

BIGORANGE XVIII

Well stimulation vessel

APPLICATIONS

- Large-volume, high-pressure stimulation operations
- Hydraulic fracturing, acidizing, and sand control treatments
- Multipurpose pumping
- Nitrogen lifting

BENEFITS

- Increases operational flexibility with storage and blending capacities that accommodate applications from small matrix treatments to large hydraulic fracturing operations
- Enables preparation and blending of gelling agents, crosslinkers, gel breakers, friction reducers, surfactants, demulsifiers, corrosion inhibitors, fluid loss additives, and precise proppant delivery over a full range of treatment rates

FEATURES

- Installed horsepower: 14,800 hhp
- Proppant storage: Six bins with a total capacity of 4,360 m³ [154,000 ft³]
- Corrosive fluid storage capacity: 28,618 m³ [180,000 bbl]
- Nitrogen storage capacity: 113 m³ [30,000 galUS]
- Liquid additive storage capacity: 10 tanks of 5.7 m³ [1,500 galUS]
- One PCM* precision continuous mixer for fracturing that delivers gel treatments up to 3,407 m³ [900,000 galUS]



To perform efficient stimulation operations, the pumps on BIGORANGE XVIII deliver up to 14,800 hhp with a variety of configurations to enable flexibility in rates and pressures.

BIGORANGE XVIII was purpose-built for North Sea operations, with blending, pumping, and storage systems incorporated from the outset into the vessel's unique design. From simple acid stimulation to complex fracturing operations, the onboard equipment and experienced crew and engineers ensure maximum efficiency and effectiveness.

With DNV DYNPOS-AUTR Class II-approved dynamic positioning, the vessel delivers superior handling and high stability even in extreme conditions. The two bow thrusters and two azimuth stern thrusters, controlled by a Kongsberg ADP 702 dynamic positioning system, enable the vessel to maintain station alongside or stern-on to platforms, semisubmersibles, and jack-ups, even in gale force conditions.

Equipment, storage, and mixing options improve flexibility

The blending system enables delivery of complex stimulation designs requiring multiple types and grades of proppant. The addition of proppant is computed by process controllers that automatically compensate for any change in treatment rate to ensure the correct concentration is achieved under all operating conditions. The flexible system allows any combination of four metered dry additives with ten liquid additives.

Blended fluids are transferred by high-rate centrifugal pumps. Treating fluids are pumped to elevated pressure using a total of 10 triplex pumps. Six high-pressure pumps are DC electric with silicon-controlled rectifiers that maintain precise rates across the pumping range. Fluids are pumped to the rig or platform through two 4-in flexible Coflexip lines rated to 103.4 MPa [15,000 psi] at a combined rate up to 9.5 m³/min [60 bbl/min].

Independent quality control of all fluids is monitored constantly at the onboard laboratory and reported to the control room throughout the treatment execution.

Automation ensures efficiency and accuracy

All phases of the stimulation treatment are controlled remotely from a central command center on the vessel. Data is recorded in real time for continuous monitoring and control of critical parameters which ensure the highest degree of quality control and assurance.

BIGORANGE XVIII

BIGORANGE XVIII Specifications

Marine data

Dimensions

| | |
|----------------|------------|
| Length, m [ft] | 76 [249.6] |
| Beam, m [ft] | 18 [59] |
| Depth, m [ft] | 7.6 [25] |

Capacities

| | |
|-------------------------------------|----------------|
| Deadweight, T [tonUS] | 2,941 [3,242] |
| Freshwater, m ³ [galUS] | 98.4 [26,000] |
| Diesel fuel, m ³ [galUS] | 170.3 [45,000] |

Thrusters

| | |
|---------------------------------|-------|
| Bow thrusters (2 Schottel), kW | 800 |
| Stern thrusters (2 Ulstein), kW | 1,600 |

Harbor power

| | |
|----------------|--------------------------------|
| Generators (2) | 250 kVA, 440 V, 60 Hz, 3-phase |
|----------------|--------------------------------|

Accommodations

| | |
|--|----|
| One-person cabins | 18 |
| Total berths | 30 |
| Large recreation rooms and conference facilities | |

Seakeeping

| | |
|----------------------------|----------|
| Vertical amplitude, m [ft] | 4.6 [15] |
| Vertical acceleration, g | 0.22 |
| Roll amplitude, deg | 10.8 |

Stimulation data

Treatment pumps

| | |
|--|-----------------|
| Total pump power, kW [hhp] | 11,036 [14,800] |
| Max. treatment rate, m ³ /min [bbl/min] | 4½ |
| Up to 10,000 psi | 9.5 [60] |
| Up to 12,000 psi | 7.2 [45] |
| Triplex pumps powered by marine-cooled diesel engine | 4 |
| DC electric motors | 6 |

Storage capacities

| | |
|---|----------------|
| Storage for 36% HCl, m ³ [galUS] | 681 [180,000] |
| Storage for 28% HCl equivalent, m ³ [galUS] | 708 [240,000] |
| Dry additive storage tanks (3), m ³ [ft ³] | 29.4 [1,040] |
| Liquid additive storage tanks (10), m ³ [galUS] | 42.5 [1,500] |
| Other liquid storage, m ³ [galUS] | 886 [234,120] |
| Proppant storage, m ³ [ft ³] | 436 [15,400] |
| Nitrogen storage, m ³ [galUS] | 113.6 [30,000] |

POD blenders and silos

| | |
|---|---|
| POD blenders (2) [†] | |
| Max. fluid rate, m ³ /min [bbl/min] | 2 × 9.5 [60] (independent) 15.9 [100] (combined) |
| Fiber feeders, kg/min [lbm/min] | 2 × 122.5 [270] |
| Max. gel mixing rate, m ³ /min [bbl/min] | 11.1 at 4.8 kg/min [70 at 40 lbm/1,000 galUS] |
| Batch mixing capacity, m ³ [bbl] | 174.7 [1,100] with independent circulating system |

[†]Blenders are enabled for HiWAY* flow-channel fracturing technique.

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