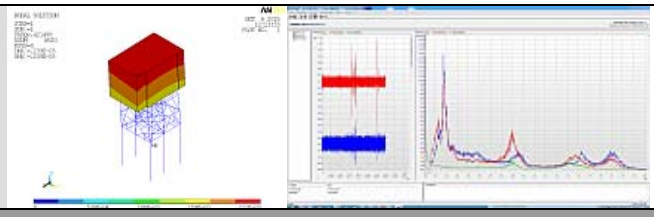
Vienna Consulting
Engineers ZT GmbH

PART SAZE STRUCTURAL ENGINEERING

VCE Offshore Reference Projects

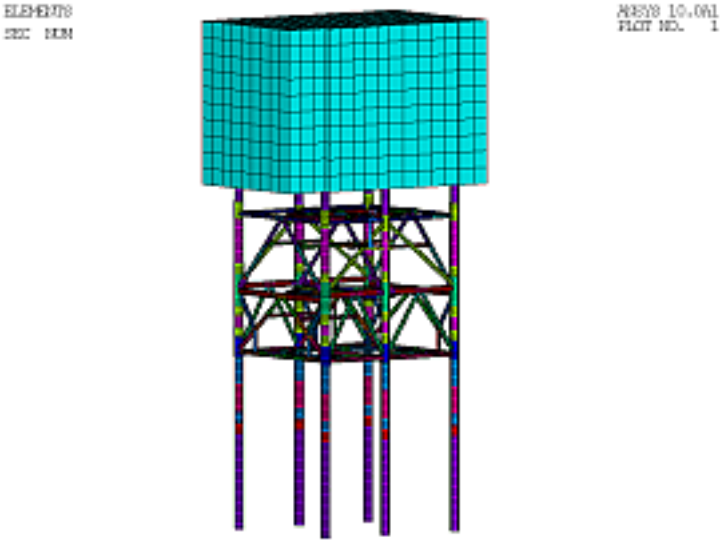


HelWinBeta Platform

The objective of the monitoring system is to identify the performance of the structure and the interrelation of piles and jacket. For this purpose a system identification campaign is proposed. It consists of:

- Measurement of the dynamic response of the platform by a mobile system
- Work out a structural model and perform a dynamic analysis
- Compare measured frequencies with computed frequencies
- Adjust the model to the measured characteristic
- Draw conclusions on performance
- Work out recommendations
- Explain the findings in detail

- Client: TenneT TSO GmbH
- Location: North Sea, Germany
- Service Period: since 2015



BRIMOS® Services conducted:

Lifecycle Management:	☐ Condition Assessment	☒ Condition Monitoring	☐ Rehabilitation Planning	☐ Quality Control
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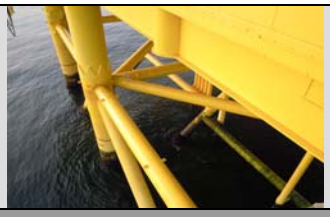
Special Measurements:	☐ Attendant Monitoring	☐ Noise and Vibrancy	☐ Deflection Measurements	☐ Seismics

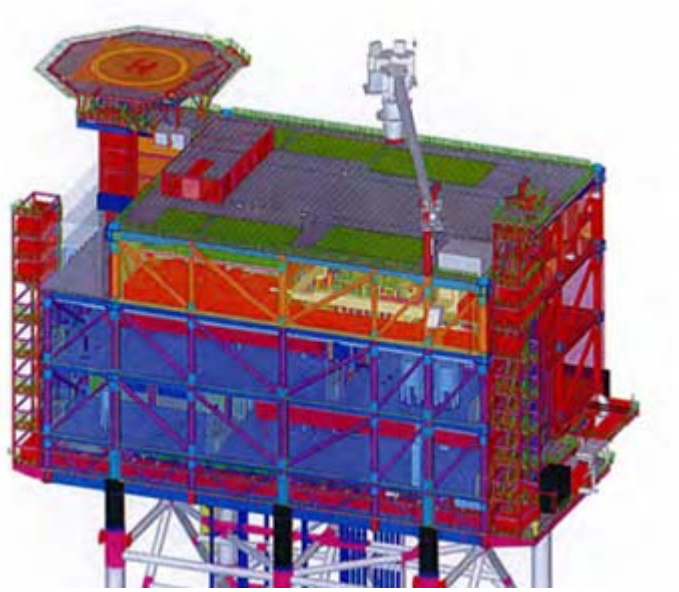


Development of a SHM Concept for DolWinAlpha Platform

The scope of work included the development of a comprehensive monitoring concept for the platform and the drafting of a design document for life-time monitoring. The special focus was on the dynamic behavior of the structure, the welded joints and the grouted joints.

The concept also included the estimation of implementation costs for all monitoring services.

- Client: TenneT TSO GmbH
- Location: North Sea
- Service Period: 2014



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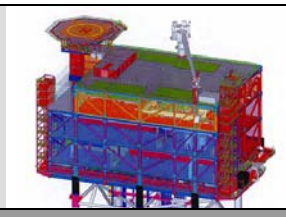

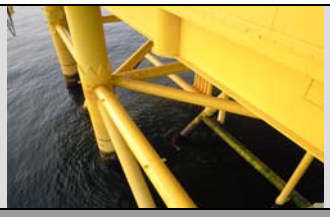

Motion Analysis DolWinAlpha Platform

The platform DolWin alpha was experiencing unexpectedly high motions in the topside, even in moderate weather/sea conditions, which are having a detrimental effect on the platform's electrical equipment and may also result in premature fatigue damage.

The scope of work included a motion analysis of DolWin1 platform split up into two phases. In the first phase, measurements of the platform movements were taken and an analysis of the data was performed. Within the second phase, the achieved data was compared with the expected structural response of the platform derived from a dynamic structural model. The final step was to propose a technical solution to reduce the motions.

- Client: TenneT TSO GmbH
- Location: North Sea
- Service Period: 2015

BRIMOS® Services conducted:

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PART SAZE STRUCTURAL ENGINEERING

brimos® BRIDGE MONITORING SYSTEM



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On-board Calibration and Adjustment of Mooring System of AmirKabir Semi-Submersible Drilling Unit in the Caspian Sea

The mooring system of the AmirKabir semi-submersible drilling unit, which is located in the Caspian Sea, was calibrated. Therefore the cable (chain) forces of a total of 8 winches were measured for different loads and compared against the winch load monitoring system. In case of unacceptable deviations the winch system was adjusted to match the cable (chain) force readings.

The services were carried out by the VCE from 26 April to 08 May 2014.

The cable (chain) forces were determined by the BRIMOS® 12.1 based method developed by applying the BRIMOS® Recorder with an external 3D-accelerometer. This equipment has been applied worldwide for measurement of cable forces at more than 7,500 cables since 2001. The recorder captured the vibration behavior of cables with an accuracy better than 0.1 %. The cable force was determined from the geometry of the cable, the cable properties and the fundamental frequencies.

- Client: The North Drilling Company
- Location: Caspian Sea, Azeri Continental Shelf
- Service Period: 2014

BRIMOS® Services conducted:

Lifecycle Management:	☒ Condition Assessment	☐ Condition Monitoring	☐ Rehabilitation Planning	☐ Quality Control
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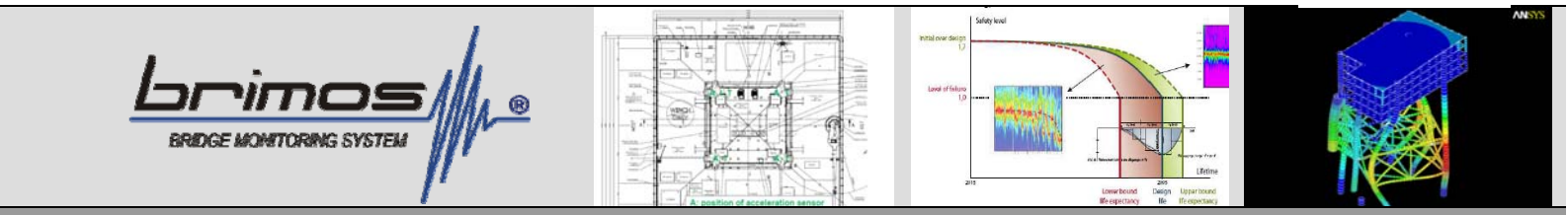
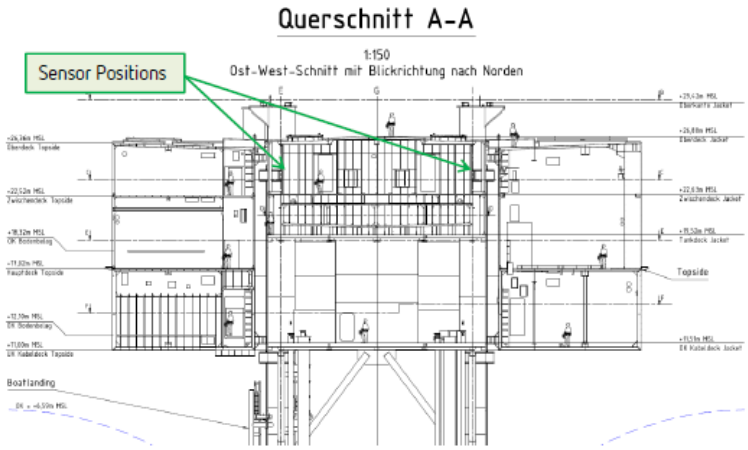


Development of a SHM Concept for OSS Baltic 2

The scope of work included the development of a comprehensive monitoring concept for the platform and the drafting of a design document for life-time monitoring. The special focus was on the dynamic behavior of the structure, the welded joints and the grouted joints.

The concept also included the estimation of implementation costs for all monitoring services.

- Client: Weser Wind GmbH
- Location: Baltic Sea
- Service Period: 2013



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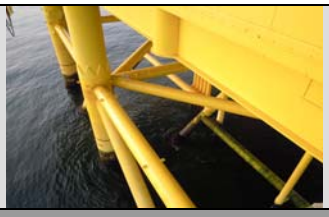


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Development of a SHM Concept for BorWinAlpha Platform

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The concept also included the estimation of implementation costs for all monitoring services.

- Client: TenneT TSO GmbH
- Location: North Sea
- Service Period: 2014

BRIMOS® Services conducted:

Lifecycle Management:	☐ Condition Assessment	☒ Condition Monitoring	☐ Rehabilitation Planning	☐ Quality Control
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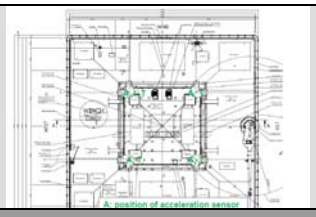
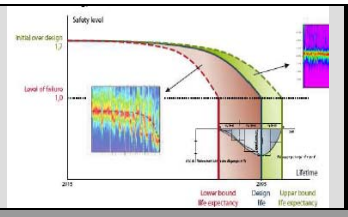
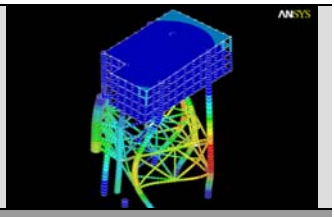




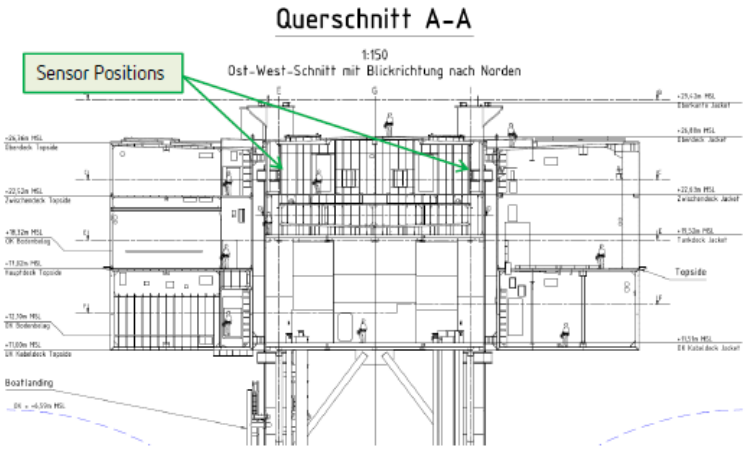


Supply of Sensors for the Permanent Monitoring of OSS Baltic 2

The OSS Baltic 2 was equipped with a comprehensive monitoring system including different types of sensors for the permanent monitoring of the structure. The main focus was on motion analysis of the platform and the assessment of the life-time behavior and conditions.

VCE supplied the high sensitive 3D-accelerometers for the installed monitoring system. The contract also includes long term guaranty and maintenance for the equipment.

- Client: Weser Wind GmbH
- Location: Baltic Sea
- Service Period: 2014



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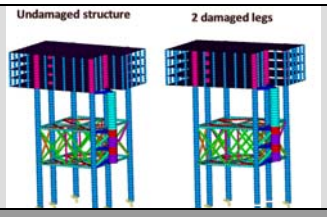

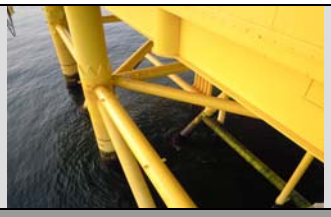

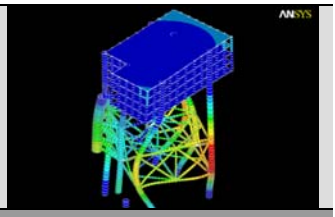

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