

A large, orange, segmented pipe with Tri Strakes Combi VIV suppression devices is shown underwater. The pipe is illuminated from above, creating a bright blue and white light effect. The background is a dark, murky blue-green water.

# Resilient & stackable vortex induced vibration suppression

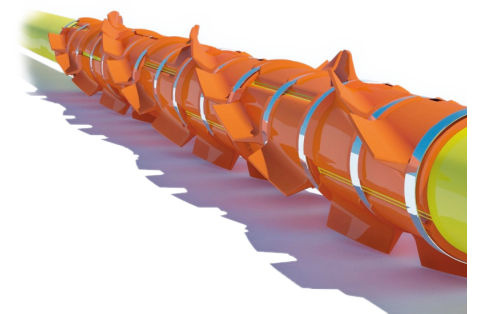
## Tri Strakes<sup>®</sup> Combi

Pipelines unsupported over free spans, such as steel catenary risers and rigid steel flowlines, are prone to vortex induced vibration (VIV) fatigue, which can cause serious performance issues such as pipe girth weld failure or premature pipe malfunction.

Developed in response to market demand, the Tri-Strakes<sup>®</sup> Combi is a high quality, cost effective VIV suppression system manufactured by CRP Subsea. The system consists of overlapping and interlocking mouldings, with three-start helical strakes to provide an effective triangular or trapezoidal strakes profile.

Working with polymers across a number of technologies and industries, CRP Subsea was able to use insight and innovation to improve packing and handling factors using best-value engineered solutions. The established manufacturing process means that the Tri-Strakes<sup>®</sup> Combi can be produced up to three times faster than systems manufactured using traditional techniques, ensuring shorter lead times. The product is manufactured in marine grade polyurethane (PU), giving the benefits of traditional cable and flowline impact and abrasion protection with an effective VIV suppression profile.

To perform at every level, CRP Subsea built up a wealth of in-house VIV knowledge through consultation with industry renowned hydrodynamicists, alongside computational analysis. Physical hydrodynamic testing combined with in-house impact, axial slip and load bearing capacity testing has produced a hydrodynamically efficient and load bearing capable product. All materials and geometries used are fully qualified for long term subsea use.



Each section of the system has been designed as a single, lightweight component, enabling quick and easy pre-install onshore or install offshore. The hinged design permits the system to be stacked efficiently during shipping, ensuring more efficient and cost effective transportation and installation.

## Benefits

- Cost effective, high density packaging
- Light weight and easy to handle
- Impact and abrasion resistant
- Moderate S-Lay and full J-Lay load bearing capacity
- Temperature resistant up to 60 °C / 140 °F
- Qualified geometry and materials
- Quick installation

## Applications

- Risers
- Pipelines



For a stackable and lightweight vortex induced vibration suppression solution take a look at our Tri-Strakes® Lite product at:  
[www.crpsubsea.com/tri-strakes-lite](http://www.crpsubsea.com/tri-strakes-lite)

For a highly resilient vortex induced vibration suppression solution take a look at our Tri-Strakes® Stinger product at:  
[www.crpsubsea.com/tri-strakes-stinger](http://www.crpsubsea.com/tri-strakes-stinger)



CRP Subsea delivers innovative and reliable offshore solutions that maximise business performance to meet your needs. Our dedicated and highly skilled staff are always on hand to provide seamless process support from initial idea, through to delivery and beyond.