Autumn 2006

Current times

news and developments from the **engineering business** limited

BOWTIS has landed

In a genuinely significant event for the deepwater offshore wind industry, the Beatrice Offshore Wind Turbine Installation System (BOWTIS) designed and built by EB for Talisman Energy (UK) Limited has been used to install the first 5MW turbine at the Beatrice Offshore Windfarm Demonstrator Project.

This project breaks new ground across the board:

- the first offshore wind turbine to be installed in a single lift from a floating barge
- the first REpower 5MW turbine to be installed offshore
- the first offshore wind turbine to be installed in 45m of water

"We have been campaigning for the concept of installing offshore wind turbines in a single lift since 2002 and the Beatrice project has allowed the demonstration of both the feasibility and benefits of this concept. This is the kind of project EB excels at – the rapid delivery of an innovative and successful offshore solution – and an achievement that both EB and its North East of England supply chain should be rightly proud of"

Mike Watchorn, *Engineering Director*

Photo: Copyright REpower

BOWTIS has three main functions:

- to allow the full assembly of the 85m high turbine onshore
- to allow the safe vertical transit of the 1,000t turbine and lifting equipment to site
- to allow a crane barge to land and align the turbine on a fixed jacket with an impact of less than 0.3*g*

Photo: Copyright REpower

The EB system comprises three key elements, weighing 530t:

The Jacket Interface Frame (JIF) – is fitted to the offshore jacket and provides the landing structure for the turbine

The Turbine Interface Frame (TIF) – provides a base for the turbine on land during assembly and the main lift point. It also incorporates the hydraulic Soft Landing and Alignment Systems – like a festive Christmas tree stand, but 22m in diameter

The Spreader Beam (SB) – supports the top of the turbine and routes the lift wires to the turbine base

BOWTIS will be used to build and install a second turbine and EB hopes that the technology will subsequently enable the efficient mass installation of offshore turbines.

Pipeline Escalator (PES) **on the move**

Following completion of the build of the system, the 343t PES was rolled out to the Teesside quayside as a fully assembled unit on a series of powered trailers. It was then lifted onto a transport barge, using one of the largest mobile crane's in the UK, and delivered safely to the Huisman yard in Rotterdam.

On arrival it was positioned next to the Huisman designed and built J lay tower to allow completion of acceptance testing and integration with the lay tower. EB engineers have been a regular fixture in Holland supporting this work and are now contemplating the move to Angola where the system will be installed on the Acergy Polaris Pipelay barge.

Once completed, the fully upgraded Polaris is scheduled to work for BP on its Greater Plutonio development.

CAROUSEL **starts its work**

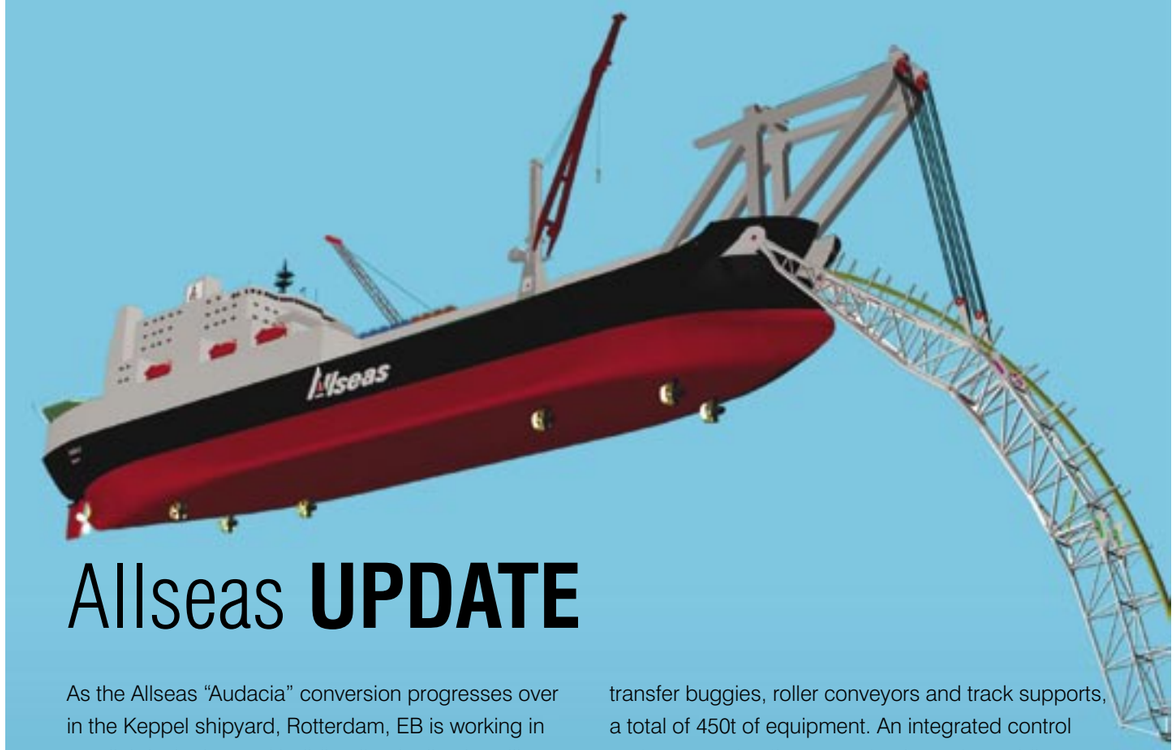
Just 36 weeks after the initial kick off meeting, Subsea 7's 3000t capacity carousel system was completed and loaded out onto its transport barge for shipment to Stavanger, Norway. To minimise commissioning time, the equipment was shipped fully assembled and on arrival was immediately installed on the Skandi Neptune.

A 120km umbilical was carefully spooled onto the carousel with the EB supplied compensator and level winder ensuring that the high value cable was loaded correctly and without damage.

On completion of spooling, the vessel set sail for a project offshore Norway. At the start of the lay programme there were some teething problems with the system, but EB provided engineering support for this phase of the project and over the course of four weeks the umbilical cable was successfully laid.

The carousel has subsequently completed a second installation project and will soon be starting its third.

Illustration: courtesy of Allseas



Allseas **UPDATE**

As the Allseas "Audacia" conversion progresses over in the Keppel shipyard, Rotterdam, EB is working in parallel designing and building its pipeline handling system. The majority of the equipment is now under construction at EB's new Hadrian Yard facility on the banks of the River Tyne.

The pipeline handling system is in effect an offshore production line for the building and deployment of subsea pipelines. It comprises 38 individual components including, line up tools, welding trolleys, transfer buggies, roller conveyors and track supports, a total of 450t of equipment. An integrated control system operates the separate elements enabling the pipe sections, weighing up to 24t and 12.5m in length, to be welded together and safely laid.

Working to a tight schedule, a close working relationship has developed between the Allseas and EB project teams and this has undoubtedly contributed to the speed and quality of the work completed so far.

Assembly line at EB's new Hadrian facility

Trenching Plough – **advances**

The Offshore Industry, like many others, is subject to peaks and troughs in demand whether related to exploration or production. Each segment of the industry has its own rules, which govern the demand for vessels and associated equipment. In the past, rapid market variations have made life difficult for many supply companies.

As a reliable and enthusiastic provider of a wide range of specialist offshore equipment, EB has adjusted to the highs and lows of the oil and gas business by spreading its exposure over a number of additional markets such as Marine Defence, Offshore Renewables and Submarine Telecoms.

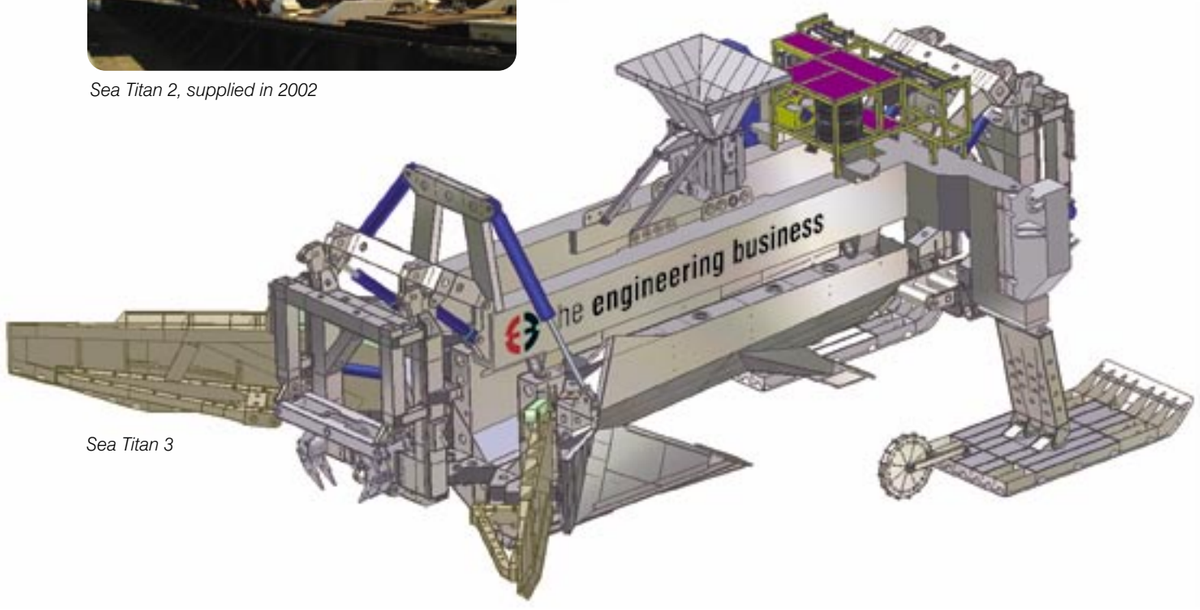
When EB was established in 1997, one of its leading products was the subsea trenching plough. Following a peak in the late 90's / early 2000's, demand declined with the collapse of the submarine telecoms market and the static nature of the oil and gas trenching sector. However, with the increase in offshore activity over the past two years, the number of enquiries for trenching equipment has started to rise once again and real projects are now being quoted on a monthly basis.

During the market lull, EB continued to develop its core ploughing technology, adding new features to improve productivity and the degree of protection given to subsea cables or pipelines.

This process continues with the development of the new Sea Titan 3 pipeline plough illustrated below, building on the lessons learned from Sea Titan 1 and 2, allowing more efficient trenching of pipelines to greater depths.

Sea Titan 1, supplied in 2002

Sea Titan 2, supplied in 2002



Sea Titan 3

EB wins new build flexible lay system contract

Oceanteam Power and Umbilical AS has selected EB to provide a complete Flexible Lay System for its newbuild vessel the NorthOcean 101. The multi million pound EPIC project includes the design, build, installation and commissioning of a turnkey spread of equipment that will be utilised for the installation of flexible product in the Offshore Power, Renewable and Hydro Carbon Energy Sectors.

EB will supply a 5,000t capacity carousel, the complete product deployment and overboarding system as well as a fully integrated control system, all for installation on the new build vessel currently under construction in Spain.

Over the course of a year more than 900t of high quality equipment will be designed and built in the North East of England.

Oceanteam commented:
"The selection of The Engineering Business as supplier was facilitated by its reputation for being able to deliver a quality product based on the latest technology on time and on budget.

Oceanteam consider the coupling of our experience with EB's technical and design capability will result in a technologically advanced lay spread to service the offshore industry."

Engineering Business **excellence**

EB growth and achievement continues at a fast pace and I am pleased to report some real strengthening of the business. We aim to provide a better service to our customers and meet the increased demands of our markets.

In the past six months we have delivered a carousel system, a pipeline elevating system and are well on the way to delivering the Audacia pipe lay system and the Nato submarine rescue PLARS. Bowtis represents a genuine 'world first' for EB. The deck spread of equipment for the Oceanteam new build is a logical extension of EB activities in cable and pipelay systems and is our largest order so far. EB excellence is based on its people and they are the greatest pleasure at EB. We continue to recruit well, with a number of new roles being established to allow for future growth. A lot of what we do in engineering is based on the judgement of our engineers and the quality and creativity of that judgement is crucial to us. We are building an ever-more capable team.

We have expanded our office at Riding Mill and are planning for further space soon. EB is moving its Tyneside workshop base to the Hadrian Complex in Wallsend where we currently have 65,000 ft^2 of workshop space on hire with adjacent quayside facilities for offloading large systems. We also have other major riverside sites available to us on the Tyne and the Tees.

These are exciting times and we thank our customers for providing the opportunity to be involved in such rewarding projects.

Tony Trapp, *Managing Director*

EB events – see you there…

Event	Venue	Date
RIO Oil and Gas	Rio de Janeiro	11 – 14 September 2006
DOT 2006	Houston	28 – 30 November 2006
Subsea UK 07	Aberdeen	8 February 2007
MCE Deepwater Development 2007	London	27 – 29 March 2007
OTC	Houston	30 April – 3 May 2007

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