

Oceans of knowledge

bluewater



Since its foundation in 1978, Bluewater is owner & operator of world class Floating Production Storage and Offloading vessels and provider of the most innovative Single Point Mooring Systems.

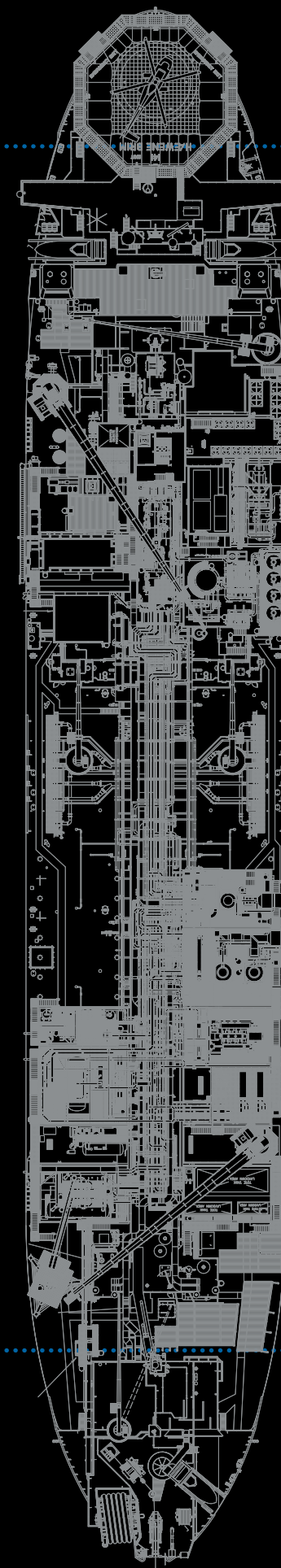


X100

The storage capacity of our Hæwene Brim FPSO is equivalent to the storage capacity of 2,867 tank trucks

FACT

Name explanation	Anglo Saxon for Bluewater
Length overall	252 m
Breadth	42 m
Deck Area	7,280 m ²
Accommodation	90 persons
Storage capacity	595,000 bbls
Fluid process capacity	100,000 bbls per day
Field	Pierce, UK sector North Sea
Date first oil	1 February 1999
Details: Sistership of Munin, designed as shuttle tanker, forward accommodation, Brynhild (Norway) tie-in in 2014. Converted to add gas-export in 2022.	



Colophon

Editing	Bluewater Energy Services B.V. Hoofddorp
Photography	Menno Mulder Photography, Apeldoorn Sander van der Torren Photography, Haarlem
Graphic design	Hollands Lof, Haarlem
Print	Veenman+, Rotterdam

The background features several minimalist geometric shapes: a large teardrop shape on the right, a smaller teardrop shape nested inside it, a circle in the bottom left, and a set of concentric circles in the top left. The word "bluewater" is centered in a bold, blue, lowercase sans-serif font.

bluewater



‘Turbulent decades in our industry have made us into what we are: confident in our technology through constant innovation, also in renewable technologies. Reliable and organized in our project execution and in our FPSO operations. And always driven by the will to succeed.’

.....

Hugo Heerema, President & CEO



Company Profile

Bluewater has designed, manufactured, supplied and installed numerous innovative FPSO, FSO and SPM systems for energy companies worldwide through turnkey supply and time charter contracts. The company also provides operational and logistic management and support for FPSO and FSO systems. Through the years, Bluewater designed, owned and operated ten FPSO's (Floating Production Storage and Offloading systems), of which three have been retired

and two have been sold back to the oil companies. Presently, Bluewater owns and operates five FPSOs for our clients. Since its foundation in 1978, Bluewater has developed some of the most innovative Single Point Mooring (SPM) systems in service from Catenary Anchor Leg Mooring (CALM) Buoys, to Turret Mooring and Tower systems featuring multiple risers. Each system has its own characteristics and fields of application.



FACT

Our Aoka Mizu FPSO is as long as 2.5 soccer fields

Name explanation	Japanese for Bluewater
Length overall	248.2 m
Breadth	42 m
Deck Area	7,984 m ²
Accommodation	90 persons
Storage capacity	618,000 bbls
Fluid process capacity	35,000 bbls per day
Latest field	Lancaster Field, West of Shetlands, UKCS
Date first oil	04 June 2019
Details: Bluewater patented disconnectable turret, forward accommodation.	

Aoka Mizu

The Aoka Mizu is the seventh Bluewater designed, built, owned and operated FPSO installation. The Aoka Mizu is equipped with propulsion power enabling her to sail under her own power.

The FPSO is also equipped with a Dynamic Positioning (DP) system enabling her to hook-up to the disconnectable turret autonomously.

Working at Bluewater

With offices in the Netherlands, the United Kingdom, Australia, China and West Africa as well as worldwide project locations, Bluewater continuously strives to provide ingenious solutions in all areas of our business. Not surprisingly, working at Bluewater means working in a highly dynamic, challenging and international environment. We are always looking for competent and motivated colleagues to fill our need for professionals in various disciplines and departments.

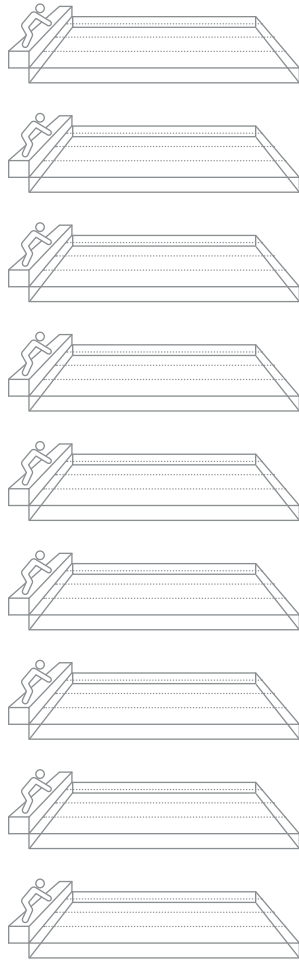
If you are a result-oriented and pro-active professional who enjoys working in teams within a technically challenging environment, you could be the new Bluewater employee we are looking for. Please have a look at our vacancies to see if there is a match to be made!

www.bluewater.com/careers



‘In an increasingly complex oil & gas industry, Bluewater achieves through providing innovative solutions to its clients. Bluewater’s people make the difference through their creativity and by cooperating with key stakeholders to successfully deliver the products and services.’

.....
*Arjan van der Laan,
Vice President Finance & Administration*



FACT

Our Bleo Holm FPSO could fill 9 Olympic swimming pools with oil per day

Name explanation	<i>Cornish for Bluewater</i>
Length overall	242.3 m
Breadth	42 m
Deck Area	7,985 m ²
Accommodation	90 persons
Storage capacity	689,472 bbls
Fluid process capacity	140,000 bbls per day
Field	Blake and Ross fields
Date first oil	1 Sept 1999
Details: Since 2005 in bareboat charter to Repsol Sinopec (former Talisman Energy). Hull built in Japan (Hitachi Zosen), converted in Glasgow.	



Bluewater offices

Hoofddorp - The Netherlands

Aberdeen - United Kingdom

Luanda - Angola

Lagos - Nigeria

Tianjin - China

Rio de Janeiro - Brazil

Ciudad del Carmen - Mexico

Houston - United States

- FPSO/FSO
- Turret Mooring Systems
- CALM / CALRAM
- Multi Buoy Systems
- Tower Loading / Mooring Systems

Operations Worldwide

‘Our goal is to set standards of excellence in operating FPSOs. We provide stewardship in a safe working environment continually improving environmental performance while maximizing the efficiency of our operations. Our know how, competency and track record makes us a partner of choice.’

Jesse van de Korput,
Vice President Floating Production



Where are we now?



Aoka Mizu

Aoka Mizu is committed to operate in the West of Shetlands.



Bleo Holm

Producing at the Ross and Blake fields in the in UK continental shelf of the North Sea for oil company Repsol Sinopec (former Talisman Energy).



Glas Dowl

Glas Dowl most recently operated on the Kitan field, the joint development area of East Timor and Australia and is being offered for redeployment.



Hæwene Brim

Currently producing on the Pierce field (UK) for Shell. Brynhild field (Norway) tie-in in 2014. Converted to add gas-export in 2022.



Munin

Munin is the first DP operating FPSO. Proven operation on the Lufeng and Huizhou fields, in the South China sea. Munin is being offered for redeployment.



Single Point Mooring

‘Our industry is faced with an increasing demand for robust solutions for complex projects. This requires efficient, flexible, controlled and predictable project management. Bluewater is ready and provides the necessary experience, know-how and competence to make every project a success.’

.....
Geert Datema,
Vice President Projects

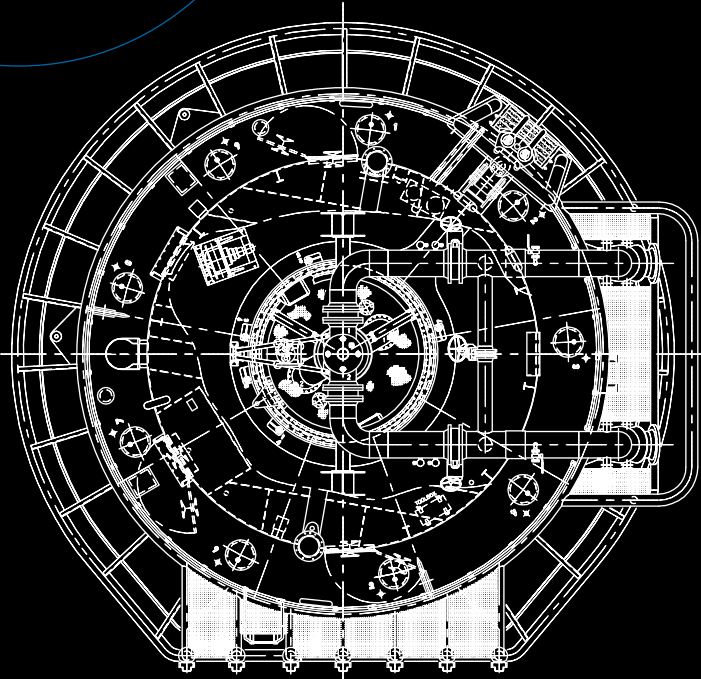


Single Point Mooring Systems

Bluewater has developed some of the most innovative Single Point Mooring (SPM) systems from Catenary Anchor Leg Mooring (CALM) buoys systems and Tower Mooring Systems to internal and external Turret Mooring Systems. Each system has its own characteristics and fields of application.

In the past decades Bluewater has designed, built and delivered over 100 CALM Buoy Systems, and over 25 Tower and Turret Mooring Systems. The Turret Mooring systems include internal, external, fixed and disconnectable types.

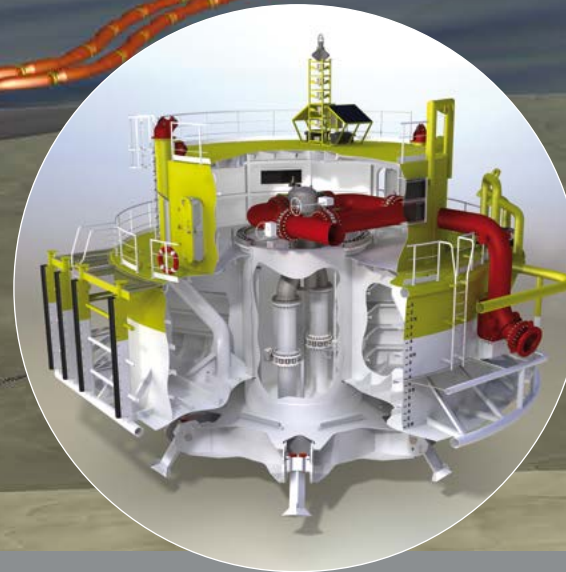




A typical Bluewater CALM Buoy System weighs more than 20 of the largest African elephants

Diameter	10 / 12 m
Height	4 m
Weight	250,000 kg
Lifetime	25 years

FACT



CALM Buoy Systems

The CALM (Catenary Anchor Leg Mooring) buoy system is a buoy permanently moored to the seabed by means of multiple mooring lines. It facilitates near shore and offshore (off)loading of trading tankers. The buoy contains a bearing system that allows a part of it to rotate around the moored geostatic part. A tanker moored to this rotating part is able to freely

weathervane around the geostatic part of the buoy. The buoy is provided with a fluid transfer system that enables connection of (subsea) pipelines to the tanker. The fluid transfer system includes submarine hoses between the pipeline end manifold (PEM) at the seabed and the buoy, and hoses between the buoy and the tanker.

Turret Mooring

‘With our highly skilled staff and technology base we design and deliver robust, safe and innovative energy solutions suitable for any environment. From mooring & transfer systems for any product like oil, gas, LPG, LNG, electricity, hydrogen, methanol, ammonia and CO₂, to creative solutions for floating tidal, wind and solar energy. Striving to push the boundaries of what’s possible and committed to deliver!’

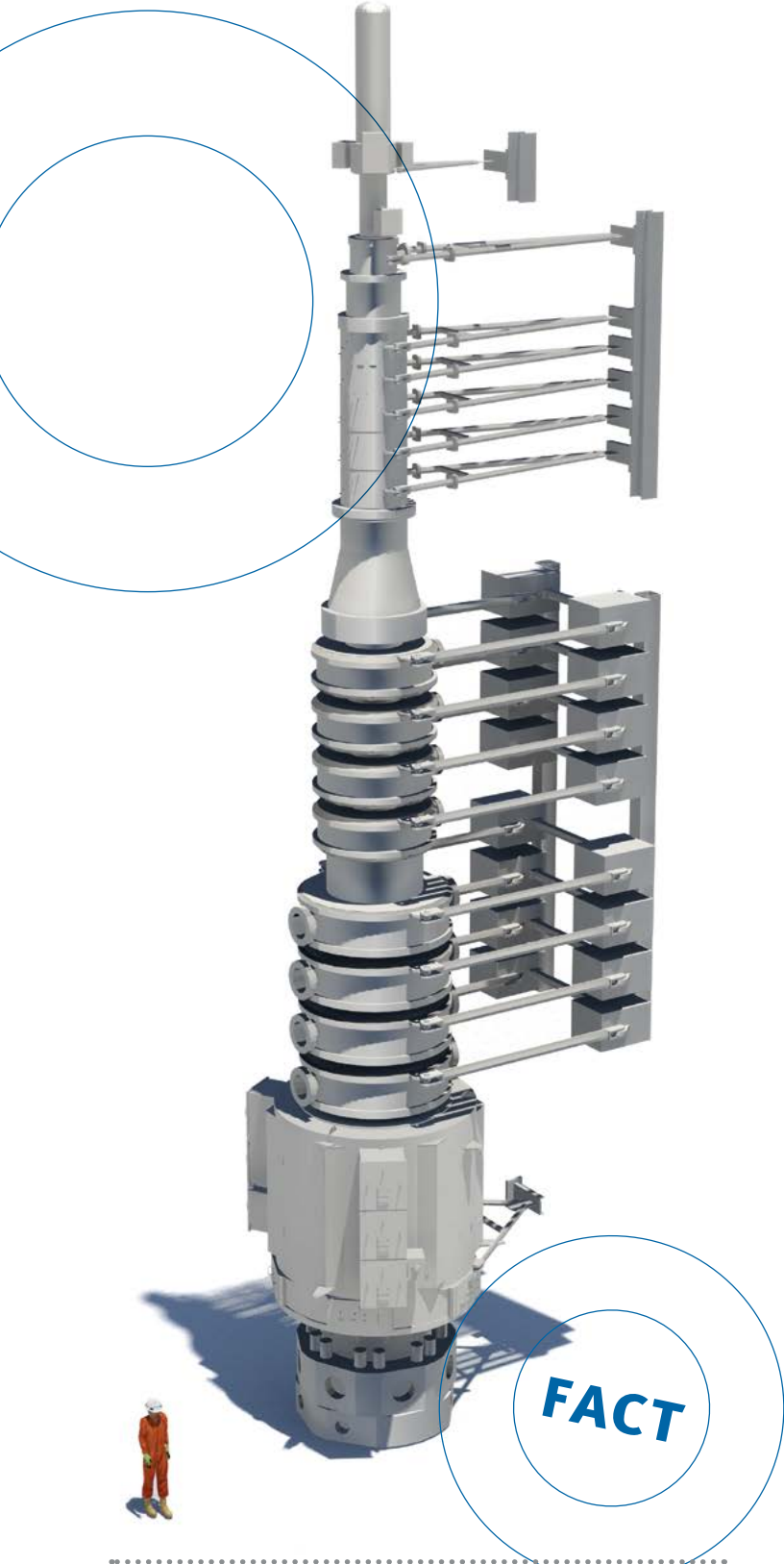
Turret Mooring Systems

The turret mooring system (TMS) consists of a turret assembly integrated with a vessel and fixed to the seabed by means of a mooring system. The TMS contains a bearing system that allows the vessel to rotate around the moored geostatic part of the turret. The TMS includes a transfer system that enables connection of (subsea) pipelines and equipment to the weathervaning vessel such as an FPSO. The transfer

system includes risers and umbilicals between subsea infrastructure and the geostatic part of the turret. Swivel modules forming part of the turret provide the transfer paths for fluids, gasses, power and control signals. The TMS is fully passive and does not require active vessel heading control or active rotation systems.

*Boris Rijnten,
Vice President Technology*





FACT

Our Multi Product Swivels can be higher than the Sphinx of Giza

Standard module size	Up to double 16" ID
Design pressure	50/210/350/700 barg
Design temperature	Up to 130 °C



Kaombo Turret

Turret sizes are steadily growing as fields are being developed in deeper, harsher and more remote locations with greater production requirements. More robust, reliable and safer systems are required, which are also easier to operate and maintain. Kaombo fits that trend, with water depths up to 1,650 m. Each turret can accommodate a nine-point, deep-water mooring spread and 19 riser slots, resulting in

an 8,000 mT system with a 25 m high swivel stack. The main bearing, a roller bearing, is 17 m in diameter, which is equivalent to nearly the length of two double-decker buses. The systems are massive in size and in weight as direct consequences of environmental loads, motions and field specific requirements.

Tower Mooring



Tower Loading Systems

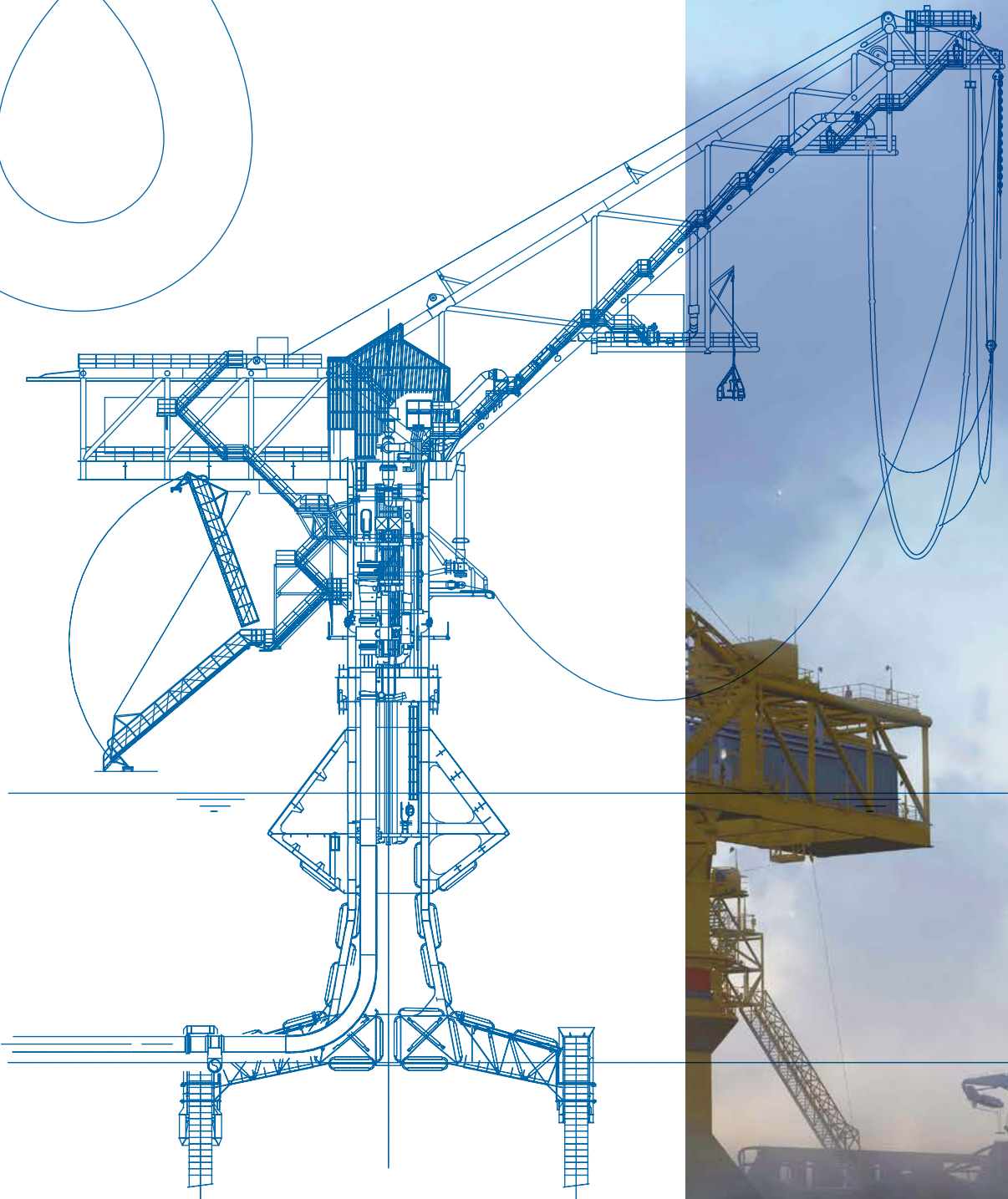
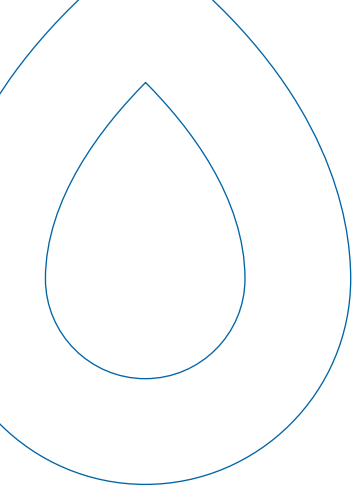
The tower loading system consists of a tower structure that is permanently fixed to the seabed. The tower contains a bearing system that allows a part of it to rotate around the fixed geostatic part. A vessel moored to the tower is able to freely weathervane around the geostatic part of the tower. A fluid transfer system enables connection of (subsea) pipelines to the vessel. The pipeline is connected at the base of the tower.

Swivels provide the fluid, gas, power and signal transfer paths in the tower. Tower mooring systems are typically designed for shallow water depths. Tower mooring systems may include an ice breaking cone structure to operate under arctic conditions to withstand ice on the move of meters thickness while being exposed to a design temperature of -50 °C.

‘Bluewater’s success is acknowledged in being awarded high tech special projects, like the Disconnectable Turret System for the Marine Well Containment Systems (Gulf of Mexico), the Tower Loading Systems in arctic waters (Sakhalin and Noviy Port), the CALM Buoy System for CLOV and the Turret Mooring Systems for the Kaombo FPSOs, both deepwater offshore Angola.’

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*Michel Bonte,
Vice President Business Development*





A Bluewater tower mooring system can be as high as the Statue of Liberty

FACT

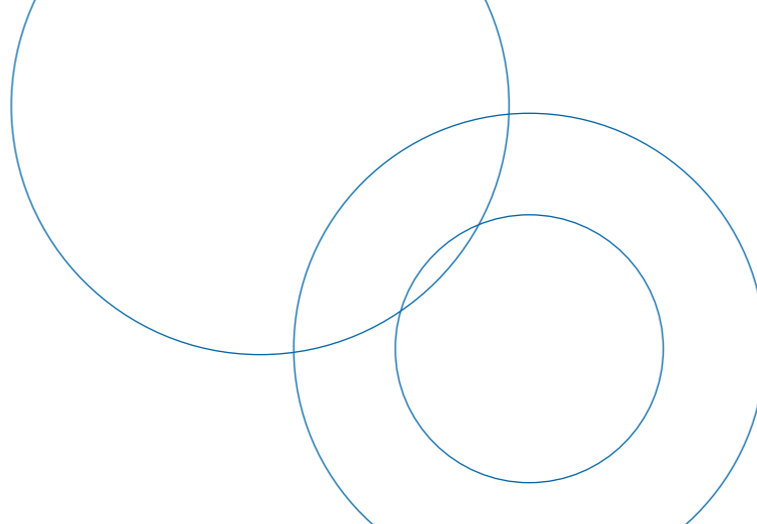
Overall height	87 m
Overall weight	3,000,000 kg

Noviy Port Arctic Loading Tower

The Noviy Port Arctic Loading Tower is suitable to transfer crude oil all year round and has been designed to moor (dedicated) ice strengthened tankers up to 55 kDWT with bow mooring stations. The loading operations could be executed in open water conditions

as well as in ice infested waters. These conditions require highly specialized structures, materials and equipment. The unmanned and fully remotely operated Arctic Tower Loading Systems, enable safe and year-round terminal operations.

Renewable Energy Solutions



Electrical Power Buoy

The e-Buoy system is an electrical power Single Point Mooring system for offshore power supply to ships such as Offshore Service Vessels & Crew Transfer Vessels in offshore wind parks and cruise vessels at anchorage outside ports.

The system can transfer high voltage electrical power to ships when moored to reduce carbon footprints.



Floating Offshore Wind

The Tension Leg Platform is a lightweight foundation to support offshore wind turbines.

The floater is situated out of the wave-zone, minimizing floater motions, resulting in substantial advantages for both the wind turbine and power cable performances.



Floating Offshore PV

The Floating Photo-Voltaic panels use flexible and an extremely light floating substructure that can be mass produced in factories.

The unique design of large floaters allows for easy transport and installation offshore. The floaters are not connected with each other but only with the mooring system.



Green FPSO

The Green FPSO includes solutions for new hydrogen-based products such as green methanol, Sustainable Aviation Fuels and green ammonia.

Existing FPSOs may reduce green house emissions by returning volatile organic compounds (VOCs) during loading of tankers, green power import and limiting emergency flaring by maximizing containment rather than depressurisation of entire systems.



Head Office

The Netherlands

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Bluewater Energy Services B.V.

Taurusavenue 46

2132 LS Hoofddorp

P.O. Box 3102

2130 KC Hoofddorp

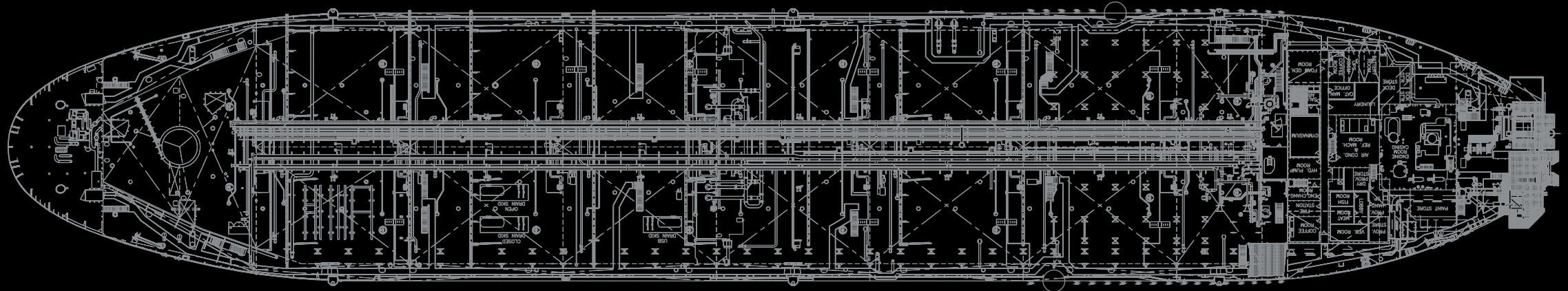
The Netherlands

Phone number +31 23 711 5500



info@bluewater.com

www.bluewater.com



Our Glas Dwr FPSO is as long as
9 blue whales

FACT

Name explanation	<i>Welsh for Bluewater</i>
Length overall	<i>242.3 m</i>
Breadth	<i>42 m</i>
Deck Area	<i>7,985 m²</i>
Accommodation	<i>96 persons</i>
Storage capacity	<i>657,000 bbls</i>
Fluid process capacity	<i>70,000 bbls per day</i>
Field	<i>Kitan, Timor Sea</i>
Date first oil	<i>14 October 2011</i>

Details: Converted new build tanker, previously operated in the UK and South-Africa.

The image features a large, dark blue 'bluewater' logo painted on a light-colored concrete wall. The wall is part of a structure, likely an offshore oil rig, as evidenced by the complex metal framework and lights visible in the background. The background shows a deep blue sea under a twilight sky. A thin white curved line is visible on the right side of the image.

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