



KVÆRNER™

Jackets



● KVAERNER
● PARTNER

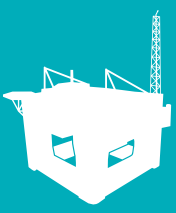





KVÆRNER™

Kvaerner is a specialised engineering, procurement and construction (EPC) company. As a preferred partner for oil and gas operators, industrial partners and other engineering and fabrication contractors, Kvaerner is focused on delivering complete solutions to some of the world's most demanding projects through reliable, effective and flexible execution models.

HSE is a core value

At Kvaerner, concern for health, safety and the environment is more than a core value; it is also an effective way to work. Our HSE mindset is founded on the belief that all incidents can be prevented. We work systematically to ensure continuous improvement of our HSE culture and performance.

- We strive continuously for zero harm to people, the environment, material and non-material assets
- We focus on employee health and on further improvement of the work environment
- We require every employee to take personal responsibility for HSE by focusing on their own behaviour

TOPSIDES	FLOATERS	CONCRETE	JACKETS	ONSHORE	CONSTRUCTION
					
Offshore topside facilities	Floating oil & gas facilities	Concrete GBS for offshore platforms	Steel jackets for offshore platforms	Onshore facilities to oil and gas, power, steel and industrial markets.	Construction and maintenance services



We plan & execute demanding EPC projects

Engineering

An optimised design and engineering typically counts for 5-20 percent of the total project costs. This phase is the fundamental basis not only for the subsequent procurement of equipment and the construction of the facility, but it is also imperative for building a facility which will operate effectively for decades to come. Our multi-disciplined organisation covers all phases of technical and administrative functions needed to execute demanding engineering tasks for our customers.

Procurement

In many projects, more than half of our own contract value represents equipment and services we procure from subcontractors on our customers' behalf. Kvaerner provides best value procurement from subcontractors to customers by leveraging global sourcing networks and market knowledge. Our supply management and procurement organisation supports project execution through a pro-active process for optimising the lead-time, total costs and quality, mitigating risk and ensuring HSE performance.

Construction

Kvaerner's offering includes specialised in-house fabrication yards with decades of experience from demanding projects combined with the capacity at high quality partner yards. With Kvaerner's flexible execution model we deliver reliable and cost-effective solutions while ensuring a high degree of local content when it benefits the project. All our projects are supervised by Kvaerner's senior project and construction management.

Jacket EPC

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Kvaerner provides steel jacket substructures for the oil & gas and offshore wind industry. We represent demonstrated execution and design excellence through a strong track record of continuous jacket deliveries since 1975. Our deliveries span from conceptual and feasibility studies, front-end engineering and design (FEED), detailed engineering, procurement, project management through construction and delivery of jacket structures. In 1987, Kvaerner's yard in Verdal completed its first large EPC contract with great success: the steel jacket for the Oseberg B Project on the Norwegian Continental Shelf. Specific attention to EPC project execution enables us to offer an integrated solution to the client.

Jacket EPC advantages

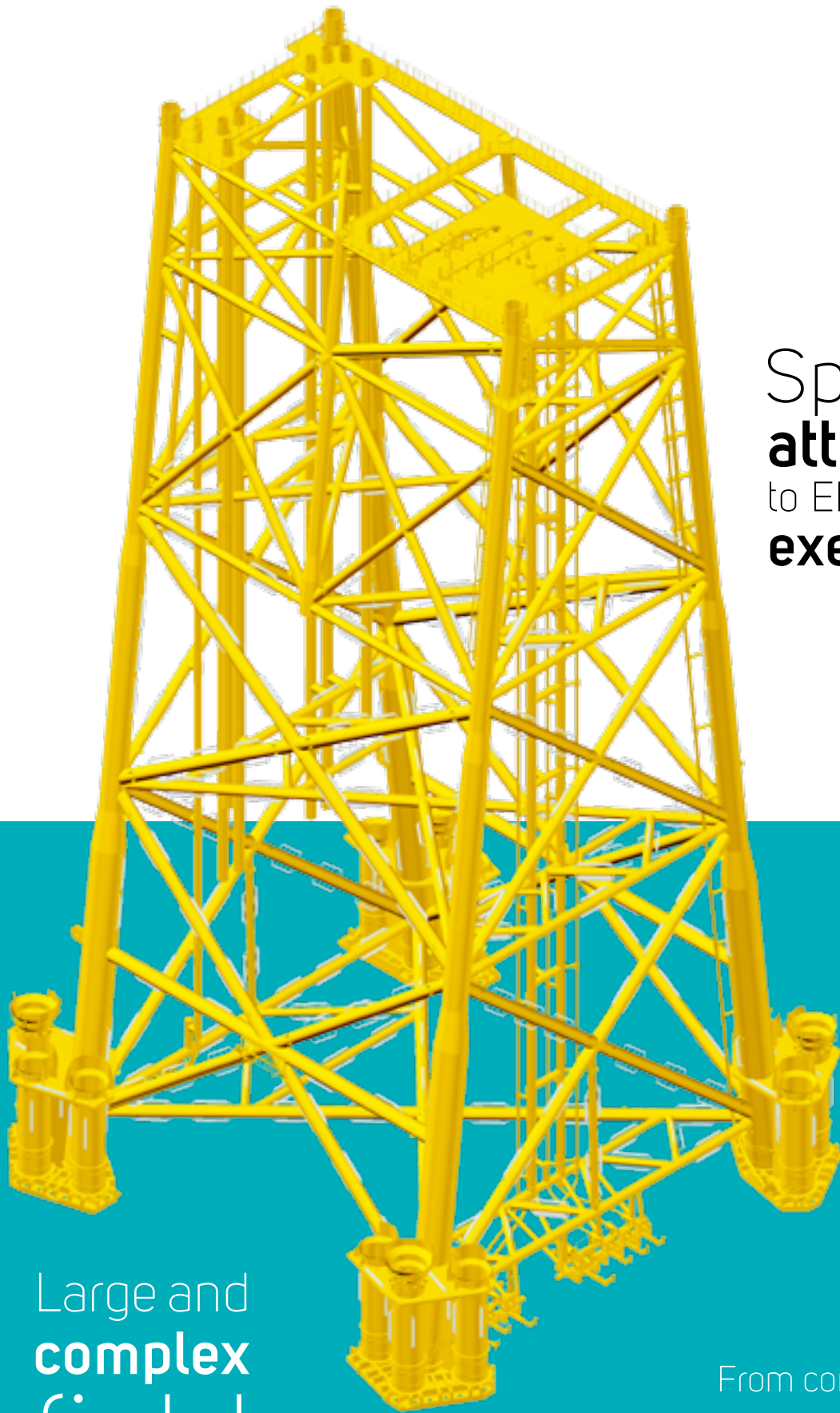
Kvaerner Verdal AS was established in 1970 as one of Europe's first purpose built yards to serve the offshore oil industry. Based on Aker and Kvaerner's more than 160 solid years of traditions and development, the yard in Verdal today stands out as modern and unique - the ideal location for fabrication and delivery of large jacket structures.

Substantial investments in plant and equipment, technology, personnel and management training position Kvaerner as one of the best suppliers to the oil industry in Europe.

Our world class proven execution model integrates specialised design and engineering capability in Oslo and Trondheim with procurement and fabrication in Verdal, providing a truly seamless solution with continuity of key personnel throughout the project execution. One schedule, covering the total EPC period and a complete value chain from concept design to delivery, ensures security for quality and predictability for delivery on time.

EPC execution increases the flexibility and competence to manage the entire value chain. The Project Execution Model for jacket projects includes efficient interfaces with the client and interfacing contractors, and above all, a general Health, Safety and Environment (HSE) focus through design, engineering, procurement and construction. HSE is not only our licence to operate; it is an efficient way to work.

- > **EPC knowledge since the 1980s**
- > **Proven execution model**
- > **Control of entire value chain from concept to EPC delivery**
- > **Substructure design with controlled interfaces towards topside and offshore installation requirements**
- > **Cost-effective substructure**
- > **Short project execution time**
- > **Security for quality and predictability for timely delivery**



Specific
attention
to EPC project
execution

Large and
complex
field
developments

From concept to
FEED
and EPC
delivery

We deliver a full range of jacket substructures

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We do not believe that “one size fits all”, or that a single solution can meet all operators’ needs or demands. Kvaerner offers a wide range of fit-for-purpose solutions - from light and innovative offshore wind structures to lift installed and launched jackets for the oil and gas industry.

Many of the world’s leading operators have chosen Kvaerner because our solution has proven to be reliable and cost effective, providing the security for delivery, predictability and quality needed to meet the challenges of each specific project.

Kvaerner can offer EPC deliveries of jacket substructures for the offshore wind industry for shallow waters as well as lift installed or launched jackets for deep waters and harsh environments, depending on the project and client requirements.

The yard in Verdal municipality in the middle of Norway, has approximately 700 employees with a number of contract staff during peak times. The yard with its 650 000 m² in size, of which 30 000 m² are indoor fabrication, has continuously been upgraded and developed to reach optimal efficiency while ensuring quality when building, assembling and loading out jacket structures. The state of the art facilities for sandblasting and surface protection are climate controlled and equipped with sand recycling facilities to ensure the best quality of surface protection. Further, Kvaerner’s fleet of crawler cranes and lifting capacity, large assembly areas and four load-out quays, enable the yard to handle several jacket projects in parallel.

The company actively supports regional industrial development. Continuous contact with local and regional authorities is emphasised to mutually exchange information as well as experience. Investing in education is yet another example of Kvaerner’s efforts to support the local community. These efforts display not only responsibility, but also serve to recruit new talents to the industry and the company.

Jackets

From its yard in Verdal, Kvaerner has delivered jackets to the Norwegian and UK Continental Shelf since 1975. Kvaerner delivered its first jacket to the Ekofisk Field

Development for Phillips Petroleum Company Norway with Albushell 1/6A Jacket in 1976. This was a fabrication contract, and the jacket design was a 12-legged launched jacket with leg piles and six large temporary ballast tanks to ensure buoyancy during the installation. Kvaerner’s second jacket, the Ekofisk 2/4H delivered in 1977, was replaced by the 38th, the Ekofisk 2/4L, delivered to ConocoPhillips Scandinavia AS in 2012. This jacket will serve as the substructure for the Ekofisk Field accommodation facility for the next four decades. This delivery represents a leap in time - supporting the living quarter for 80 years - and technology - from conventional fabrication contracts to EPC delivery.

Kvaerner entered the market as an EPC provider of jackets when delivering the Oseberg B Drilling Jacket to Norsk Hydro in 1987. The 18 800 tonne launched jacket with 32 leg piles and temporary buoyancy tubes and flotation tanks was delivered after a 27 month contract period. This was the first large launched jacket for Norsk Hydro followed by the delivery of the 18 400 tonne Brage Jacket in 1993 and the 18 000 tonne Grane Jacket in 2003. With these jackets, the delivery model developed from extensive subcontracting and subcontracted engineering to in-house design and management of the entire fabrication by our own resources in Verdal.

With the Veslefrikk Jacket and the Kvitebjørn Jacket delivered to Statoil in 1989 and 2002 respectively, Kvaerner demonstrated its technology and innovation on challenges related to deep waters on the Norwegian Continental Shelf. The 12 000 tonne Kvitebjørn, a 4-legged, 2-parts lifted jacket as well as the Europipe 16/11E Riser Jacket with bucket foundations, represented a new and novel design.

The first delivery to the UK Continental Shelf was made with the Goldeneye Jacket to Shell UK in 2003. This 2 500 tonne and

140 meter high lightweight jacket was the beginning of a series of jackets delivered for UK clients, including the fabrication contract for the 8 500 tonne Clair Jacket for BP UK delivered in 2004, continuing with a series of three 5 000 tonne jackets for Nexen UK for the Buzzard Field Development. Further, the award of the quarter utility jacket and the drilling platform jacket for Clair Ridge in 2010 represents continued EPC deliveries for the UK waters and another milestone for Kvaerner with a lift installed 9 000 tonne jacket and a launched jacket in excess of 22 300 tonnes.

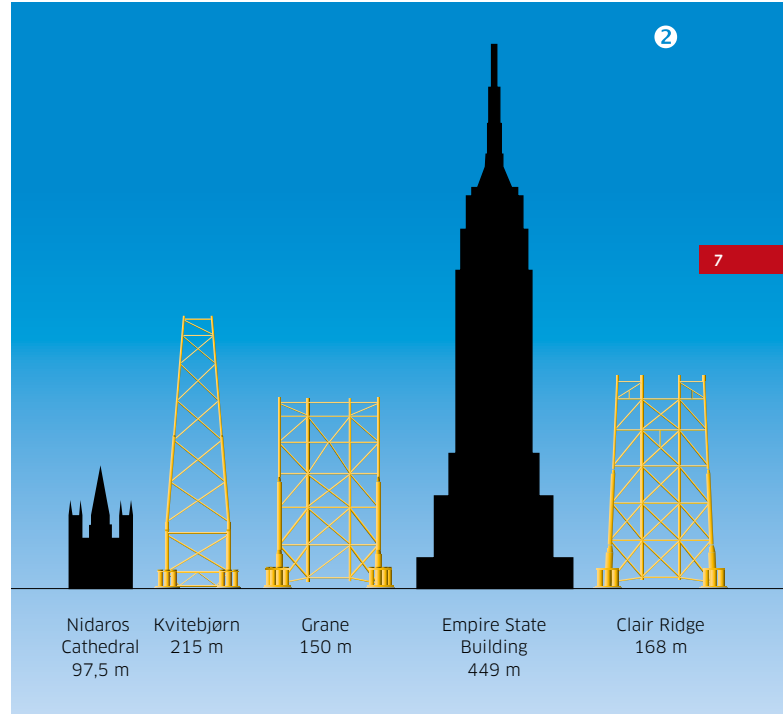
Kvaerner has also delivered lightweight jackets, tripod substructures, flare towers and bridges for both the Norwegian and UK Continental Shelf, and has worked with installation contractors. The Sleipner Flare and Bridge EPCIH contract with Statoil was delivered with Heerema Marine Contractors as the installation subcontractor. The innovative 2 200 tonne Tripod and Topside for the Varg Wellhead Platform was delivered to Saga Petroleum in 2007 as part of an EPCI contract in joint venture with Saipem.

Kvaerner has developed its substructure concept for the offshore wind industry, and Kvaerner’s introduction to EPC jackets for renewables was made with the award of 49 substructures to RWE Innogy for its Nordsee Ost Offshore Wind farm in German waters.

The 14 500 tonne EPC contract for Edvard Grieg for Lundin Norway AS and the 16 500 tonne EPSC contract for Martin Linge for Total Exploration & Production Norge AS in 2012, confirmed Kvaerner’s position as a leading provider of launched jackets and its attractive design and delivery model for a continued development of the Norwegian Continental Shelf.



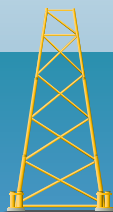
- 1 High competence and long experience ensure successful load-out as the jacket is skidded onto the barge
- 2 Compared to famous buildings like the Nidaros Cathedral in Trondheim and the Empire State Building in New York, our oil and gas jackets stand out as quite impressive
- 3 The Verdal yard is carefully designed to achieve optimal efficiency, ensuring quality and enabling the yard to handle several jacket projects in parallel



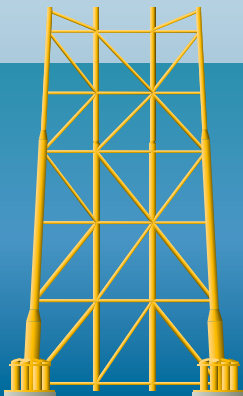


Leading jacket fabricator in Europe

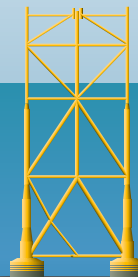
Kvaerner is the European leader in steel jackets for offshore oil and gas projects. Our strong track record illustrates that we are not only able to offer attractive concepts, but we also deliver reliable solutions of the right quality and at the right time.



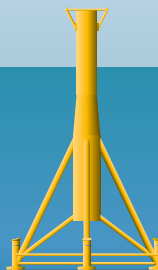
Sleipner A



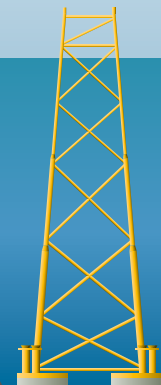
Brage



Sleipner
Vest



Varg



Jotun

TRACK RECORD

Albuskjell	Drilling Jacket	FC	1976
Ekofisk	Quarters Jacket	FC	1977
Valhall	Drilling Jacket	FC	1980
Statpipe	Riser Jacket	FC	1983
Ula	Drilling Jacket	FC	1985
Ekofisk 2/4K	Water Injection Jacket	FC	1986
Oseberg B	Drilling Jacket	EPC	1987
Veslefrikk	Drilling Jacket	EPC	1989
Gyda	Drilling Jacket	FC	1989
Sleipner A	Riser Platform Jacket	EPC	1992
Brage	PDQ Jacket	EPC	1993
Europipe 16/11-E	Riser Jacket	FC	1994
Sleipner Vest SLB	Wellhead Jacket	PC	1995
Sleipner Vest SLT	Production Jacket	PC	1996
Ekofisk 2/4X	Wellhead Jacket	EPC	1996
Ekofisk 2/4J	Processing Jacket	FC	1997
Varg	Monotower	EPIC	1997
Oseberg Øst	PDQ Jacket	EPC	1998
Jotun	Wellhead Jacket	EPC	1998
Oseberg Gass	Gas Treatment Jacket	EPC	1999
Eldfisk	Water Injection Jacket	EPC	1999
Oseberg Sør	PDQ Jacket	EPC	2000
Huldra	Wellhead Jacket	EPC	2000
Kvitebjørn	PDQ Jacket	EPC	2002
Valhall	Water Injection Jacket	EPC	2002
Grane	PDQ Jacket	EPC	2003
Goldeneye	Wellhead Jacket	EPC	2003
Clair	PDQ Jacket	PC	2004
Ekofisk 2/4M	Processing Jacket	EPC	2004
Ekofisk 2/4L	Tripod	EPC	2004
Buzzard	Wellhead Jacket	EPC	2005
Buzzard	Quarter Utilities Jacket	EPC	2005
Buzzard	Process Jacket	EPC	2005
Alpha Ventus	Tripods	PC	2008
Valhall Re-Development	Process and Quarter Jacket	EPC	2009
Gudrun	Production Jacket	EPC	2011
Ekofisk 2/4L	Accommodation Jacket	EPC	2012
Ekofisk 2/4L	Bridge Support Jacket	EPC	2012
Clair Ridge	Drilling & Prod. Jacket	EPC	2013
Clair Ridge	Quarters Utility Jacket	EPC	2013
Nordsee Ost	Offshore Wind Jackets	EPC	2013
Edvard Grieg	PDQ Jacket	EPC	2014
Martin Linge	PDQ Jacket	EPSC	2014

OSEBERG B

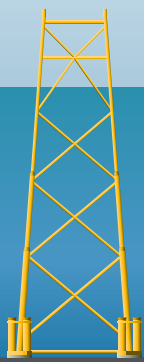


The Oseberg B Drilling Jacket was the first EPC jacket delivered by Kvaerner and represented a step change from fabrication contracts to taking responsibility for a complete EPC delivery.

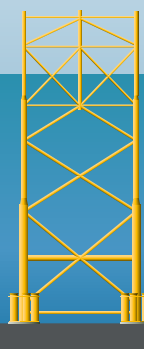
The EPC contract was ordered in 1985 and delivered to Norsk Hydro in 1987.

Jacket key data:

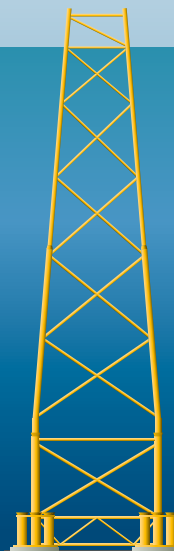
Weight jacket: 18 800 tonnes
 Weight piles: 6 500 tonnes
 Height: 122 metres



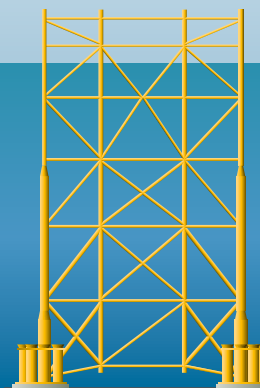
Oseberg Gass



Oseberg Sør



Kvitebjørn



Grane



Goldeneye

KVITEBJØRN



The Kvitebjørn Platform is an integrated drilling and processing platform installed at a water depth of 190 m. The lift installed jacket, with its height of 215 m, was installed in two parts and is the tallest jacket on the Norwegian Continental Shelf.

The EPC contract was ordered in 2000 and delivered to Statoil in 2003.

Jacket key data:

Weight jacket: 12 000 tonnes
Weight piles: 5 200 tonnes
Height: 215 metres

GRANE

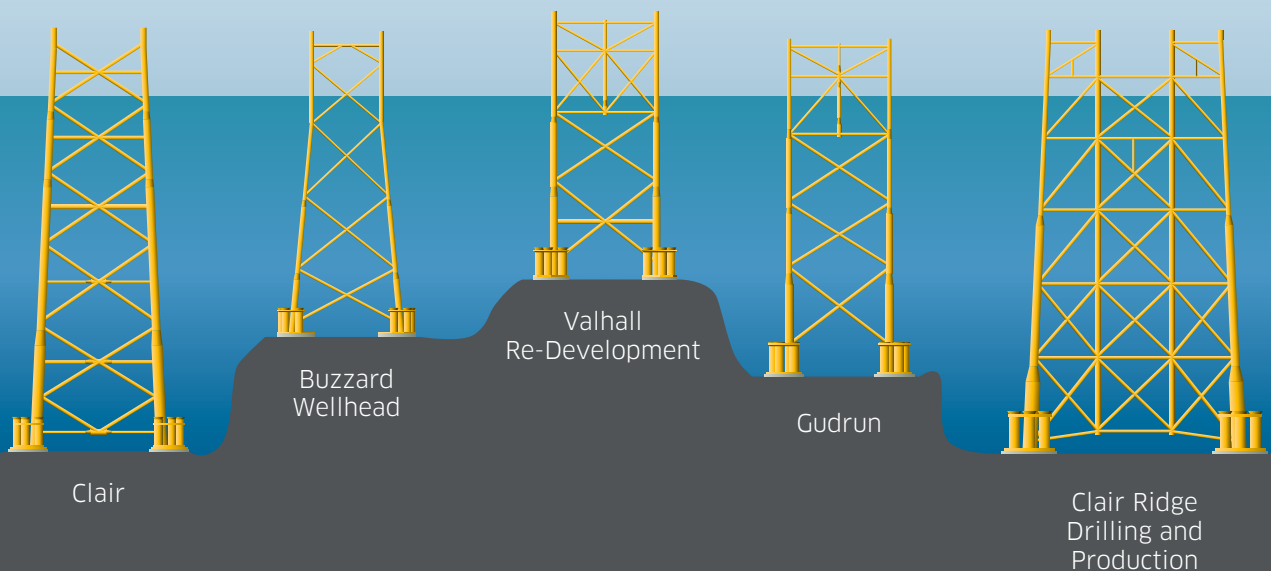


The Grane Platform is an integrated accommodation, process and drilling platform installed at water depth of 127 m and was the third launched jacket delivered to Norsk Hydro.

The EPC contract was ordered in 2000 and delivered to Norsk Hydro in 2003.

Jacket key data:

Weight jacket: 17 650 tonnes
Weight piles: 3 900 tonnes
Height: 150 metres



BUZZARD



Three jackets for the Buzzard Field Development comprising the Wellhead, Quarter Utilities and the Production Jackets were initially enquired about as FC contract but converted to EPC delivery.

The EPC contract was ordered in 2003 with delivery to Nexen UK in 2005. In addition, two bridges and a flare were delivered in 2006.

Wellhead Jacket key data:

Weight jacket/piles: 4 700/3 500 tonnes
Height: 121 metres

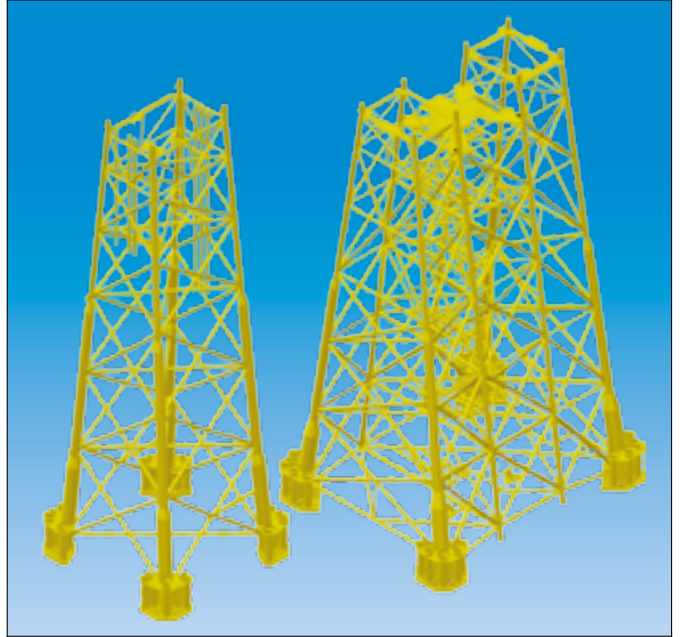
Quarter Utilities Jacket key data:

Weight jacket/piles: 4 700/3 600 tonnes
Height: 121 metres

Production Jacket key data:

Weight jacket/piles: 5 600/3 600 tonnes
Height: 121 metres

CLAIR RIDGE



With the award of the Clair Ridge Quarter Utilities and Drilling Production Jackets, Kvaerner is continuing to deliver jackets for BP. Both jackets represent significant achievements with the 22 300 tonne launched DP Jacket and the 9 400 tonne lift installed QU Jacket.

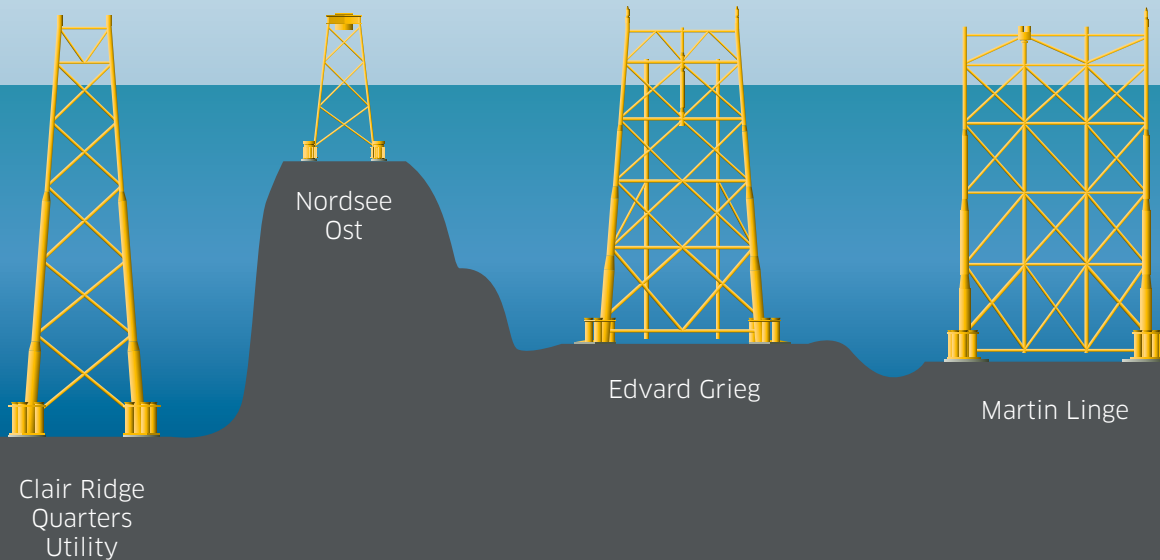
The EPC contract was ordered in 2010 with delivery to BP UK in 2013.

Quarter Utility key data:

Weight jacket/piles: 9 000/2 900 tonnes
Height: 167 metres

Drilling Production Jacket key data:

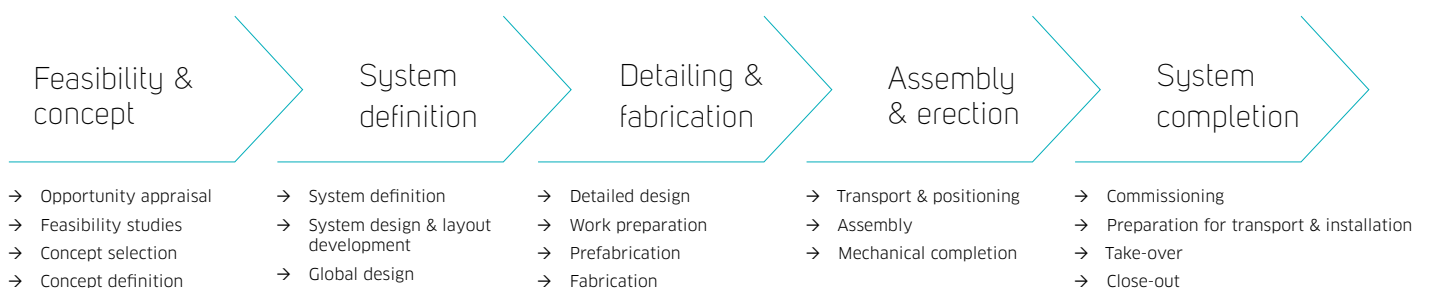
Weight jacket/piles: 22 300/6 500 tonnes
Height: 168 metres





Kvaerner is a main contractor with practical experience gained from many of the world's most demanding projects. Use of Jacket Project Execution Model (PEM™) provides a methodology for project execution and gives both parties a common understanding of the project specific challenges – common Risk Management Register for the whole EPC phase.

OUR Project proven Execution Model





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- 1 Sunset at the yard sets off the slim jacket outlines
- 2 Jacket no 37 leaving the yard at Verdal
- 3 Safety and a reinforced HSE mindset are always integrated
- 4 Our people make the difference
- 5 Wind jackets lining up for load-out
- 6 The use of PEM assures quality in every step of the project

Why a common, global Project Execution Model (PEM™) for Kvaerner?

Over the years, we have developed and continuously refined our Project Execution Model (PEM) for execution of EPC Contracts fully integrated with our jacket technology design offices and in close cooperation with the supply chain, including steel manufacturing, rolling of tubulars and provision of cast nodes. Design solutions are customised to yard specific fabrication methods.

The use of PEM assures quality in every step of the project, through a clear definition of milestones, elements and quality parameters, which shall be in place before the work moves on to the next phase. This systematic approach provides transparency for both the project team and for the customer. The continuously updated project overview identifies opportunities for flexibility.

PEM not only improves the quality of work; it also controls the delivery time, increases profitability and improves competitiveness. This is made possible because PEM includes more effective work processes, a focus on product rather than discipline, a continuous value chain E+P+C and improved Risk Management – no costly surprises. Safety and a reinforced HSE mindset are always integrated in all steps along the way.

Technology development

As part of our continuous improvement, Kvaerner carefully invests in developing new technological solutions and new

methods. It is this development and the experience transfer which enable us to bring new knowledge and ideas to the table when a project is being considered by our customers.

Studies and front-end

Our front-end products and services range from feasibility studies and field development planning through concept screening and selection, concept definition and FEED (front-end engineering design) as well as project execution strategy.

The FEEDs are executed by our own teams of highly skilled jacket technology engineers in Oslo and Trondheim. The activities are planned and carried out to fit the clients' needs, and adjusted to suit the starting point and specific level of completion of defined deliverables. Kvaerner understands that the FEED phase is critical to the long-term success of the overall project objectives. During FEED, due consideration is also given to fabrication friendly solutions for overall geometry, installation arrangement, routing of appurtenances and implementation of facilities for pre-drilling to achieve the necessary level of reliability, efficiency and safety for the concept.

Engineering

Kvaerner has experienced in-house engineering expertise for the execution of simultaneous projects. Our network of highly qualified consultants may often be

used to provide additional capacity and to contribute with expertise and experience. Kvaerner's design competence within structural, geotechnical and naval architectural engineering and extensive use of technology in developing and designing novel and cost-effective jacket concepts, are highly appreciated in the industry.

As part of the jacket design is the in-house developed 3D CAJAC Model which is refined and released within the PEM milestones to allow for the next step in procurement and construction.

Procurement

The documentation from detailed engineering is an important tool to enable the procurement organisation to gain the best terms and conditions from subcontractors and suppliers for provision of materials and services in accordance with the project requirements and the PEM milestones. Kvaerner's long term relationship with the experienced and reliable supply chain, including providers of structural steel, rolling of legs and tubulars, design and manufacturing of cast steel, as well as surface protection and lifting and load-out operations, are vital for the successful execution of jacket projects.

Construction

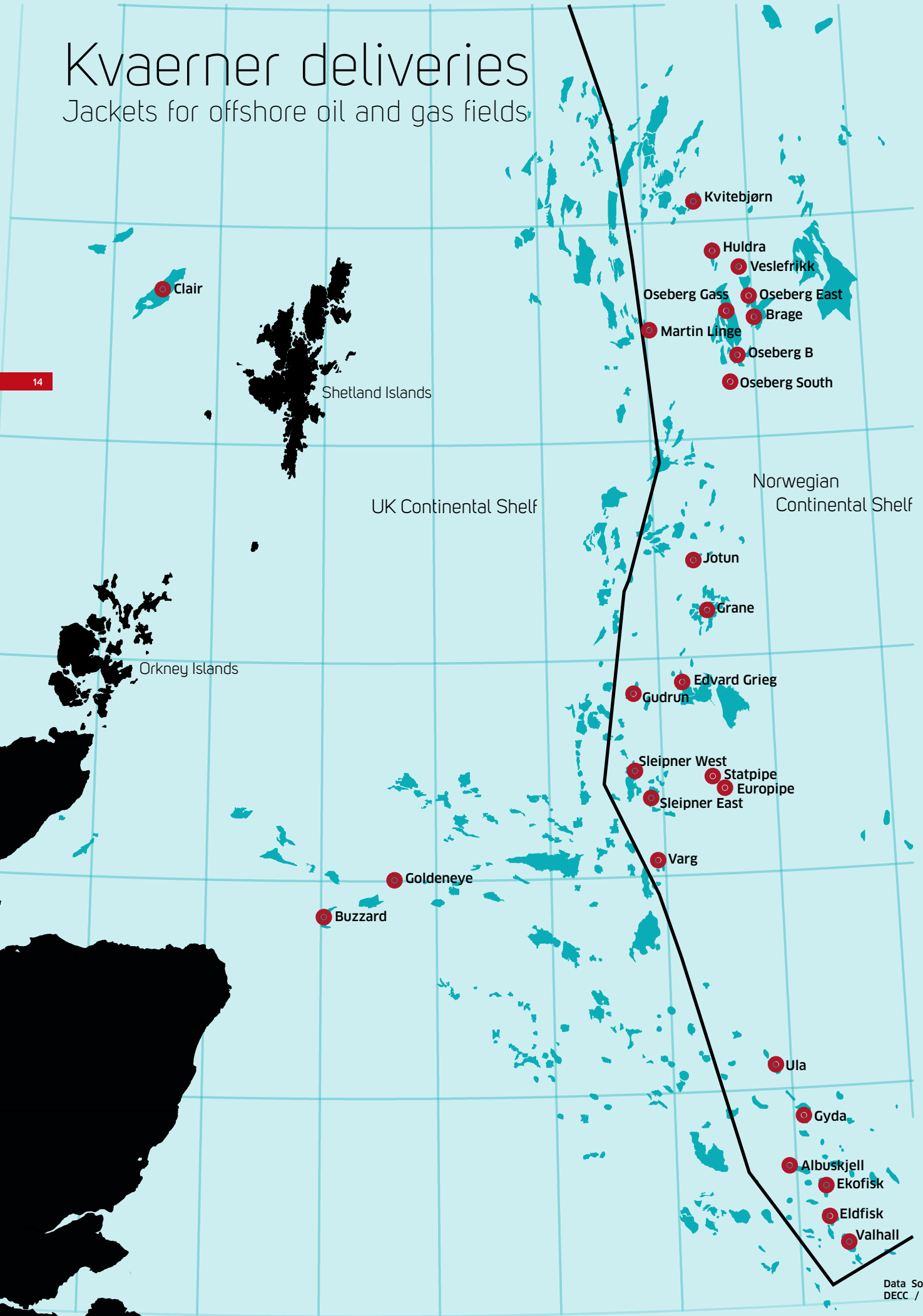
Kvaerner's more than 40 years of experience with jackets ensures the combination of effective design with jacket fabrication and assembly methodology with high quality. Controlling the entire EPC delivery model is a warranty for flexibility and ability to handle changes within the project and is a security for delivery in due time with the right quality.

Hands-on project management

All our projects, including the performance of our supply chain, partners or contractors, are supervised by Kvaerner's own project managers. The in-depth expertise, the proven experience and hands-on approach are some of the factors that make Kvaerner unique, and have made our brand recognised as the reliable, effective contractor for the most demanding projects.

Kvaerner deliveries

Jackets for offshore oil and gas fields



Common values



Kvaerner's mission is to successfully execute some of the world's most demanding projects through living our values.

In any organisation, values are essential for building trust – in each other, in our partners, in our customers and with society. All the Kvaerner businesses share a common set of values – the compass that guides our policies, our operations and ultimately, our behaviour.

For further information, please visit our web site: www.kvaerner.com

KVÆRNER™

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