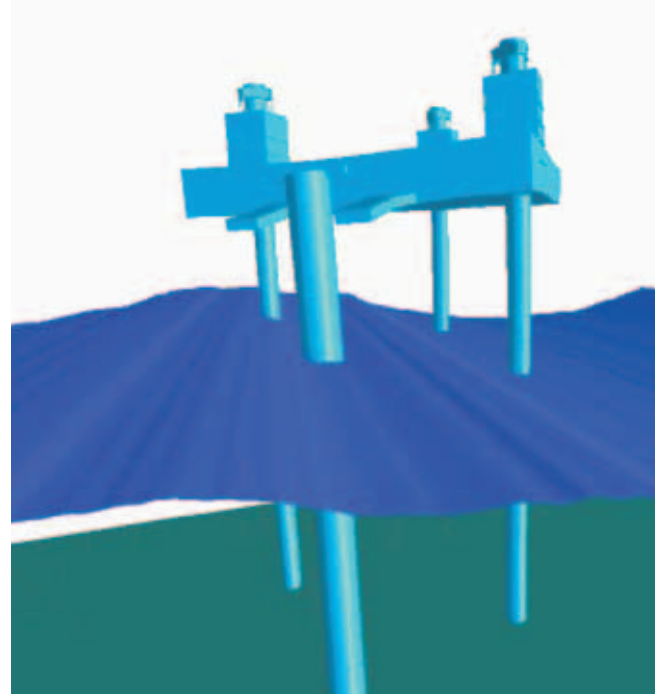


Advanced software tools utilized to document increased capacity.



Full dynamic analyses document extended lifetime of the structures.



Your reliable engineering partner---

Rambøll Oil & Gas is one of the international divisions of the Rambøll Group comprising more than 4,200 employees in over 140 permanent and project offices all over the world providing engineering services on a worldwide basis.

With more than 25 years of experience, Rambøll's Oil & Gas division provides all types of engineering consultancy with onshore and offshore production facilities ranging from project identification and feasibility studies to design, procurement, commissioning and, eventually, decommissioning.

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Modification Projects---



Minimizing costs – maximizing benefits---

Innovative, integrated bridge module for the Tyra Field.

If your aim is to maintain the profitability of your oil & gas installation, Rambøll is offering you our expertise. With more than 25 years of experience in advising on and designing minor and major modification projects, we know how to improve the cost-efficiency of offshore as well as onshore petrochemical plants.

Today, modification jobs ranging from minor modifications to complete rewamps of existing facilities constitute the vast majority of the 300 projects carried out by Rambøll Oil & Gas each year.

Rambøll has been involved in the international oil & gas industry from its early days in the Danish sector, which has gained us thorough and in-depth experience of the complex challenges requiring expertise and innovative solutions if a modification is to minimize costs and maximize benefits.

Multi-disciplinary resources

Rambøll is carrying out all types of modification projects. However, experience has shown that optimal cost-benefit derives from concepts based on multi-discipline planning.

Rambøll offers an experienced staff capable of sharing their know-how of:

- process design
- piping design

Cover: The Siri platform under extensive modification.

- process equipment
- electrical/control/ESD/F&G
- structural design
- support/safety equipment

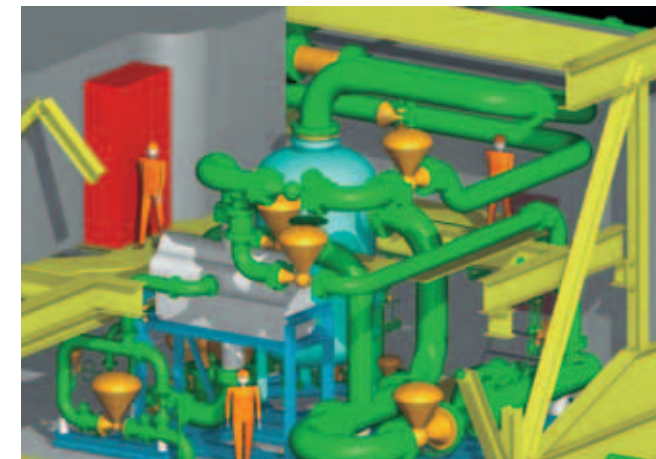
HSE&Q aspects are an integrated part of all stages of any design, which ensure that all projects are implemented safely and with due consideration for the protection of the environment.

It is our line of practice to carry out all stages of the modifications in close cooperation with the customer's operations staff in order to ensure mutual understanding and an efficient and trusting working atmosphere.

A successful modification project typically comprises:

- assessment of the old design and certification documentation
- a design with integrated planning of hot work and hot tapping
- detailed dimensional surveys
- detailed drawings and MTO's to cover all requirements

Our in-depth knowledge is your guarantee that your modification project is carried out with a minimum of costly offshore work and with the intention of avoiding shutdowns or, alternatively, ensuring detailed planning of shutdowns.



Detailed design of wellhead compression facilities on the Tyra West platform, including retrofitting extension of existing facilities.



A caisson supported module extends the capacity of fully equipped platforms, Tyra Field.

Minimizing costs – maximizing benefits

As a means to reduce the costs of onsite personnel during the modification phase, Rambøll has successfully incorporated the use of 3D technology and Laser Survey techniques. This allows component interface comparison prior to site installation, which ensures correct design and fabrication. In this way the customer is able to maximize offsite prefabrication activities and minimize onsite plant shutdown periods.

When planning a modification, Rambøll maximizes the benefits of the customer by:

- using a multi-disciplinary staff working closely together with the customer
- allocating personnel experienced in the processes of a petrochemical plant and in designing projects for implementation in classified areas
- checking that no details are missing in drawings and material lists



Additional external conductors installed on old platform, the Tyra Field.

- selecting solutions and materials that reduce welding and PWHT requirements
- planning for a minimum of shutdown time and man/hours spent on the installation
- ensuring safe and environmentally optimal solutions.

By adhering to these basic rules, Rambøll is ensuring a modification suitable for the changing requirements and fulfilling the customer's expectations for an attractive cost-benefit solution.

Your success is our best reference---