

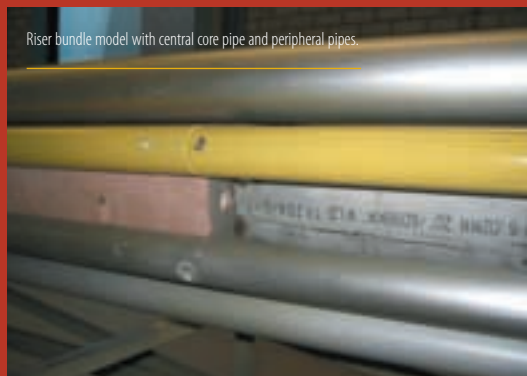
A busy year for VIV test apparatus in High Speed Basin

The newly-developed riser VIV test apparatus in the High Speed Basin has seen a productive year with three successful test campaigns. Report briefly describes them.

The year started off with an interesting campaign, managed by 2H Offshore (see MARIN Report no.82). At the start of this project, the set-up underwent some important modifications. The long spring blades of the original set-up were replaced by linear bearings, ensuring pure, cross-flow oscillations. A bare pipe was extensively tested at Reynolds number 40,000 and compared with existing bare pipe data at Reynolds number 10,000. The apparatus has been developed for testing riser sections at full section scale and at a 3.5 m length. Consisting of a powerful oscillator, the apparatus is mounted on the overhead carriage. The test section is forced in a harmonic oscillation while being towed. Recorded hydrodynamic loads of the vortex shedding process can be used for calibrating VIV prediction programs, such as SHEAR7 and VIVARRAY. Current speeds, oscillation frequencies and oscillation amplitudes are at real values, which avoids the uncertainties related to so-called “Reynolds scale effects”.

Detailed scale models

In the second test campaign, a novel riser bundle design was tested for Stolt Offshore in Paris. A detailed scale 1:8.25 model of the actual bundle was tested for a large number of flow angles and flow conditions. The bundle consisted of several



5205



35346

peripheral pipes attached to a central core pipe with buoyancy members. A total of 390 tests were carried out. The bundle-specific, lift load coefficients will be used for further VIV analysis of the full-length system in various current conditions.

A third test campaign was carried out for Lankhorst-Mouldings, which is based in the Netherlands. Lankhorst has developed a 3-shell riser VIV suppression system, which is self-aligning and fully interlocking. A systematic series of strake designs was tested for optimum VIV suppression efficiency. In addition they had to meet the challenging constraints of mechanic robustness.

With a trio of test campaigns successfully completed, MARIN is sure the new riser VIV test apparatus has a busy life ahead of it as demand continues to grow.

Jaap de Wilde
J.dewilde@marin.nl

MARIN