed strategic decisions that promote stronger societies. With unprecedented levels of competition in the global economy, Ramboll focuses on empowering private sector clients with expertise and powerful management tools.

PLANNING & URBAN DESIGN
Ramboll’s holistic approach to urban development encompasses strategy, planning, and world class technical design services and is based on an integrated multidisciplinary skills base. We have an extensive track record working with a number of the world’s largest cities to create liveable, sustainable, and implementable urban development solutions that are fully adapted to the local context.
Ramboll is an international engineering and design consultancy and provider of management consulting services.

**MISSION**
Create sustainable societies where people and nature flourish

**VISION**
A globally leading consultancy delivering integrated and sustainable solutions, shaping today and tomorrow

**OWNERSHIP**
Ramboll Group A/S is 98 per cent owned by the Ramboll Foundation with the remainder of the company owned by Ramboll employees

Founded in 1945 in Denmark as a two-member partnership, Ramboll has expanded to become an international consultancy that today employs approximately 15,000 engineering consultants and professionals.

Located in 35 countries and in more than 300 offices, Ramboll provides engineering and design consultancy services across eight markets, namely buildings, transport, environment & health, water, planning & urban design, energy and management consulting.

**Ramboll in the Middle East**
Ramboll provides multidisciplinary solutions that serve businesses, governments and communities across the Middle East region. From the engineering design of buildings and infrastructure to the management of resources such as energy and oil & gas, our work spans disciplines and sectors. What unites our services is a commitment to design rigour, innovation and value for the end user.

With four offices based in the United Arab Emirates (Dubai and Abu Dhabi), Qatar (Doha) and Saudi Arabia (Riyadh), our 350-strong team specialise in structural engineering, building services, sustainability and environmental services, transport, energy and oil & gas services.

Our engineering consultants, scientists and professionals believe that great skills are the norm; we also believe that our combination of human ingenuity, exacting solutions and creativity together with the ability to solve the most complex challenges is what sets us apart. Over the course of two decades, we have delivered some of the region’s most iconic planning and design projects in the buildings, oil & gas, transport infrastructure, environmental and energy sectors.

Our impressive repertoire of projects over the course of 20 years is testament to our team’s imagination and ambition with many of our designs becoming landmarks.

Ferrari World, one of the largest indoor theme parks in the world; Green Planet, the first living museum in the region; as well as Al Shaheen, one of the most complex offshore oil and gas projects in Qatar. We also lead the way in district cooling and waste-to-energy consultancy.

Recognised as a leading sustainable society consultant, we constantly strive to achieve inspiring and exacting solutions that make a genuine difference to our clients, end-users, and society as a whole. We place a huge emphasis on our strong local presence combined with a use our international outlook, rich Nordic principles and global knowledge base to provide an unwavering commitment to sustainable design, innovation, and buildability.
As with all our work, our commitment to sustainability underpins everything we do.

Ramboll’s commitment to sustainability forms the basis of our approach to the way we operate and is at the heart of every project that we work on. As a leading sustainable society consultant, we are acutely aware of the responsibility we have in designing and shaping the built environment, and with that in mind, we ensure our solutions successfully serve and connect societies both now and in the future.

Creating client value
We have established long-term trusted partnerships with our clients across the public and private sectors in the Middle East. From leading architects, developers, contractors, regional and municipal levels and government institutions.

Our passion and unwavering commitment to innovation is focussed on ways to bring about benefits as well as improved outcomes for our clients and society as a whole. By establishing long-term relationships to gain deep insights into our clients’ needs we are able to provide them with tailored solutions that are unique - these can be found in some of the region’s most iconic buildings and landmarks.

Our holistic approach to our projects, integrating our services into solutions that reflect the complexity of the problems we solve, positions us very well to help clients realise their vision. By combining local knowledge and insight with global expertise, we offer clients qualified guidance that supports every stage of the project.

Our expertise and portfolio
We draw upon specialist skills and capabilities from diverse disciplines and work across all phases of a project from inception through to design, construction and into operation and maintenance stages. We are recognised as a valued and trusted partner by delivering innovative engineering solutions time after time.

We are a firm believer that innovation creates major opportunities for making a positive contribution to society’s sustainable infrastructure.

Innovative culture
Every design challenge is different, so conventional thinking is always questioned whether there is a better way to build a project.

At Ramboll, we invest in research, and one such research initiative is a specialist group called Innovation Design (iD) providing unique, complex structures and dimensions to building projects using algorithmic-parametric design which will create new fields of possibility for architecture and help to reshape architecture today. The team work from concept to realisation of projects.

Sustainable solutions
As engineers and scientists, we continually seek to exploit new ways in which we can significantly reduce resource and energy demand in the projects that we design. We lead the way in sustainable design by continuously pushing the boundaries of what is possible, and in doing so, we promote sustainable solutions throughout the lifecycle of the project.

At Ramboll, Our Fundamentals guide the decisions we make every day. We live them in the way we work and how we run our projects. They also guide our behaviour and how we build on our client partnerships and deliver on our promises. Our Fundamentals are based on the commitments we make to our clients and society.

With that in mind, our team of experts use their different areas of expertise to collaborate on projects. By working in multidisciplinary teams, they are encouraged to think of the overall project gains rather than from a discipline-specific point of view whether it is a concept design or creating infrastructures of the future.

“Everyday we find innovative solutions to the challenges posed by the global trends of urbanization, climate change, resource scarcity and globalization.”

Ramboll Group - CEO
– Jens-Peter Saul

02 Ferrari World, Abu Dhabi
Client: Aldar Properties
Architects: Benoy
Completed: 2010
Services: Structural, MEP, facades, fire & life safety, geotechnical engineering, master planning and urban development
Image credit: Benoy Architects
Ramboll provides multidisciplinary solutions that serve both private and public sectors across the Middle East region. Our solutions include design and strategy that have a broad application in the built environment and beyond.

The vast range of skills and specialist knowledge found among our engineers and scientists, together with our experience of local, national and international projects, means we can offer our clients technical solutions tailored to local conditions that are one step ahead, that boost their competitive edge and are fully compliant with international standards.

Our capabilities include a broad range of specialist engineering services to clients from feasibility studies, assessments and research, through planning to construction and operation. Our disciplines include structural engineering, building services, sustainability and environmental services, infrastructure and transport, energy as well as oil & gas services.

Buildings
With a diverse team of buildings experts, we have the capability to design a broad range of building types high-rise towers, to retail malls, offices, mixed-use developments, residential, hotel and leisure.

Environment
Our team of experts work closely with our clients on everything from geophysical surveys to waste management. Our solutions are always tailored to their individual needs, and because we have the resources to oversee a complete project from start to finish, no matter how complex, we ensure our clients achieve cost-effective solutions.

Energy
Among the ten leading energy consultancies in Europe, we focus on adding maximum value - both to our clients and society at large. Our team of experts can transform challenges into solutions that are future proof, energy efficient, cost effective and practical.

Oil & Gas
Our team of experts provide a multidisciplinary service portfolio that covers the entire asset and project life cycle from early phase studies and detailed design to modifications, lifetime extension projects, complete or partial revamps, tie-ins, maintenance, and process improvements – all tailored to fit each client’s purpose and demands.

Infrastructure and transport
From feasibility studies, assessments and research, through planning and negotiations, to construction and operations, we have the in-house capability to undertake projects of all sizes. Our spearhead services within transport include aviation, bridges, ports, rail, transport planning, infrastructure and ground engineering.

AWARDS

2018
Structural Company of the Year 2018,
Middle East Consultant Awards 2018
Highly Commended - Electrical
Project of the Year - Makers District,
MEP Middle East Awards 2018

2017
M EP Consultancy of the Year -
Middle East Consultant Awards
Electrical Project of the Year - The
Jumeirah Gate, MEP Middle East
Awards
Highly Commended Mechanical
Project of the Year - The Jumeirah
Gate, MEP Middle East Awards

2016
Project of the Year - The Green
Planet - Middle East Consultant
Awards
Project Manager of the Year,
Construction Week Awards
Highly Commended Mechanical
Project of the Year - The Green
Planet, MEP Middle East Awards
Highly Commended MEP
Consultancy of the Year, Ramboll
MEP Middle East Awards

2015
Electrical Project of the Year -
Jeddah Corniche Towers,
MEP Middle East Awards
Highly Commended - Young
Engineer of the Year,
MEP Middle East Awards

03 Corniche Towers Jeddah
High-end residential and retail
development
Client: Hayat Abdul Latif Jameel Co.
Architects: U+A Architects
Services: Structural engineering, civil engineering,
geotechnical engineering, MEP
and fire & life safety services
Image credit: U+A Architects
Jumeirah Gate, Dubai
Image courtesy of Killa Design
As one of the top eight building designer’s worldwide (ENR 2017), we combine the technical skills and experience of our to deliver expert solutions to some of the world’s biggest projects. Our diverse team of building experts have a genuine passion for engineering, which is applied with the same rigour and enthusiasm to our projects whether it is the design of a stadium or a single façade connection detail.

Our design philosophy is always to consider the human experience, and we relish the challenge of complex, specialist facilities that have demanding planning, technical and aesthetic requirements.

In creating smart solutions for clients, our services include:

- Acoustics
- Building physics
- Building services
- Client consultancy
- Innovation design
- Electrical engineering
- Façade engineering
- Fire & life safety
- Ground engineering
- ICT and extra low voltage design
- Landscape architecture
- Lighting design
- Mechanical engineering
- Project management
- Refurbishment
- Security design
- Specialist services
- Structural engineering
- Survey
- Sustainability services
- Technical due diligence
KEY PROJECTS

Our portfolio contains a variety of projects throughout the Middle East of all scales and sizes.

THE GREEN PLANET, DUBAI
Ramboll is proud to have played a key role in the development of Dubai’s very own tropical indoor rainforest, complete with more than 3,000 species of plants, animals and free-flying birds.

Located at City Walk in Dubai, The Green Planet recreates an exotic, sensory experience of travelling through a lush and verdant rainforest. Visitors can explore a range of striking landscapes from mysterious forest pools to tree top canopy platform, cliff-hanging gardens and waterfalls surrounded by living habitat, birds, butterflies and aquatic animals.

Ramboll was the Design and Build contractor’s Lead Consultant for the Green Planet where our role was to provide full engineering design and site supervision for the iconic living organic Amazon rainforest museum.

Pivotal in realising Dubai’s first ever indoor tropical rainforest
A unique feature of The Green Planet is the environment within the bio-dome. Ramboll’s MEP team re-created the characteristics of a natural environment experienced in the heart of the deepest rainforests.

To create the controlled and conducive environment, our MEP team modelled the bio-dome with an engineered solution developed to allow for control environment and interconnection for the public from the more normal air-conditioned spaces.

Our team also considered the size of the building which has a built-up area of 4,365 sqm as well as the fact that the building has a 30m by 30m cube over a single basement, with three sides concrete, the fourth side has a glazed facade and an atrium roof. Environmental parameters in the bio-dome have been designed specifically to maintain the plants and wildlife, with the humidity set at 70 per cent and temperatures between 25°C and 28°C.

Although the project came with many challenges, it was crucial that the MEP design met the overall design elements for the living museum and that it incorporated the external landscape and hardscape so that the controlled environment ensures that the live rainforest plants, birds, and animals flourish.

Overcoming structural challenges
The Green Planet provided structural engineering challenges. The complexity and intricacy of some of the details were such that the information could not be adequately conveyed through industry standard 2D drawings and reports. Ramboll supplied software models to the contractor and fabricator in support of 2D contractual deliverables, while a range of 3D software packages was used to convey critical information - a Ramboll standard practice to provide 3D BIM software models to contractors and fabricators.

The accurate spatial coordination for the steel embedment plates provided a further challenge, with many of the anchors being installed on hard-to-define doubly curved inclined beams. Ramboll interfaced the steel fabricator’s Tekla model with the in-house 3D BIM model to accurately coordinate the locations of the embedment plates. This innovative interface paid immediate dividends: it was further used to carry out a clash detection exercise throughout the building. Resolving these issues at design stage removed the time and risk associated with the potentially hazardous working at height required for detailed survey and alteration.

04-06, The Green Planet, Dubai
Developer: Meraas Developments
Client: Besix - Orascom Joint Venture
Completed: July 2016
Services: Lead Design Consultant - Structural engineering, facades engineering, MEP, fire & life safety and waste management.

PROJECT AWARDS
The GREEN Planet - Project of the Year, Middle East Consultant Awards 2016
Highly Commended for Mechanical Project of the Year, MEP Middle East Awards 2016

RANKINGS
Ramboll is among the top 10 buildings designers in the world (source: ENR 2018).

OUR CLIENTS
Our clients include leading architects, developers, contractors, building owners, private corporations, universities, government institutions (incl. health and culture), and municipalities.
Facades innovation
The façade involved the design and detailing of a complex suspended tension rod façade system; which was braced intermittently to the primary diagrid structure.

The design and engineering had to take into account detailed consideration of the various loading conditions, building movements, pre-tensioning, as well as the dynamic forces exerted by a series of spring supports at the top of the structure. Such a complex façade required close integration between the façade design team, structures design team and the specialist façade contractor to achieve a fully coordinated and developed design. Supporting structural members and openings in the façade. A careful selection of glazing was required to ensure that a suitable spectrum of light could be transmitted into the building in order to support the animals and plants; while achieving the desired energy performance and aesthetic requirements.
**KHALIFA UNIVERSITY EXTENSION PHASE ONE, ABU DHABI**

The Khalifa University Extension Phase One Project adds an additional area of 120,000 sqm to the existing 34,500 sqm campus that now serves a total of 3,000 students and 762 faculty and staff. The new extension is equipped with world-class facilities such as new auditorium, students centre and sport centre also includes Abu Dhabi’s first medical school, an integrated engineering college and research & development facilities.

**MSHREIB DOWNTOWN DOHA PHASE FOUR, QATAR**

Once completed, the mixed-use development will comprise 14 buildings set on a six level basement, with a combination of commercial and residential properties, retail, cultural entertainment areas and entertainment areas with a total land use build-up-area of 350,000 sqm.

Ramboll was appointed to undertake the complete MEP and structural engineering design services for all superblocks and associated basement levels. The engineering design is provided with energy efficiency and water conservation at the forefront of the system selection processes. The project also incorporates a district cooling plant for the entire development that provides chilled water for the air conditioning system. Ramboll has incorporated a number of sustainability measures in the design for a minimum of a LEED Gold rating and has integrated all engineering services precisely within the structure; BIM was used to deliver a 3D solution using REVIT.

07 Khalifa University
Client: Khalifa University
Architects: RSP Architects
Services: Civil, structural engineering, geotechnical engineering, infrastructure, MEP, façades, sustainability, waste management, environmental, traffic and local consultancy
Image credit: RSP Architects

08 Mshreib Downtown Doha, Phase 4
Client: Mushreib Properties
Architects: HOK Architects
Services: Structural engineering, MEP, facades, fire & life safety, acoustics, sustainability & QSAS, civils infrastructure, transport planning and waste management
Image credit: HOK Architects
MAKERS DISTRICT, ABU DHABI
A vibrant hub responding to the rise of the maker movement – a global social movement with an artisan spirit – that is set to become one of Abu Dhabi’s most iconic communities. Ramboll will provide lead consultancy and design, supervision and management services over a three year period on the first phase of the Makers District working alongside international architects BIG and MVRDV. The 18-hectare mixed use development is designed as a waterfront community that cultivates creativity through residential, hospitality, commercial and retail space. With over 1,000 residential units, 11,000 square metres of commercial and retail space and a construction value of AED 2 billion. The first phase of the Makers District includes 13 mixed buildings ranging from mid to high rise with a maximum of 24 storeys with a built up area of approximately 390,000 sqm. Construction will start early 2018 for the Artery and the entire scheme is scheduled for completion in 2020.

JUMEIRAH GATE, DUBAI
Ramboll has been appointed to undertake the MEP and sustainability design services for the Address branded hotel in Dubai Marina known as Jumeirah Gate. Jumeirah Gate is a mixed-use development consisting of twin towers with a built-up-area of approximately 225,000 sqm with a total height of 30-metres high respectively. The two 74-storey high-rise towers will include the branded five-star hotel with 182 rooms, 469 serviced apartments and 479 residential units, joint at the upper levels and topped with a roof top destination restaurant, bar and large infinity pool.

009Makers District, Abu Dhabi
Client: IMKAN
Architects: Dewan
Services: Lead Consultant (design, supervision and management services over a three year period), Structural, MEP, Facades, Fire Life Safety, Transport Planning, ICT/Audio Visual, Acoustics, Waste Management and Sustainability, Site supervision. Image credit: IMKAN

10 Jumeirah Gate, Dubai
Client: Mirage Leisure & Development Inc
Architects: Killa Design
Services: MEP and sustainability services
Awards: Electrical Project of the Year - MEP Middle East Consultant, Image credit: Killa Design
Committed to delivering sustainable solutions, Ramboll has established a reputation for providing innovative and practical services that take into consideration projects of all kinds and sizes for both public and private sector clients from concept and detailed design to regulatory permitting through to construction.

A major strength is our full range of multidisciplinary design, engineering and consultancy knowledge that allows us to address the economic, social, physical and environmental aspects of any transport and infrastructure development.

Our core services:

- Aviation
- Bridge engineering
- Earthwork modeling
- Ground engineering
- Hydraulic engineering
- Infrastructure asset management
- Masterplanning & urban development
- Mobility & transport planning
- Ports & marine structures
- Road & highway engineering
- Transport planning, traffic impact assessment & traffic safety
- Tunnel engineering
- Utility design
RANKINGS
We rank as no. 15 over global transportation consultancies (source: ENR 2018).

OUR CLIENTS
Our clients range from public authorities at the national, regional and municipal levels, to contractors, investors, transport operators, and other private companies.

GREEN LINE UNDERGROUND DVE, QATAR
Ramboll appointed by PORR, Saudi Binladin and HBK JV provides Design Verification Engineer (DVE) services for the design of Green Line Underground.

The design and construction process requires an independent certification of works by a DVE.

The section of the Green Line which falls within Ramboll scope comprises six stations, two switch boxes, escape shafts, one through and 18.7 km of connecting twin tunnels.

Scope of work
Ramboll’s scope of work is to confirm that the design complies with QRail’s Employer Requirements, undertake independent analysis and calculations as well as undertake detailed checks of drawings and schedules.

With a core management team based in Doha who are supported by the presence of discipline leads, the project sees the collaboration on the delivery of several Ramboll disciplines involving temporary structures, tunnels, geotechnical engineering.

In November 2014, three additional areas were included in Ramboll’s scope of works: MEP, architecture and external services as built drawings.

The Green Line Underground DVE has established Ramboll as a preferred supplier of services to Qatar Rail in its development rail initiatives in the country.

11 Green Line Underground DVE, Qatar
Client: PORR, the Saudi Binladin Group and HBK Contracting Join Venture
Services: Design Verification Engineer for new underground line.
FUJAIRAH 2040
FRAMEWORK PLAN, UAE
With a coastline on the Gulf of Oman, the Emirate of Fujairah is a gateway to the Indian Ocean and a place of significant geopolitical importance for the region. Coupled with far reaching strategic opportunity and a range of internal development and growth pressures, the Emirate is proactively seeking to develop and implement a strategic direction that considers the Emirate’s potential economic, environmental and development requirements beyond 2040.

Ramboll was commissioned by the Government of Fujairah to develop an Emirate-wide Framework Plan for Fujairah, one of the seven Emirates making up the United Arab Emirates (UAE). The Framework Plan for the Emirate - known as ‘Fujairah 2040’ - presents the strategic direction for an integrated sustainable growth encompassing the realms of economic, social, urban, rural, infrastructure, environment, cultural heritage and sustainability in the local and regional context.

Ultimately, Fujairah 2040 will enable the Government of Fujairah to successfully deliver and implement a vision for the future.

MASDAR MASTERPLANNING, ABU DHABI
To assist in building the world’s most sustainable community, Ramboll was appointed to deliver an overall landscape plan and conceptual landscape design for Masdar City’s public realm, and establish a city-wide guidance for the design, selection and assessment of landscape elements. Our main goal was to create forward-thinking, innovative designs coupled with precise engineering to meet our client’s vision to “build the world’s most sustainable city”.

12 Fujairah 2040 Framework Plan
Client: Fujairah Municipality
Services: Transport, environment, buildings, oil and gas and management consultancy

13 Masdar Abu Planning, Abu Dhabi
Client: Abu Dhabi Future Energy Company - Masdar
Completion: 2015
Services: Landscape, master plan and project management
Ramboll is ranked as one of the world’s leading environmental consultancies and trusted by clients to manage their most challenging environmental, health and social issues. We continually strive to be at the forefront of our fields, delivering truly integrated solutions that set new standards and make a genuine difference to our clients, the environment and society as a whole.

Our team of experts are made up of scientists and engineers with considerable experience in a broad range of specialisations where we have earned a reputation for technical excellence, innovation and client service. Our in-house capabilities mean we are able to offer a fully integrated project team delivering across the value chain from strategy development to project delivery environment and waste projects.

In delivering solutions that achieve Environmental regulatory and permit approval to local and international requirements, Ramboll has worked with a wide variety of clients in the Middle East, from the private sector and in government. In the private sector, we have provided a full range of ESIA services for entities in residential and industrial development, infrastructure, mining, energy production and transmission, oil and gas development, and ports.

Our key services:

- Air quality
- Carbon management
- Climate change adaptation
- Contaminated land
- Environmental due diligence
- Environmental and social impact assessment (ESIA)
- Environmental and social planning
- Environmental management
- Flood risk assessment
- Groundwater
- Health & occupational safety
- Noise
RANKINGS
Ranked 8th by Environment Analyst (EA) amongst the world’s environmental consultancies in relation to size, geographical diversity and global ambitions, and the tenth largest firm by revenue in the "Engineering/Design" category of ENR’s "Top 200 Environmental Firms" report.

OUR CLIENTS
Our clients range from public authorities at the national, regional and municipal levels, to contractors, investors, transport operators, and other private companies.

JEDDAH ENVIRONMENTAL ASSESSMENT AND ENVIRONMENTAL SOCIAL MASTER PLAN
Environmental assessment and social master plan studies covering 15 disciplines and services across the city of Jeddah in the Kingdom of Saudi Arabia.

The Jeddah Environmental Impact Assessment (JEA) and the Jeddah Environmental Social Master Plan (JESMP) are part of the Jeddah Government’s Plan to oversee a comprehensive series of engineering, environmental and social activities that include studies to resolve current and future environmental problems. The studies identified environmental issues and their impact in connection with Jeddah on a regional scale.

Ramboll was awarded the role of Environmental Consultant for the complete JEA and JESMP projects reporting directly to the Jeddah Storm Water Drainage Programme team (JSDP) and the Presidency of Meteorology and Environment (PME).

This was the first largest environmental project ever won in the Middle East region with a team of 40 experts from our offices in the Middle East, the United Kingdom and Denmark.

The study’s scope covered the required environmental and social studies in Jeddah over an area of approximately 4,600 sqkm.

The JEA provided a baseline of existing environmental conditions included the natural and cultural resources and environmental and environmentally related socio-economic problems that Jeddah has been facing. The complete assessment provided information on corrective actions in terms of prevention and mitigation of adverse impacts.

14 Jeddah Environmental Assessment and Environmental Social Masterplan
Client: Jeddah Storm Water Drainage Program Team (JSDP) and Presidency of Meteorology and Environment (PME)
Services: Air quality, marine and thermal pollution, surface water, waste water, ground water, transport, solid waste and radioactivity, socio economics, land use, public health, energy/climate, natural hazard, noise, terrestrial ecology and archaeology.
GROUNDWATER EXPLORATION IN THE EMIRATE OF DUBAI

Ramboll was awarded the water and environment contract to explore the feasibility of groundwater aquifers for desalinated and fresh water storage.

Ramboll’s experience in the successful completion of the Liwa feasibility study prepared for Liwa Oasis contributed to Ramboll’s appointment by the Dubai Electricity and Water Authority (DEWA) to perform the groundwater survey, using non-intrusive methods, to check and assess the potentiality of Dubai aquifers to store and naturally desalinate the sea water.

The desalinated water, used purely for agriculture, could potentially save DEWA between 70 to 80 per cent of the cost of traditional desalination.

The project was performed in three phases.
- Phase 1: obtaining approvals from Dubai’s Road and Transport Authority to permit works to start on the field.
- Phase 2: fieldwork; and
- Phase 3: analysis and reporting of the findings.

During the exploration, we realised some of the works undertaken were within the boundaries of the natural reserves around Dubai, which falls under different and strict regulations, and separate approvals had to be obtained from the Natural Reserves Department.

Ramboll’s specialism in geophysics meant that we were fully equipped to deal with this complex environment. Specialised radar technology was used for imaging and mapping the groundwater, a more environmentally friendly technique than the traditional way of drilling which causes noise and disturbance to the environment and habitat.

Drawing from our pool of experts throughout Ramboll ensured that we met the short timeframe set by the client.

15 Groundwater exploration in the Dubai Emirate
Client: Dubai Water and Electricity Authority (DEWA)
Completion: October 2015
Services: Geophysical survey of Groundwater
Architectural vision of waste-to-energy facility in Abu Dhabi
Modern energy systems face increasingly complex challenges. Global energy demand is rising as societies develop, whilst we must also reduce climate change impacts. Growth in renewable generation along with the development of higher efficiency and flexible fossil fuel plants are increasingly seen as the key to delivering reliable lower carbon solutions.

Ramboll has more than 45 years of experience in the planning, design and implementation of energy solutions, typically acting as the Owner’s Engineer, Lender’s Engineer or project and programme manager.

Our international team of energy specialists provide expertise on the full spectrum of energy technologies and all parts of the value chain from production through to transmission and distribution. We assist our clients in all project phases, ranging from planning and engineering design, to long-term operation and maintenance support.

Our key services:

- Wind energy
- Waste-to-energy
- Thermal power
- District energy
- Power systems
- Asset management
- Renewable energy
- Energy planning
FIRST UTILITY SCALE WIND FARM IN JORDAN
Acting as the Owner’s Engineer on a new wind farm development, Ramboll (through the recently acquired CUBE) played a central role in implementing the first utility scale wind farm in Jordan. Ramboll cooperated with the developer for Jordan’s first large-scale wind farm project from the early stages of the project through to commissioning.

Ramboll also acted as the main technical consultant in all project stages, including site selection and layout determination process, wind measurement campaign, environmental and social impact assessment, permitting, tendering and contract negotiations for the DBOM (Design, Build, Operate and Maintenance) contract, securing project financing by several international lenders and contract negotiations with NEPCO as the local off-taker.

During the design and construction phase, Ramboll was responsible for the supervision, contract management, budget and schedule control, risk and claim oversight, the management and coordination of interfaces (client, NEPCO, DBOM Contractor) as well as the technical interaction with the financing parties and the lenders’ engineer.

Ramboll was involved in the project from site identification through to commissioning of the turbines and ensured bankability for the international lenders was kept throughout the project including wind assessment, environmental and social impact assessment and construction supervision.

SALALAH II IPP PROJECT 440MW CCCT
The plant will comprise a 440MW power generating plant utilising combined cycle gas turbines and associated auxiliaries. The plant will have dual fuel capability with natural gas as the primary fuel and fuel oil as back-up fuel. The scheduled date for commercial operation is January 2018.

Ramboll is providing the consultancy services to monitor the construction and commissioning of the plant to ensure that it is carried out in accordance with the requirements of the Power Purchase Agreement, and to provide the necessary co-ordination between the construction and commissioning of the plant, the grid substation and the gas receiving facilities.
DISTRICT COOLING WITH MEGA-PROJECT IN MAKKAH

Ramboll is the Technical Advisor in connection with the planning and implementation of a 540MW district cooling project in Makkah, Kingdom of Saudi Arabia.

3,600 Dilapidated buildings have been demolished in order to make space for a new central pedestrian pathway. The King Abdul Aziz Road Project measures 3.65 km in length running from the city outskirts to the Grand Holy Mosque. The average width is 320 metres, and the project includes the construction of two roads, a metro line, a grand mosque and over 200 plots that will house more than 100,000 people.

The King Abdul Aziz Road Project is also expected to alleviate the chaotic pilgrim activity during Hajj.

As Technical Advisor for the district cooling project, Ramboll delivers conceptual design, employer’s requirements and procurement assistance.

The first deliverables were the design, location and quantity of the chiller plants together with the piping design and advice on the buildings connectivity to the pipeline network. Phase 2 comprises assistance to the Client in the procurement of the chiller plants.
As global energy consumption continues to grow, oil and gas will continue to play an important role in the world’s energy mix.

Our roots in the energy market run deep. With more than 40 years of experience in providing oil and gas solutions, our expert knowledge and services have evolved with the needs and challenges facing the industry both offshore and onshore.

Ramboll is a truly people-based organisation. We believe that the key to our success lies in the motivation, persistence, skills and commitment of our employees.

We base our services on integrity, deep specialist insight, and absolute independence of third party providers. In this way, we contribute to the safe, responsible and sustainable development of the oil and gas market.

Our key services:

- Energy & infrastructure consulting
- Offshore platforms
- Floating production
- Pipelines & subsea
- Onshore production & refining
- Terminals, storages & pipelines
- Gas & LNG

Covering the asset life cycle:

- Financial studies
- Conceptual studies
- FEED
- Detailed engineering
- EPC projects
- Project management
- Modifications & maintenance
- Decommissioning
AMAZING AL SHAHEEN
Qatar has one of the fastest growing economies in the world. It sits on the world’s third-largest proven gas reserves thus controlling enormous hydrocarbon reserves. Al Shaheen is a production oil and gas field off the North East coast of Qatar in the Arabian Gulf. It has been developed by Maersk Oil in what constitutes one of the largest and most complex offshore oil and gas projects undertaken in the world. By 2012, the Al Shaheen field consisted of 35 platforms, and produced around 40 per cent of Qatar’s oil and gas output. Ramboll carried out the brownfield design including design of modifications of existing platforms and a discrimination study that would ensure a smooth tie-in of the new platforms to the existing power system. Ramboll set up a dedicated team for this project, which at peak times counted +130 people.

FEASIBILITY STUDY FOR ARTIFICIAL ISLANDS IN THE ZAKUM OIL FIELD
The Zakum field stretches over some 1,200 sqkm - making it one of the largest oil fields in the world with a very long expected operating life. Ramboll studied the effects of introducing the artificial islands and burrow areas in the existing oil field as an alternative to establishing numerous platforms for increasing oil production. The evaluation consisted in the construction of four to six new artificial islands to be used as the centre for drilling and oil production in future. Ramboll’s analysis showed that the construction of the artificial islands would not affect the environment and the existing structures significantly. In collaboration with ZADCO shareholder ExxonMobil, Zadco evaluated the concept of artificial island based drilling and production centres and found it to be an attractive forward development plan, which was pursued and executed.