

**Next generation vessels:
Loading, Transporting and Installing
offshore – all in one.**



Agenda

1. The Offshore Market

Status Quo, Potentials and Challenges

2. BELUGA HOCHTIEF Offshore

2.1. Strategy and Mission

2.2. Vessel Design

2.3. Crew Strategy

www.beluga-hochtief-offshore.de

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Leonardo Da Vinci laid the foundation for Wind Energy in the 15th Century



Blade Concept

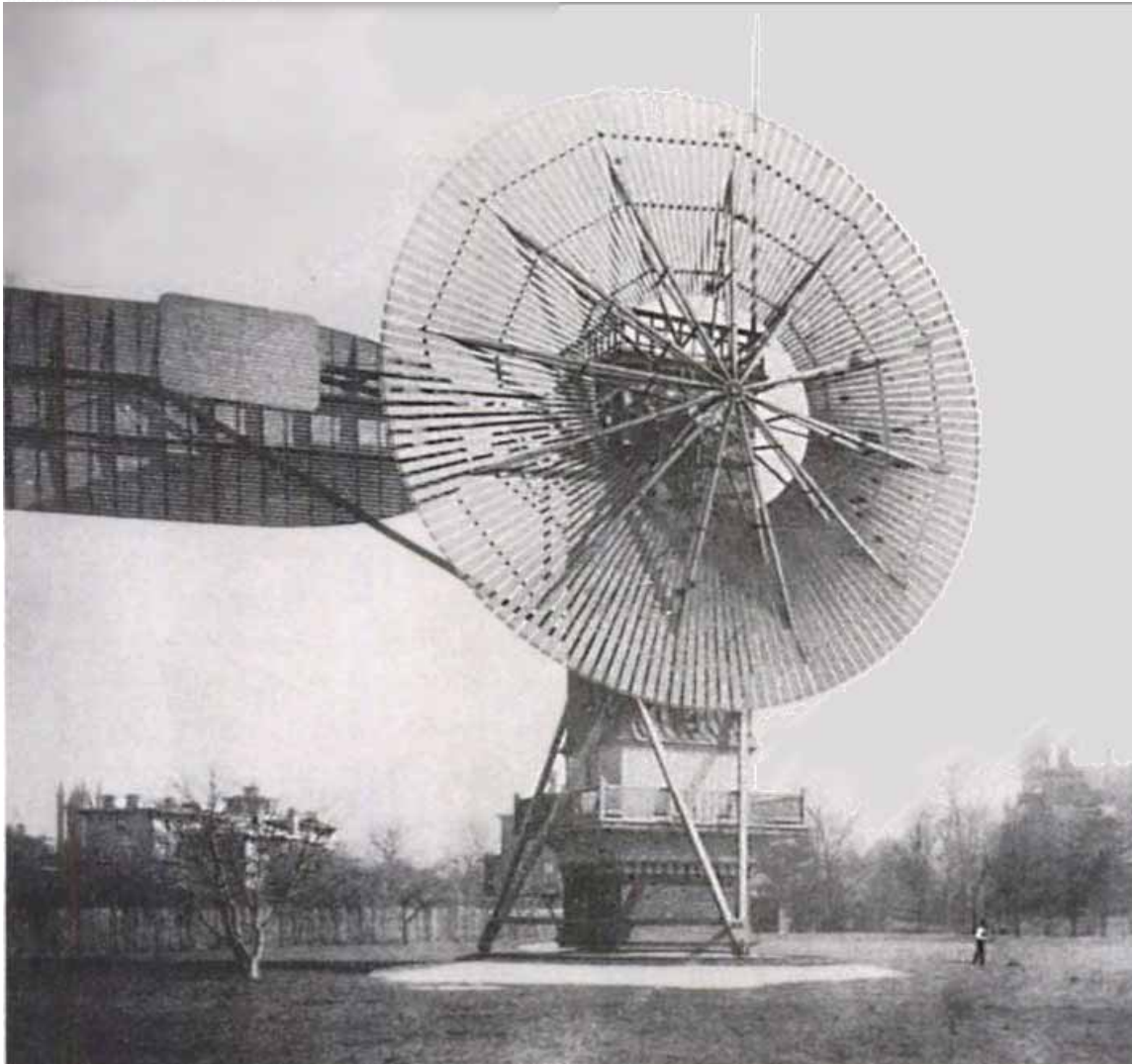


Flow Concept



Drawing of Windmill

First realized in Cleveland (USA) in 1888



- ▶ 18 m High
- ▶ 4 t Weight
- ▶ 12 KW



The first offshore wind park in 1991

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Denmark, Vindeby

- ▶ 450 kw
- ▶ 1.5 to 3 Km distance to port

Offshore wind parks in 2010

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- ▶ Up to 120 m Height
- ▶ Up to 400 t Weight
- ▶ 130 m Rotor (diameter)

- ▶ Foundation weights up to 800 t

Germany – Alpha Ventus, 2010 (5 MW)

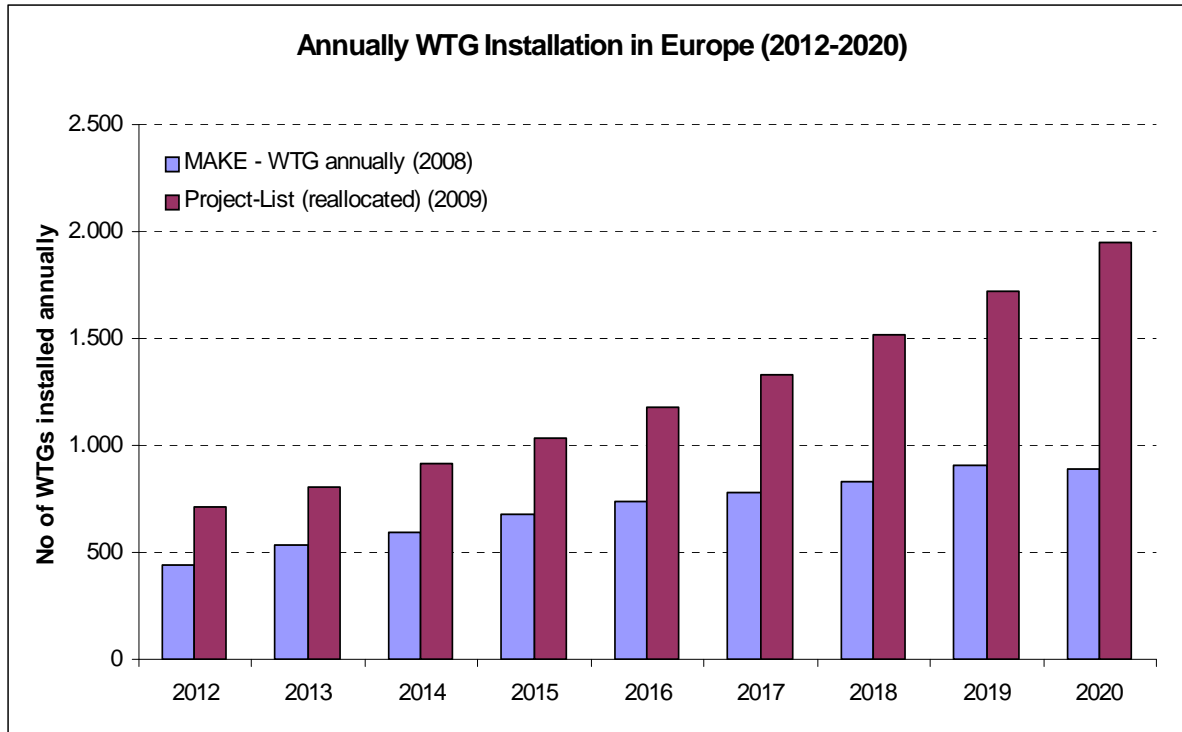


Germany



Length: 50 m, Diameter: 2,70 m, Weight: 160 t

Future projects constitute a challenge for today's vessels



Ø 800 WTGs planned per year with:

- Increasing weight of components
- Increasing Distance to port
- Increasing water depth: 1/3 of all projects are being built in water depth of up to 35 m

Today's equipment is inadequate: The equipment is either too small ...



... or the equipment is too big

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Stanislav Yudin

- Day Rates: 400-500.000 €
- Operation: Greater Gabbard (2010)

Thialf

- Day Rates: up to 1 M €
- Operation: Alpha Ventus (2009)

The offshore market and the conclusion

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- The Offshore market is booming.
- A large number of projects are scheduled.
- 2012 – 2020: New Installation of 800 foundations and wind turbines p.a.



- Installation capacities and equipment don't meet installation requirements.
- The market requires over 20 highly sophisticated installation vessels.



**The Kick-off for the joint venture
BELUGA HOCHTIEF Offshore**

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BHO – Best of two worlds

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+



Two world wide leading companies from maritime and civil engineering field bundle their competencies in a joint venture.



Start of cooperation in March 2008
Company foundation in April 2009

Our Goal: Next generation vessels combining all in One

- We perform as ship owner and manager
- We focus on + 5MW wind turbines
- We work in deeper water depths
- We operate in large distance to port

Loading



**Future vessel:
“all in one
solution”**

Installing

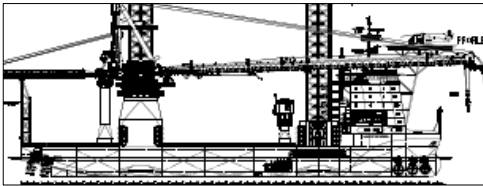


Transporting



Milestones up to date

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- ▶ Start of cooperation in March 2008
 - Market Analyses
 - Concept Design
 - Business Planning
- ▶ Company foundation in May 2009
- ▶ Model tests at MARIN in February 2010
- ▶ Completion of Basic Design and class approval in May/June 2010

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2. The Role of BELUGA HOCHTIEF Offshore

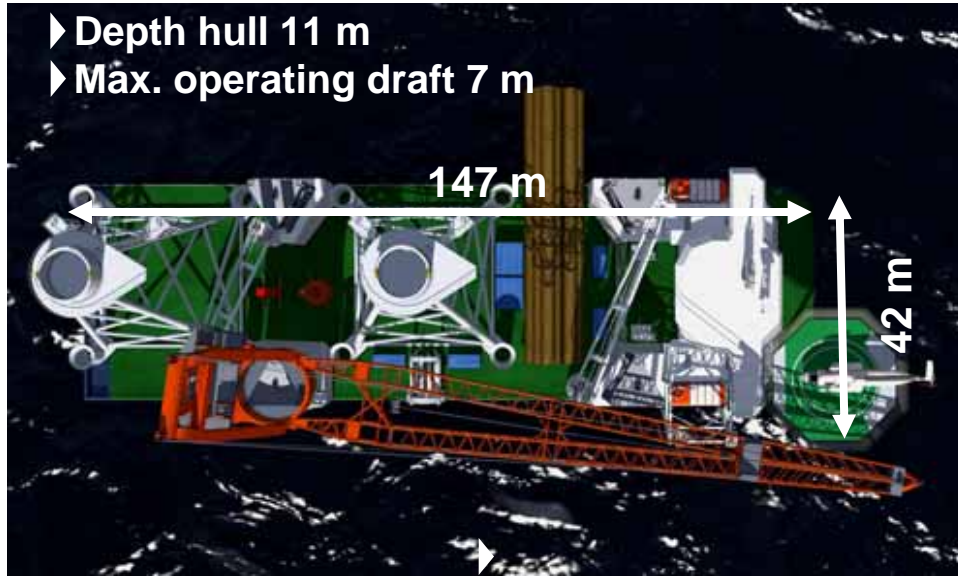
2.2. Vessel Design

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Installation Process - Tomorrow

Main Dimensions Hull

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Installation Process - Tomorrow

Transit to Site

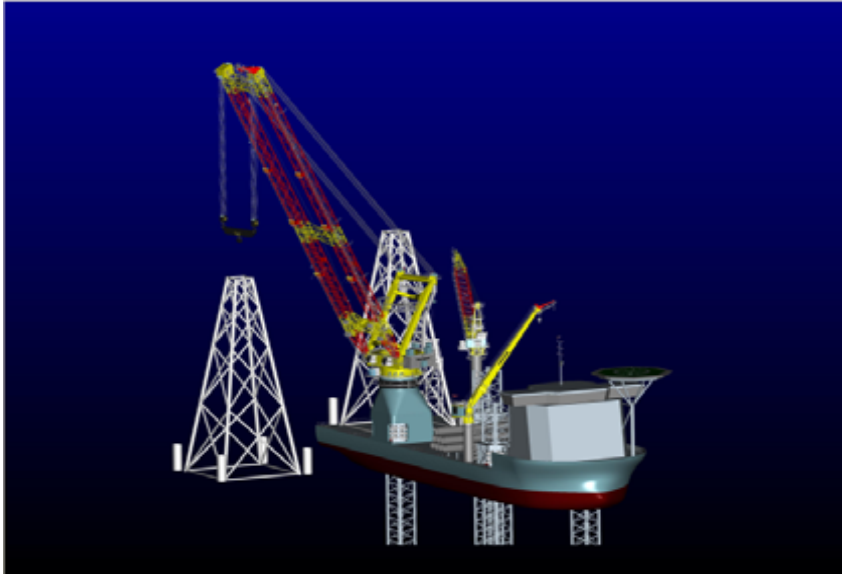
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- ▶ Self-sustaining
- ▶ Self-propelled
- ▶ DP2 capability
- ▶ 8.000 t cargo load capacity
- ▶ Feederling is not necessary

Installation Process - Tomorrow

Jacket and Turbine installation



- ▶ Crane around the leg
- ▶ 1,500 t SWL
- ▶ Up to 50 m water depth

- ▶ Loading Scenarios Jacket installation:
 - 2 jackets up to 1,000 t
 - 4 jackets up to 600 t
 - 7 monopiles up to 500 t

- ▶ Loading Scenarios Turbine installation:
 - 600 t nacelle weight @ 120 m height
 - Up to 7 WTG / 5 MW+
 - Up to 12 WTG / 3.6 MW

HLJV Modell-Test successfully passed in Febr. 2010

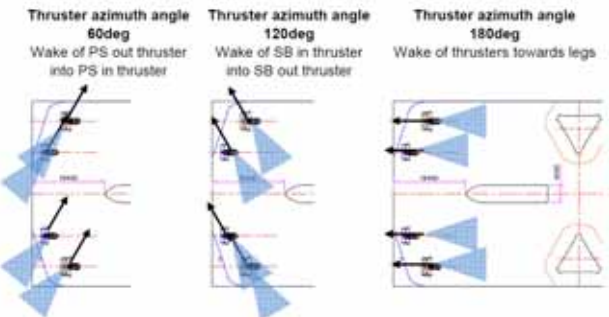
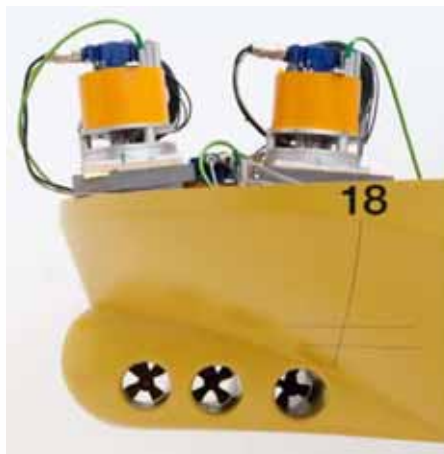
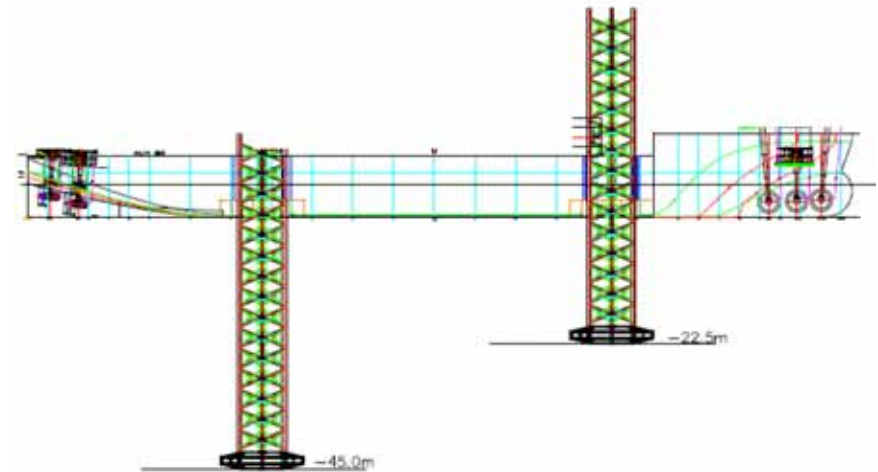


Phase I: Resistance and Propulsion Tests



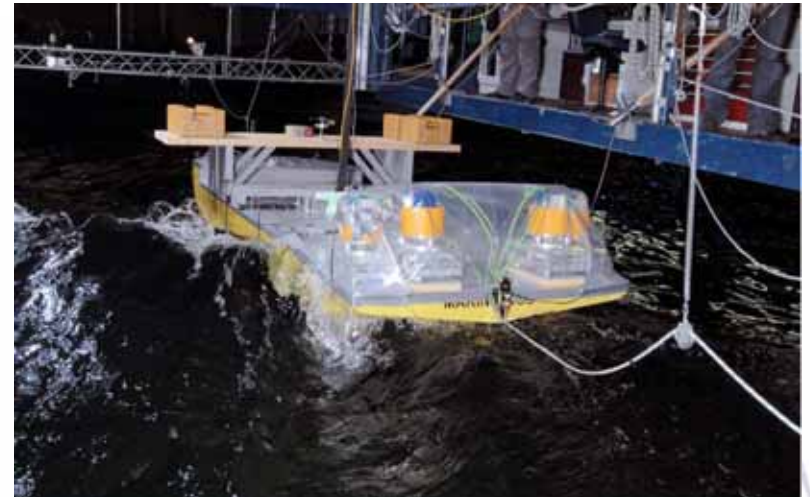
Phase II: Current Loads and Thruster Efficiency Tests

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Phase III: Seakeeping Test

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Crew strategy for one vessel

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54 Crew members

Captain
Nautical Officer
Technical Officer
Crane operator
Ship's mechanic
Rating Deck
Rating Machine
Electrician
Cook
Catering (Steward)

22 Key personnel

Captain
Nautical Officer
Technical Officer
Crane operator
Boatman
Electrician

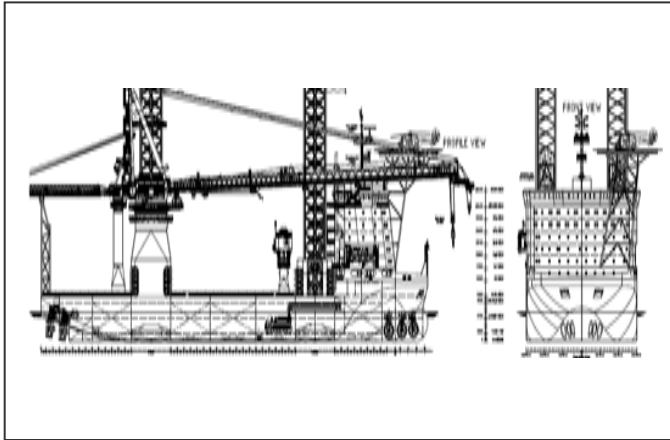
How to recruit and qualify?

1. Gaining admission to existing
Pool of heavy-lift
experienced
Sea crew of BELUGA

2. Use of BELUGA
Qualification facilities:
Sea Academy / BOTA / Elsfleth

3. Only in case of need:
Recruiting from the market

Upcoming Next Steps



Ship Construction as from August 2010



Market entry mid of 2012

Next-Generation Vessels

Loading, Transporting, Installing Offshore -All in one

Questions?



Back-up



Beluga - Our Maritime Partner

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- Established in 1995
- Management and CEO Niels Stolberg
- 500 employees and 1300 Sea Crew staff
- World wide leading project- and heavy-lift carrier
- Leading position in most important markets: USA, Asia, Europe, Australia, Pacific
- Turnover: € 418 Mio. in 2008

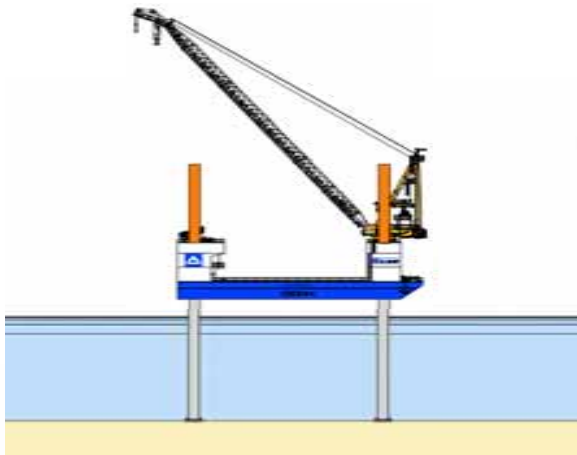


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- Established in 1873
- World wide fifth largest construction
- 64.500 employees world wide
- Integrated portfolio: Development, construction, services, concessions and operation services
- Leading position in most important markets: USA, Asia, Europe, Australia, Pacific
- Turnover: € 20,6 Billion in 2009

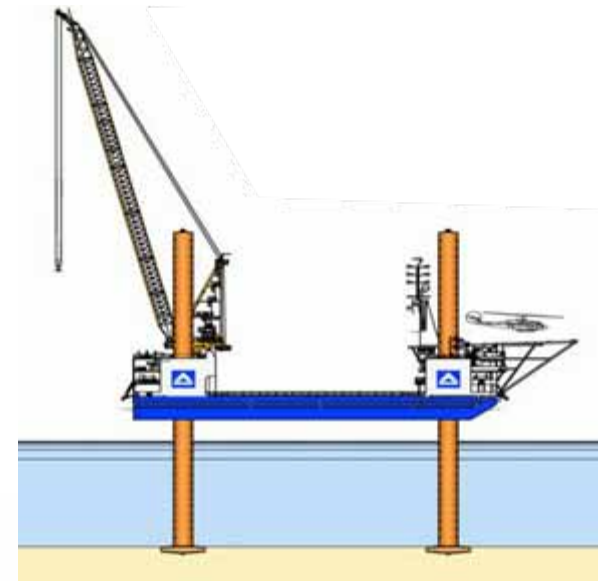


Developing and operating of Jack Ups



ODIN

Barge: 46,10 x 30,00 x 4,6 m
Legs: 60 m/2,0 x 2,0 m
Water depth: 35 m
Payload: 900 t
Crane: 300 t
Operation: Nov. 2004



THOR

Barge: 70,00 x 40,00 x 6,0 m
Legs : 82 m/ø 3,7 m
Water depth: 50 m
Payload: > 2.500 t
Crane: 500 t
Operation: May 2010