OneSubsea
A Schlumberger Company

# 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.


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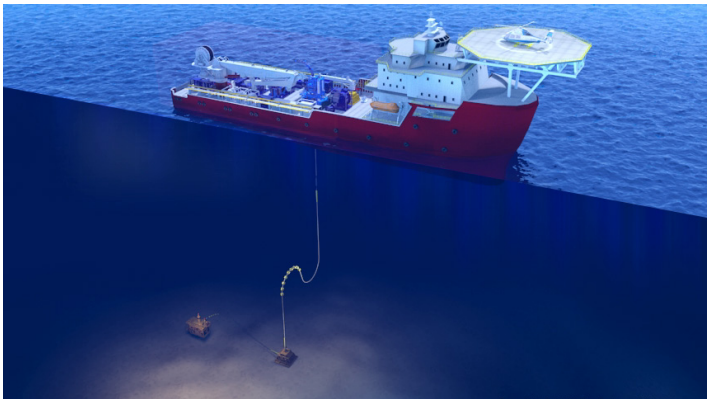

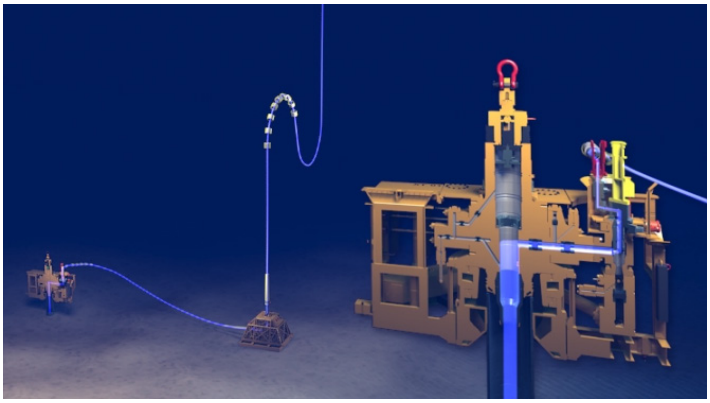

| General System Specification | |
|---|---|
| Design depth, ft [m] | 6,560 [2,000] |
| Design pressure, psi [MPa] | 10,000 [68.9] |
| Product specification level | 3G (pressure containing components only) |
| Performance rating | PR 2 (ISV valves only) |
| Rated working temperature, degF [degC] | 0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

†Continuous subsea exposure during intervention campaign

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