

RAMBOLL

DESIGNING STATE-OF-THE-ART PIPELINE SYSTEMS

A steady and secure energy supply requires careful planning and specialised engineering skills

Based on experience from a broad spectrum of pipeline projects, Ramboll provides operation services and optimised design for both onshore and subsea structures.

We have designed some of the most challenging pipeline systems in the world using state-of-the-art solutions and technical engineering tools, adopted to provide cost-effective and robust solutions to our clients.

Moving to deeper reservoir pockets

As offshore operators are moving onto deeper waters to access untapped hydrocarbon reserves, the length and depths at which subsea pipelines are laid exceed anything that has been achieved before. Specialised engineering skills are required to keep up with this development. We are a major player in designing complex HPHT

pipelines from detailed design to installation and maintenance.

Pipeline reassessments for maturing fields

Ramboll supports clients in increasing efficiency and prolonging production on mature fields.

Our in-depth knowledge extends to offshore platforms and FPSOs, which gives us the required overview and experience to handle tie-back or tie-in projects for all relevant interfaces between pipeline, subsea completion and platform or FPSO.

Local partners

We take pride in partnering up with local companies to supplement our own services with indispensable knowledge about local conditions. For example, onshore pipeline system design requires careful planning to select the optimum pipeline route with regard to overall length, right-of-way access, existing

use of the land or population density. Challenges such as these, are often better solved involving local partners, and Ramboll is renowned for our success establishing local partnerships.

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ABOUT RAMBOLL

Ramboll is a leading engineering, design and consultancy company founded in Denmark in 1945.

With more than 13,000 experts globally in 300 offices across 35 countries, Ramboll combines local experience with a global knowledgebase constantly striving to achieve inspiring and exacting solutions that make a genuine difference to our customers, the end-users, and society as a whole.

Ramboll works across the markets: Buildings, Transport, Environment & Health, Water, Energy, Oil & Gas and Management Consulting.

1,500 experts across the company work with different aspects of energy, including oil & gas.

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Selected projects

Polarled pipeline - world record breaking engineering

Client: Statoil, 2013 - 2015

The Polarled project, headed by Statoil, involved pipeline installation at water depths reaching 1265 m, setting a world record for deep water installation of a 36" pipeline through a very uneven terrain where ancient icebergs have been scouring the sea bed leaving behind numerous of free spans of up to 200 metres.

Ramboll performed the detailed design of the pipeline and a FEED study including route optimisation and EIA. Our extensive knowledge within subsea pipeline design was instrumental in designing this unprecedented technical solution.

Polarled pipeline will ensure gas transport capacity to continental Europe for gas volumes from planned and future field

developments.

Zakum oil field - subsea pipeline RLA assessment

Client: ZADCO, 2016

ZADCO planned to extend the design and service life of selected pipelines in the Zakum field.

Ramboll provided a separate report for each pipeline covering evaluation records and justifications for design lifetime extension as well as recommendations following the inspections, and a plan for repairs and maintenance.

The study enabled the client to plan maintenance and potential replacement of equipment in due time and thereby extend the remnant life of the existing pipelines with 20 years.

Routing and environmental baseline study in Uganda

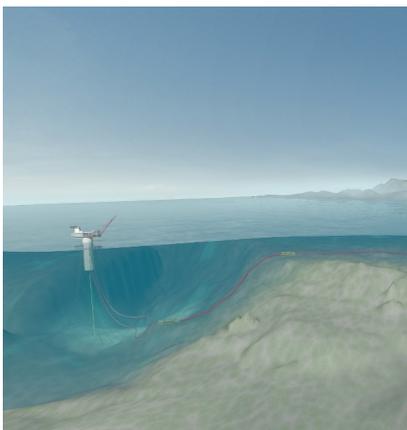
Client: Uganda's Ministry of Energy and Mineral Development, 2015 -

2016

The Hoima-Kampala Petroleum Products Pipeline comprises a 210 km pipeline for transport of refined oil products between the Hoima refinery and the Kampala distribution terminal. The project represented one of the first steps towards establishing a domestic oil and gas industry in Uganda, East Africa.

Ramboll was involved in the early phase and conducted a utility corridor study including detailed pipeline routing, and EIA. Due to the sensitivity of the green and swampy nature Ramboll teamed up with local partner, Newplan, for most of the field work.

Ultimately, to meet the expectations of every party involved in the project, including the local community, the initial length of the utility corridor and pipeline routing was extended with 10 km.



LEFT

Graphical illustration of Polarled pipeline © Allseas

RIGHT

Resistivity measurements for the Hoima-Kampala project in Uganda © Ramboll