Subsea Modular Injection Systems
MARS multiple application reinjection system configurations

APPLICATIONS
- Hydrate, paraffin, and asphaltene remediation
- Well stimulation and acidizing
- Scale squeezes
- Well kill
- Pipeline and umbilical flushes
- Plug and abandonment (P&A)
- Commissioning and decommissioning

ADVANTAGES
- Safer operations and reduced risk
- Field-proven technology
- Environmental acceptability
- Cost effectiveness
- ROV operability
- Fast mobilization
- Emergency disconnect function
- Ability for one insert to cover entire field
- Architecture flexibility on connection points

The OneSubsea portfolio of MARS* multiple application reinjection systems includes subsea modular injection systems, which can be deployed from a vessel of opportunity for subsea fluid injection.

The systems offer significant benefits to operators with simpler and safer operations through:
- independent injection skid optimized for deployment and ROV operations
- pressure-balanced weak link (PBWL) that enables ESD by hydraulic actuation (active) or by line pull
- PBWL gimbal system that connects to the PBWL to accommodate up to 40° riser angle shift from vertical
- ROV flying jumper that requires no lifting or load handling close to critical subsea architecture elements
- fail-safe-close barriers activated by ROV or passively in the event of disconnect
- specially designed mudmat for deepwater low-strength soils
- skirt design that ensures increased lateral resistance is available
- moonpool deployment to reduce heave-induced motions on coiled tubing
- conventional injector head that eliminates plastic cycling during injection operation
- CoilScan* engineered pipe management service and universal tubing integrity monitoring system for monitoring coil tubing mechanical properties
- openwater CT fatigue monitoring system.
**General System Specification**

<table>
<thead>
<tr>
<th>Specification</th>
<th>Value</th>
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<tbody>
<tr>
<td>Design depth, ft [m]</td>
<td>6,560 [2,000]</td>
</tr>
<tr>
<td>Design pressure, psi [MPa]</td>
<td>10,000 [68.9]</td>
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<tr>
<td>Product specification level</td>
<td>3G (pressure containing components only)</td>
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<tr>
<td>Performance rating</td>
<td>PR 2 (ISV valves only)</td>
</tr>
<tr>
<td>Rated working temperature, degF [degC]</td>
<td>0 to 140 [−18 to 60] API6A 20th Ed. temperature class S</td>
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<tr>
<td>Material trim level</td>
<td>HH (except for coiled tubing and flexible hose)</td>
</tr>
<tr>
<td>Maximum chemical injection flow rate, L/min [bbl/min]</td>
<td>2,600 [16]</td>
</tr>
<tr>
<td>Maximum operational duration,† months</td>
<td>6</td>
</tr>
<tr>
<td>Service life, years</td>
<td>25</td>
</tr>
</tbody>
</table>

†Continuous subsea exposure during intervention campaign