



CALASH



**Commercial Review of 8 Riser SLO R System**

**Magma m-pipe<sup>®</sup> versus steel pipe**



# m-pipe<sup>®</sup> versus steel SLOR risers



**Magma m-pipe<sup>®</sup> is an enabling subsea technology that can deliver a step change in riser systems, with a clear economic benefit for future deep water projects**

Deep Water SLOR Cost Summary and Comparison – Steel versus m-pipe <sup>®</sup> Riser System				
System of 8 x SLORs in 3,000m Water Depth	Steel SLOR (US\$)	m-pipe m-SLOR (US\$)	Steel SLOR oncost (%)	Steel SLOR oncost (US\$)
Riser, jumper and pipe materials	224,855,400	226,126,208	-1 %	-1,270,808
Equipment – buoyancy and connectors	67,298,000	36,269,501	86 %	31,028,499
Fabrication – piles, rigging and logistics	51,590,000	17,055,500	202 %	34,534,500
Engineering and Project Management	27,720,000	16,632,000	67 %	11,088,000
Offshore Construction	177,092,300	17,560,620	908 %	159,531,680
Construction all risks insurance	16,456,671	9,420,699	76 %	7,088,640
<b>Total Cost for 8 x SLOR Riser System</b>	<b>565,012,371</b>	<b>323,053,144</b>	<b>75 %</b>	<b>241,959,227</b>
<b>Typical total project field development cost</b>	<b>2,500,000,000</b>	<b>2,258,040,773</b>	<b>11 %</b>	<b>241,959,227</b>

- A steel SLOR riser has a 75% oncost (+\$242m) vs. an m-pipe<sup>®</sup> m-SLOR riser system
- An m-pipe<sup>®</sup> m-SLOR riser system saves 11% versus a traditional steel SLOR riser project
- The much lighter weight of an m-pipe<sup>®</sup> m-SLOR riser offers significant technical benefits
- m-pipe<sup>®</sup> is also likely to be competitive versus a steel SLOR for shallower water depths



## m-pipe<sup>®</sup> riser cost benefits

### **Magma m-pipe<sup>®</sup> should be seriously considered on the basis of reducing costs and removing cost overrun risks for deep water multiple riser projects**

- Minimal cost difference of m-pipe<sup>®</sup> m-SLOR riser and steel SLOR riser systems on total riser, jumper and pipe materials costs (\$226m versus \$225m)
- An m-pipe<sup>®</sup> m-SLOR does not require aircan Rotolatch connectors, flanges or fittings, and the total buoyancy can, connectors and tension monitoring costs are 86% more for a steel SLOR versus an m-pipe<sup>®</sup> m-SLOR (\$67m versus \$36m)
- The entire Upper Riser Assembly (URA) is not required with an m-pipe<sup>®</sup> m-SLOR, generating a \$62m cost saving versus a steel SLOR riser
- The eight flexible jumpers are less than a third of the pipe length with an m-pipe<sup>®</sup> m-SLOR versus a steel SLOR, equating to a saving of over \$81m
- Total m-SLOR riser fabrication costs are a third that of a steel riser (\$17m vs. \$52m)
- Some m-pipe<sup>®</sup> m-SLOR fabrication oncosts are offset by the \$13m differential in pile costs between a steel SLOR and m-pipe<sup>®</sup> m-SLOR (\$17m versus \$3m).
- A steel SLOR requires a fabrication allowance on J Lay spread that is not required with an m-pipe<sup>®</sup> m-SLOR, a saving of \$29m including labour cost
- m-SLOR riser offshore construction costs are one tenth that of a steel SLOR riser





## m-pipe<sup>®</sup> riser project benefits

**With m-pipe<sup>®</sup> it is expected riser construction can be undertaken in as short as three months versus seven months for steel SLORs, reducing cost and risk**

- Potential cost overruns due to construction delays and missing weather windows are significantly greater due to heavy-lift vessels required for steel SLOR risers
- The type and size of vessel needed to transport and deploy steel SLOR risers are ten times the cost of transporting and deploying an m-pipe<sup>®</sup> m-SLOR
- There is a reduced requirement of project staff for m-pipe<sup>®</sup> m-SLOR deployment due to its lighter weight and easier handling (30 staff for m-pipe<sup>®</sup> versus 50 staff for steel)
- The much smaller air cans required for an m-pipe<sup>®</sup> m-SLOR riser should result in significant reductions in inspection, repair and maintenance during operation
- There is the option for an m-pipe<sup>®</sup> riser manufacturing base to be established at relatively low cost in the local deployment region to increase local project content
- m-pipe<sup>®</sup> m-SLOR risers are able to utilise smaller, more readily available locally sourced vessels for more flexibility on the timing of riser deployment projects
- Unlike conventional non-bonded flexible jumpers, m-pipe<sup>®</sup> jumpers have a long design life that should exceed the life of the field, avoiding the need for replacement

