

STACKLITE™ RVM™



HYBRID BOP CONTROL UNIT

Control | Monitor | React

Superior BOP Closing Performance

- Suitable for entire BOP control or dedicated shear integration with existing systems
- Rapid BOP closure times: 120 gpm and minimal system back pressure
- Precise pressure settings by function; adjustable on the fly
- Up to 5ksi pressure available at all times for maximum shearing performance including during multi-function draw-down
- Energy storage sufficient for multiple API 16D draw down tests without recharging

Reliability of Electronics

- Real time monitoring, data available for condition-based maintenance
- Battery based energy storage
- Redundant pumping
- Suitable for automation w/ integrated BOP testing device
- IEC Ex Zone 2

Modular Design for Flexible Installation

- Self-contained skid for seamless installation, temporary or permanent
- May be integrated into rig superstructure to save weight and simplify rig-up
- Reduce rig-up time and minimize tubing runs by mounting control valves on or near BOP
- Ease of serviceability and maintenance



Land drilling



Platform drilling



Jack-up drilling



StackLite RVM can be configured for any drilling application. Its combination of enhanced performance and compact, light-weight packaging enables significant savings for logistics for modular rigs on land or on platforms, and enables a step change in reliability and performance enhancement for space limited applications like Jack-ups and offshore platforms with fixed drilling units. For drilling units facing increased demands, the StackLite RVM offers a highly competitive alternative to outdated accumulator based systems.

TRADITIONAL BOP CLOSING UNITS JUST DON'T STACK-UP AGAINST THE STACKLITE™ RVM™

	StackLite RVM for Surface Drilling	Electric BOP Control System	Conventional Surface BOP Closing Unit
Reduced Site Footprint/Stack Weight	✓	✓	✗
Replacement of Accumulators with Lightweight Energy Dense Battery	✓	✓	✗
No Single Point Failure Components	✓	✗	✗
Offline Testing Capabilities	✓	✗	✗
Full rated shear force available at all times	✓	✓	✗
Reduced Maintenance Between Wells	✓	✓	✗
Simplified Rig-Up/No Specialized Labor	✓	✗	✗
Redundant Feedback for Fault Tolerance	✓	✓	✗
100% Manual Override Capability	✓	✗	✓
Economic Value	✓	✗	✓



StackLite RVM offers all the reliability, diagnostics, and performance benefits of an electric BOP without requiring the replacement of existing hydraulic BOP equipment. The data rich system features continuous conditions based monitoring with real-time alarms and automated off-line function testing to provide a dramatic enhancement in reliability and performance for BOP closing systems in a compact and lightweight package relative to conventional systems. As required function volumes and pressure increase, the StackLite RVM is increasingly economical in terms of capital cost vs conventional systems. Subsea applications are detailed in a separate brochure.



TECHNICAL SPECIFICATIONS FOR RVM™ FOR SURFACE DRILLING APPLICATIONS

Specifications	Rating
System Type	Hybrid Electro-Hydro w/UPS System
Operating Pressure	5,000 psi
Max Flowrate	120 gpm
Stations	Up to 8 stations w/ annular stripping, modular expansion
Hydraulic Tank Cap	90 gallons, closed loop w/ filtration
Battery System	Exceeds API 16D Drawdown requirements; 10-year service life on batteries >3 drawdown tests before recharge
Controls/HMI	Digital PLC Controlled w/ remote HMI push button panel & alarms
EX Rating	IEC EX zone 2
Skid Dimensions	115" wide x 56" deep x 90" tall; Certified four-point lift & Forklift pockets
Weight	12,000 lbs dry weight

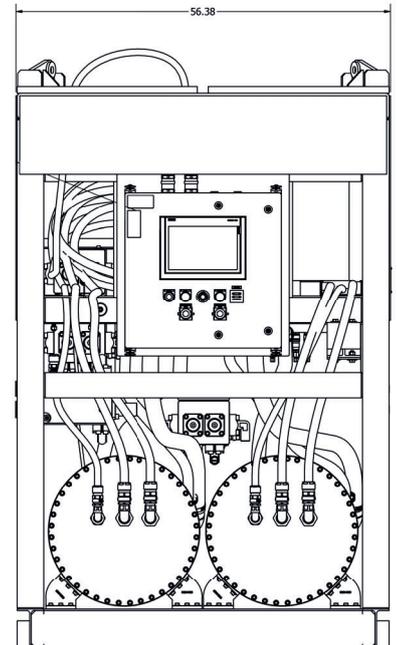
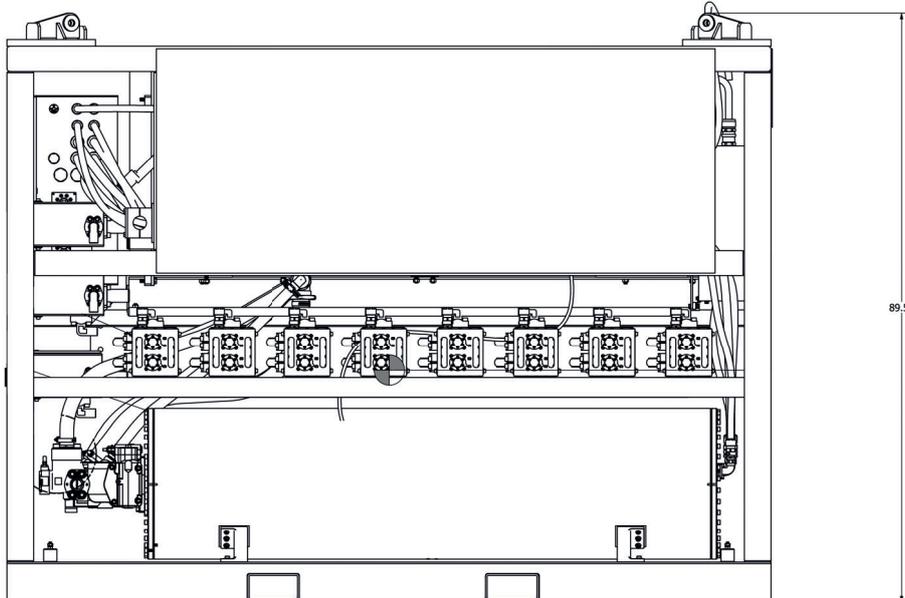
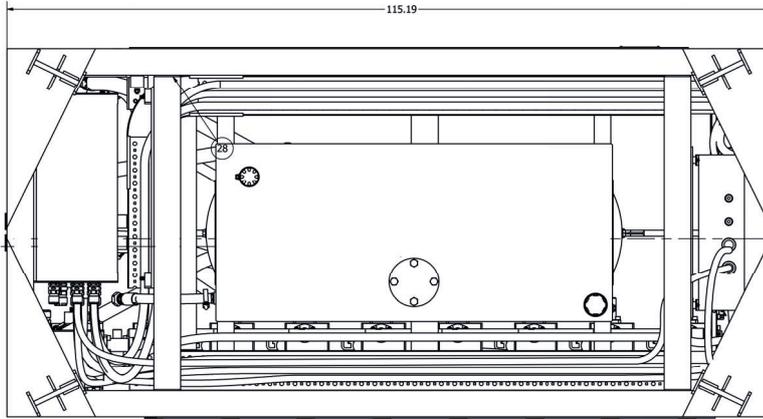


STACKLITE™ RVM™ HYBRID CONTROLS OFFER A DATA RICH INTUITIVE HMI PANEL MEETING API 16D

StackLite™ RVM™ Hybrid Controls offer a data rich and intuitive HMI panel meeting API 16D. The system is designed for up to three panels, with two being remote mounted.



TECHNICAL DATA FOR RVM™

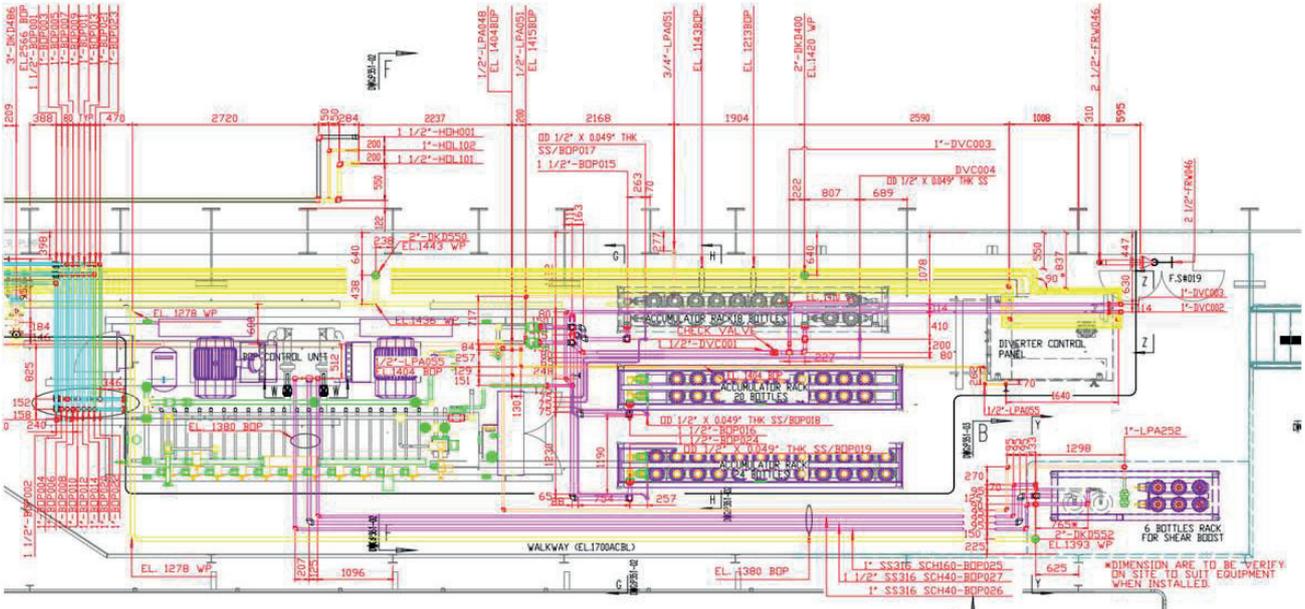


TOTAL ESTIMATED MASS WITH "HYDRAULIC RESERVOIR ASSEMBLY" EMPTY: 12069.53 lbmass

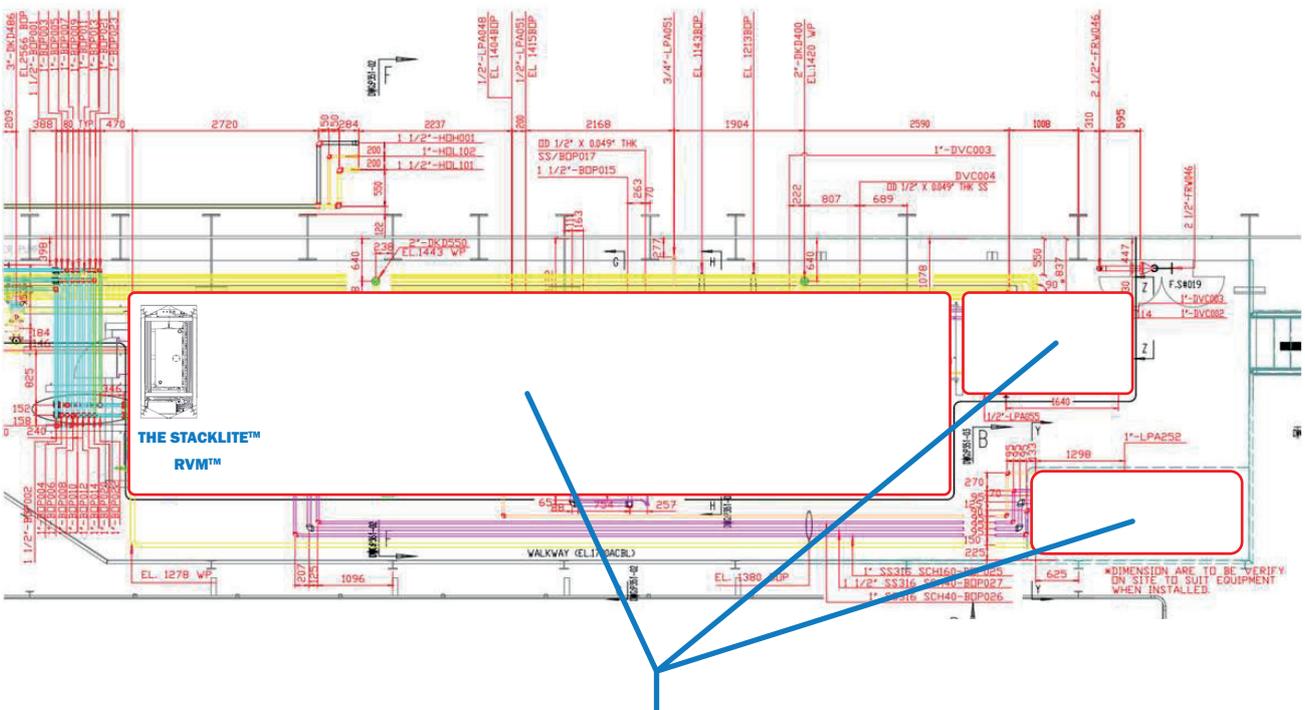
TOTAL ESTIMATED MASS WITH WATER BASED HYDRAULIC FLUID: 12777.72 lbmass

FOOTPRINT COMPARISON VS KOOMEY

Cantilever Mezzanine Deck shown above on an F&G Jack-up rig



All pumps, motors, and accumulator bottles are replaced by the StackLite™ RVM™



Traditional BOP Control systems may be removed and replaced by StackLite™ RVM™