SECURING THE SUPPLY OF ENERGY

WWW.RAMBOLL.COM/ENERGY
Ramboll is a leading engineering, design and consultancy company founded in Denmark in 1945. We employ close to 10,000 experts and have a significant presence in Northern Europe, India and the Middle East. With close to 200 offices in 21 countries, we emphasise local experience combined with a global knowledge-base. We constantly strive to achieve inspiring and exacting solutions that make a genuine difference to our customers, end-users and society as a whole. Ramboll works across the markets: Buildings, Transport, Environment, Energy, Oil & Gas and Management Consulting. www.ramboll.com

COVER: COPENHAGEN – A LIVEABLE CITY
To play a role in supporting the City of Copenhagen in its endeavour to create high-standard, sustainable urban life, Ramboll has formed a vision entitled ‘Copenhagen CO2-neutral 2025’ to help it reach its ambitious climate goals. The vision rethinks how the city can integrate different energy sources and energy carriers in an intelligent way and with maximum energy efficiency.

RAMBOLL: 10,000 EXPERTS
200 OFFICES
21 COUNTRIES

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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 works 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 governments by providing multidisciplinary technical excellence and minimising resource usage. Read more at: www.ramboll.com/transport

BUILDINGS
Buildings form a fundamental part of our lives by shaping our communities and daily activities.

For this reason, Ramboll’s design philosophy is to always make room for the human experience. As one of Europe’s top 3 building designers with decades of experience in the global market, we create visionary, sustainable, and award-winning buildings that improve life for users and enhance the surrounding landscape. Read more at: www.ramboll.com/buildings

www.ramboll.com
ENERGY

The key challenge for the energy sector today is to plan and implement a sustainable and affordable energy system that is capable of meeting the growing demand for energy, while at the same time limiting climate change. Such a system will require improved energy efficiency and the introduction of more renewable energy. If renewables are to cover a larger share of the world’s energy demand and we are to provide a secure, reliable and affordable energy supply, technology advances and intelligent interaction between supply and end-use will top the agenda for many years to come.

As a consultancy, Ramboll is at the forefront, by addressing these issues with world-class solutions for example in offshore wind, waste-to-energy, thermal power and district heating. Read more at: www.ramboll.com/energy

ENVIRONMENT

Industrial development, urbanisation, the extraction of natural resources and extreme weather events all call for sustainable and responsible environmental solutions. As the leading environmental consultancy in Northern Europe and one of the top-20 globally, Ramboll’s environmental experts help clients within the water, buildings, transport, energy, oil & gas and mining markets to address these issues. We take a comprehensive view of each project to optimise every step of the process and deliver solutions that are technically resilient, environmentally sustainable, and valuable to society. Read more at: www.ramboll.com/environment

OIL & GAS

To make it in today’s fast-paced and competitive oil and gas market, companies depend on advanced technical solutions that combine economic efficiency with stringent health, safety and environmental (HSE) safeguards during the production and distribution processes. These elements form an integral part of Ramboll’s independent and multidisciplinary consultancy service, which covers the entire project cycle. We excel in onshore consultancy and have designed offshore structures for industry giants such as Maersk Oil, DONG Energy and Statoil since the 1970s. Read more at: www.ramboll.com/oil-gas

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. Read more at: www.ramboll.com/management-consulting
Ramboll has more than 45 years of experience in the planning, design and implementation of energy solutions.

Our energy team provides expertise on the full spectrum of technologies and all parts of the value chain from production over transmission to distribution.

Our special competences lie within offshore wind, waste-to-energy, district heating and thermal power. Within these four areas, we provide a one-stop shop of services based on unique know-how and experience gained from a large number of projects, unmatched by other consultancies.

- More than 60% of the world’s offshore wind turbines rise from foundations engineered by Ramboll
- We have worked on waste-to-energy projects in 40 countries, providing consulting services for 130 new units and retrofits
- We have designed and constructed more than 90 major power plants, including some of the most energy-efficient plants in the world, and been instrumental in the ongoing conversion from fossil fuels to biomass
- We have provided consultancy services to more than 200 district heating systems worldwide, ranging from small village schemes to city-wide transmission networks.
OUR APPROACH

WE TRANSFORM COMPLEX CHALLENGES INTO SOLUTIONS THAT ARE FUTURE PROOF, ENERGY EFFICIENT, COST EFFECTIVE AND PRACTICAL

SYDVÄSTLÄNKEN, SWEDEN AND NORWAY
The purpose of the Sydvästlänken overhead transmission line is to increase the capacity, robustness and flexibility of the transmission system in Southern Sweden and between Sweden and Norway. Ramboll is the project manager of a 400 kV substation in Barkeryd, connecting the northern and southern parts of the transmission line (Image: Svenska Kraftnät, Thomas Wiklund).

Securing the supply of energy
The projects that we carry out for our clients typically provide the overall society benefit of securing the supply of energy, reducing climate impact, improving energy efficiency and countering resource scarcity.

Reducing the cost of energy
We place a strong focus on improving performance and reducing costs in all phases of our projects, from capital to operation and maintenance costs.

Optimum solutions
For our clients, working with Ramboll means that they will benefit from our long-term experience and know-how, and together we can transform their challenges into excellent solutions.

Scandinavian roots
When working outside Scandinavia, we often use Nordic best practice solutions as inspiration, while naturally considering the local factors applying to the project in question. Ramboll has offices in 21 countries around the world - thereby combining global knowledge with a local presence.
ENERGY MASTERPLAN FOR THE GREATER MANCHESTER AREA, UK

To support carbon and energy policy commitments both locally and nationally, the Greater Manchester Heat Network Programme is being developed to facilitate the efficient, cost-effective delivery of heat networks across the ten authorities of Greater Manchester. Ramboll was commissioned to develop a district heating energy masterplan and provide a basis for decisions about specific projects to be initiated.

For more information about our services, please visit www.ramboll.com/energy
OUR SERVICES

- WIND ENERGY
- WASTE-TO-ENERGY
- THERMAL POWER
- DISTRICT ENERGY
- POWER TRANSMISSION
- ASSET MANAGEMENT
- RENEWABLE ENERGY
- ENERGY STRATEGY
HOW WE WORK

PROJECT MANAGEMENT EXCELLENCE, DEEP TECHNICAL INSIGHT AND INDEPENDENCE OF SUPPLIERS

MAABJERG BIOENERGY FACILITY, DENMARK
This bioenergy facility in western Denmark is one of the world’s largest anaerobic digestion plants. Biomass is processed into biogas, which is used to generate heat and electricity on site. Surplus biogas also fuels other combined heat and power plants locally. Ramboll’s services include feasibility studies, environmental impact assessment, procurement, management and biogas handling systems.

SAREPTA ONSHORE WIND PROJECT, NORWAY
With up to 250 wind turbines to be located along the coast of Mid-Norway, the country is one step closer to reaching its renewable energy targets for 2020. Ramboll is the Owner’s Engineer for the procurement of wind turbines and Balance of Plant (Image: Sarepta).

From idea to operation
We assist our clients on all aspects of a project, ranging from planning to engineering design, to long-term operation and maintenance.

Strategic advice and hands-on experience
We typically act as the Owner’s/developer’s Engineer or lead advisor on multi-million EUR energy investment projects, assisting our clients with project management, technical expertise and engineering.

Unlike most other consultancies, we work both as strategic advisors and are deeply involved in the implementation phase of our projects, drawing on our hands-on experience from the operation and maintenance of energy facilities.

Trusted advisor
We seek long-term relationships with our clients and have worked for some of them for more than 30 years.
WORLD CLASS PROJECTS

CAPE WIND, USA
This is the first offshore wind farm ever to be developed, authorised and built in the USA. The project comprises the erection of 130 turbines providing a total power capacity of 468 MW. As the leading partner of a design consortium, Ramboll performs the detailed design of the steel monopile foundations. The project represents a new challenge to the design team as wind turbine foundations have to be designed to withstand loads from hurricanes. Also, this is the first project ever to be designed according to US rules and regulations for occupational health and safety (Image right: Artist’s representation: Cape Wind Associates).

AMAGER RESOURCE CENTRE, DENMARK
Amager Resource Centre will be one of the most efficient waste-to-energy facilities in the world. As the Owner’s Engineer, Ramboll has assisted in the planning and implementation of the EUR 469 million facility, which will produce 20% more energy per tonne of waste, compared to the existing plant. The 440,000 tpa facility will be fully integrated into the urban setting, surrounded by high-end flats, and will feature recreational facilities on the roof (Illustration: Amager Resource Centre).
WORLD CLASS PROJECTS

COPENHAGEN DISTRICT HEATING SYSTEM, DENMARK
Copenhagen’s district heating system is one of the largest in the world, and the associated networks supply low-carbon heat to a city of one million residents. For more than 30 years, Ramboll has been the Metropolitan Copenhagen Heating Transmission Company’s main consultant, providing consultancy assistance during all stages of the project from planning and design to operation and maintenance of the city-wide system.

NOVOZYMES BIOGAS PLANT, DENMARK
A new, high performance biogas plant has been established at Novozymes and Novo Nordisk’s large-scale industrial production facilities in Kalundborg, Denmark. It is the first facility in Denmark to reuse industrial waste water in this highly effective way. The biogas plant produces both electricity and district heating. The capacity is approximately 50,000 MWh of electricity per year, which is equivalent to the annual consumption of 12,000 households. Ramboll played an instrumental role in the entire project from conceptual and detailed design, through procurement, installation supervision and commissioning assistance to final hand-over of the new biogas plant.

AVEDØRE POWER PLANT, DENMARK
Ramboll is assisting DONG Energy as the Owner’s Engineer in converting power units from coal to biomass. Ever since the conception of the first unit in the 1980s, Ramboll has participated in the development of the plant’s continuous and flexible adaptations to new fuel types. Today, the plant is a state-of-the-art, multi-fuel producer of low-carbon power and heat, and one of the most energy-efficient plants in the world.