



# Drilling riser buoyancy systems

MATRIX COMPOSITES AND ENGINEERING

# The world's most advanced

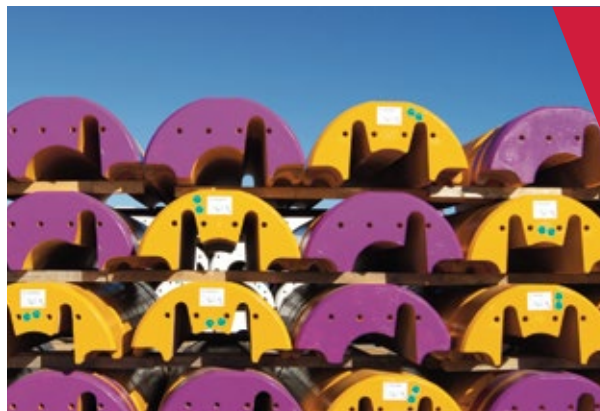
As exploration depths get ever deeper, only the very best will do.  
Matrix's drilling riser buoyancy systems lead the world in quality and performance.

Matrix is a world leader in syntactic foam technologies. Its state-of-the-art manufacturing facility in Australia produces modules in the lowest available densities, which is why they are renowned for their strength and light weight.

This allows for increased rig operating depths and widens a rig's operating window in high current conditions. Matrix manufactures buoyancy systems certified to 12,000ft with all modules colour coded for easy identification.

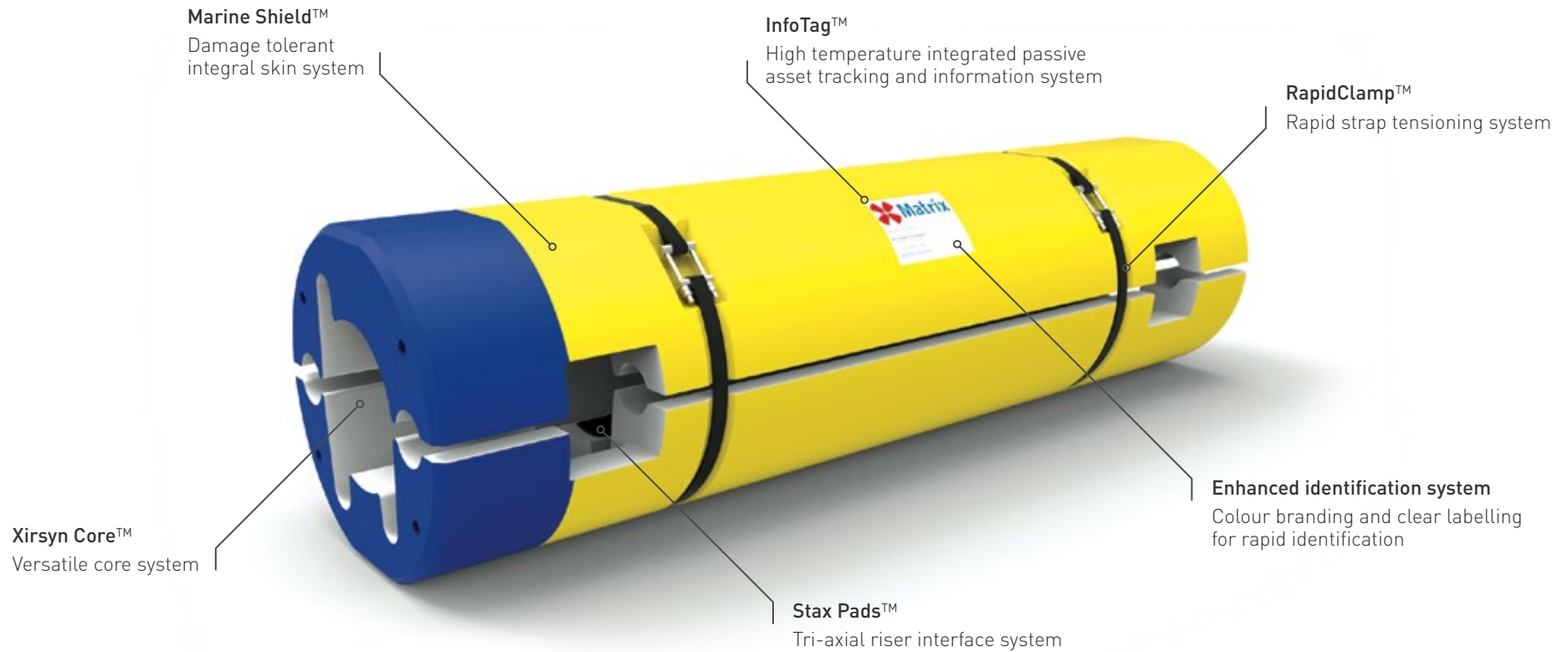
## Always on time

An automated production line means turnaround times for complete strings are industry best - less than ten weeks in some cases. Matrix is consistently quick when it comes to delivery.



ABOVE: Offering the industry's quickest turnaround times

LEFT: Colour coding makes for easy identification



## Material grades for every application

Matrix produces drilling riser buoyancy strings in a variety of material densities. The lighter densities offered by Premium and Ultralight material grades offer significant advantages over standard grades:

- Significantly improve uplift for a given geometry and module size
- Deck space and weight savings, up to 200t for a 10,000ft string
- Reduce module diameter retaining or increasing the uplift for the string
- Reduction in module size 54" for a standard grade, 49.8" for a premium grade
- Smaller ODs

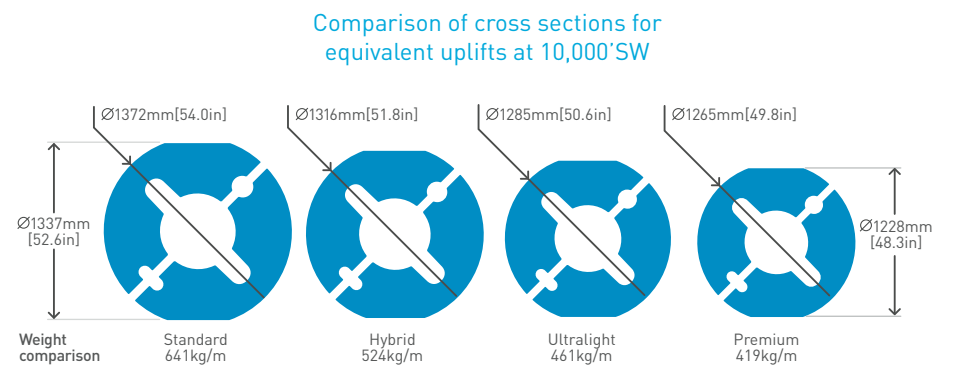
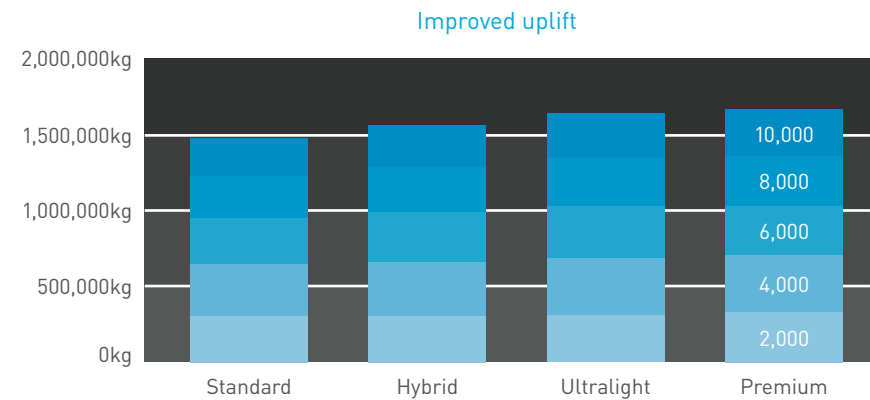


ABOVE: Riser buoyancy modules ready for deployment in Ulsan, South Korea



LEFT: Drilling riser buoyancy modules come in a variety of densities

Material grade	Density	Description
Premium	Lightest	<ul style="list-style-type: none"> <li>Next generation of ultralow density foams</li> <li>Designed for minimising the cross sectional area of buoyancy for maximum lift efficiency in constrained envelopes and minimal drag</li> </ul>
Ultralight	Light	<ul style="list-style-type: none"> <li>High performance ultralow density syntactic foams</li> <li>Designed to reduce cross sectional areas of buoyancy and improve lift per riser joint</li> <li>Reduces tensioner capacity requirements by lowering the 'in water riser weight'</li> </ul>
Hybrid	Low	<ul style="list-style-type: none"> <li>Intermediate grade syntactic foam</li> <li>Lower density than standard foams</li> <li>More economical than Premium and Ultralight grades</li> </ul>
Standard	Standard	<ul style="list-style-type: none"> <li>Standard density composite syntactic foam</li> <li>Used when there are no concerns with dimensional constraints, dry weight or operational drag loads</li> </ul>



# Raising the quality bar

Automated manufacturing and quality processes ensure the production of highly accurate parts with an exceptional degree of quality and consistency. It results in tight buoyancy distribution tolerances that exceeds current API 16F edition requirements.

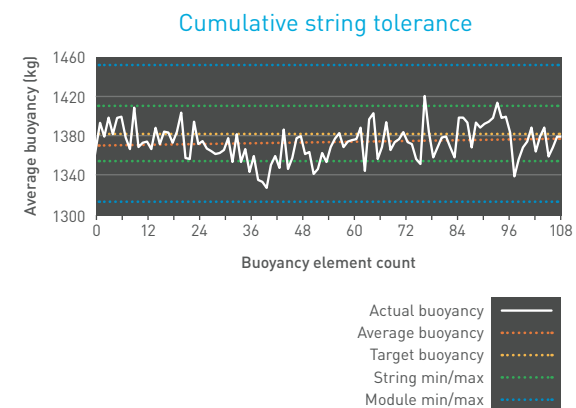
Matrix has its own hydrostatic testing facility with a 7500psi deepwater simulation chamber along with numerous smaller qualification chambers. It remains the largest of its type in the world for this pressure class and records pressure, buoyancy loss and temperature changes over time.

Matrix also has its drilling riser buoyancy certified by a third party and is the only manufacturer that provides this additional, impartial re-assurance.

- Fully instrumented, full scale qualification testing of materials to API 16F
- Fully instrumented, full scale in process testing to API 16F
- FAT (Factory Acceptance Testing)
- Stacking load full scale testing
- Full scale testing capacity to 5,135 meters seawater (16,850ft)
- Quality management system accredited to ISO 9001 and HSE to AS4801
- 100% interface dimensional testing of buoyancy
- Buoyancy is fully interchangeable



Hydrostatic pressure testing facility



## 20,000m<sup>2</sup> of state-of-the-art

Located in Western Australia, the Matrix facility features the world's only automated buoyancy production line.

It is also home to a team of multidisciplinary engineers and material scientists. Research and development is part of the Matrix DNA and ongoing product development programmes are designed to improve module performance and create more value for customers.

Matrix products have been used by every major drilling contractor with over 60,000 modules manufactured.

The company prides itself on exceeding client expectations and has been doing so since 1999.



ABOVE: Located in the Australian Marine Complex, the southern hemisphere's premier integrated marine industrial facility

RIGHT: One of Matrix's highly qualified material scientists



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