MULTIDISCIPLINARY CONSULTANCY FOR LNG PROJECTS

RAMBOLL PROVIDES INDEPENDENT ENGINEERING CONSULTANCY SERVICES ON LNG PROJECTS WORLDWIDE

Liquefied Natural Gas (LNG) is one of the fastest growing means of transporting natural gas. LNG allows the transport of natural gas to meet distant demands in a cost-effective manner.

LNG projects call for large investments and specialised knowledge. Therefore the right consultancy is a decisive factor for a successful LNG project. At Ramboll we have experience with managing large-scale projects in both the planning and construction phases.

LNG value chain
We provide professional and independent consultancy services in all areas of LNG. Our multidisciplinary approach enables us to provide all-inclusive consultancy services.

Our services cover the entire LNG value chain from gas produced from the field to gas conditioning, LNG storage, LNG transport, LNG regasification, gas transmission systems and underground gas storage services.

Market and economic studies
Ramboll has an extensive track record in market and economic studies for the oil and gas industry. Our studies provide facility owners, investors and other stakeholders with the necessary basis for making the right decision.

Site selection and environmental assessments
Selection of the optimal site for an LNG terminal should be based on the interface with existing facilities, existing gas transmission infrastructure, risk assessment and environmental impact analysis.

Ramboll has extensive experience with conducting infrastructure, risk and environmental assessments in relation to all kinds of onshore and offshore oil and gas projects.

Process and mechanical engineering
Ramboll’s core competencies within new LNG projects include all services from initial early-phase studies through concept development to detailed design and implementation of projects.

LNG projects are sensitive to decisions made early in the process. Not all technologies are suitable for all climates, some technologies are motion sensitive and typically there are significant differences in the heat efficiency. The liquefaction and re-gasification processes require significant amounts of energy, and the differences in energy consumption between different technologies have a great impact on the overall profitability of the facilities.

Ramboll is one of few independent engineering consultancies that is competent to access the prioritary design of others, and we are accustomed to evaluate different technologies and life cycle costs in the early phases of LNG projects.

The processes set high demands for facilities, equipment and choice of materials. Ramboll offers consultancy on both the liquefaction and re-gasification phases.

Selecting types of LNG facilities
LNG can be liquefied onshore or offshore. It can be stored and re-gasified offshore on FSUs (Floating Storage and Re-Gasification Units), SRVs (Storage and Re-Gasification Vessels) or in settings where, for example, the LNG is stored on 2nd hand vessels combined with onshore re-gasification facilities. This is also a robust concept to keep initial investments down.

Civil engineering
Ramboll is one of the largest companies in Europe within civil engineering, geophysical analysis, geotechnical engineering and foundation design and we hold vast experience in steel and concrete structures.

With a multidisciplinary approach, we handle all civil engineering aspects of an LNG project from planning, initial investigation, design and tender to implementation, inspection and supervision.

Ports and marine engineering
Most LNG facilities will be placed in connection with jetties or existing port facilities. Ramboll is an independent and leading provider of professional expertise across the spectrum of port planning and engineering, coastal engineering and engineering of marine structures.

LNG storage tanks
Ramboll provides services within this specific field of engineering from preliminary design and FEED to detailed design of the pre-stressed concrete outer containment tanks for LNG storage. We carry out advanced analyses, civil design work and geotechnical design work, and we have experience with the relevant design codes and material requirements associated with LNG storage tanks.

Risk and safety
Safety is a key concern on all onshore and offshore installations. Management of risk and safety is an integral part of our LNG service portfolio as well as independent third party reviews of projects and installations.

Our LNG services
Ramboll offers engineering, market analyses and management services in different project roles to support all phases of LNG projects:

- Feasibility studies (incl. market analysis)
- Economic and financial studies
- Conceptual engineering and selection
- Detailed design and procurement
- Construction and commissioning management
- Operations support
- Coordination with authorities
- Environmental impact assessments (EIA)
- Qualification of vendors and drafting of execution contracts
- Owner’s representative during detailed design and construction

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SELECTED LNG REFERENCES

- Feasibility study, site selection analysis and concept definition for LNG import and re-gasification facilities, Finland
- Feasibility study, risk assessment and site selection for LNG import and re-gasification facilities, Estonia
- Detailed design and structural analysis of LNG tanks, China
- Snøhvit onshore LNG plant at Melkøya, Norway
- Engineering and construction consultancy for Borás gas filling station and LNG storage, Sweden
- BIMEC compliance and identification of technical, economic and political pros and cons of the Paldiski LNG project, compared to other LNG projects, Estonia
- Baltic energy market interconnection plan, Baltic Sea Region
- Feasibility study for LNG filling station infrastructure, Denmark
- Road map for LNG import facility, Lithuania
- Project execution review for LNG project, Poland
- LNG import terminal, Nynäshamn, Sweden
- FEED (incl. specification of long lead items)
- Detailed design and procurement
- Construction and commissioning management
- Operations support
- Coordination with authorities
- Environmental impact assessments (EIA)
- Qualification of vendors and drafting of execution contracts
- Owner’s representative during detailed design and construction

PICTURES

Front page: LNG terminal at Melkøya, Norway. Picture courtesy Statoil
This page: LNG terminals and LNG carriers.