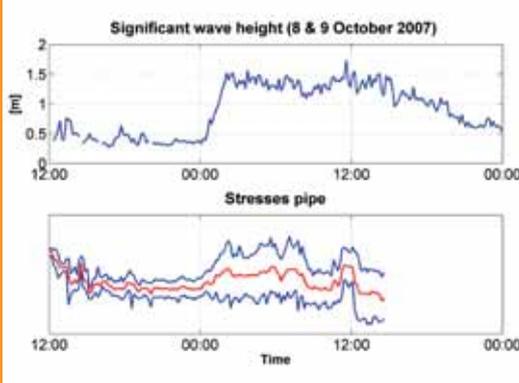




Courtesy Wintershall



Floating pipe spiralling provides alternative to pipelaying vessels

A new method for the installation of offshore pipelines has been developed and tested by Wintershall. MARIN was contracted to perform measurements during the tests and to validate strength assessment calculations. Pipe spiraling is the new kid on the block. Report explains.

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Conventional pipelaying methods utilise large, dedicated vessels but a new pipelaying method does not require such expensive equipment. Instead of the traditional pipelaying vessels, this method is based on winding the pipes into a flat floating spiral with the addition of added external buoyancy and then this is towed to the field. During the pipelay operation the external buoyancy is deflated and removed in a controlled manner, ensuring a successful installation of the pipe.

Successful trials

To verify the concept of pipe spiraling, two days of trials were performed in October 2007, with approximately one kilometer of pipe which was spiraled into a reel with a diameter of around 100 m. Prior to the tow, the pipe was pulled onboard a

barge which was positioned near the shore and then the external buoyancy was added. When the winding was completed the pipe was taken under tow to a location some 10 kilometers above the Frisian Islands.

Wintershall contracted MARIN to perform measurements during the trials. In addition, MARIN was requested to validate, using the measurements, existing towing and fatigue calculations.

Towing validation data comprises the towing loads and the velocity through water, including direction. Validation data on fatigue was obtained from stress measurements in the pipe. In order to relate the towing and fatigue calculations to the waves, a wave-radar at the bow was installed in combination with a wave frequency motion sensor to correct the wave measurements for ship's motions. The analyses of the measurements comprised the estimation of the drag coefficient, Response Amplitude Operators of the stresses and the fatigue consumption as a function of the sea states measured.

Following the successfully completed trials, Wintershall is currently performing a feasibility study to apply the floating pipelay method to a North Sea project.