Offshore Loading Systems

Presentation for:

REELPOWER
MARINE & ENERGY

Reel Power Marine & Energy's goal is to identify challenges, design innovative solutions and manufacture quality products that solve your problems.

Our Mission

To deliver innovative, lowest total life-cost, flexible material handling solutions that are the customers lowest transaction and performance risk, and highest contribution to their profitability.

Our Values

Improve our Customers competitive advantage by lowering their buying risk, improving their profitability, making their life/work easier, and lowering their overall costs.

Values Defined

- **Safety**…means our products and actions must include Customer and user safety as well as our own employees.
- **Respect**…means we treat each other, our Customers and our suppliers with respect at all times. We don't have to always agree, but we have to always be respectful.
- **Quality**…means meeting all of the requirements for our products to meet Customer specifications and perform the intended use safely and reliably.
- **Customer Needs**…means meeting quality, performance, delivery commitments and support required by our Customers.
- **Company Goals and Commitments**…means meeting financial targets, production schedules, safety goals and improvement initiatives

Reel Power Marine & Energy and Reel Power Industrial – Both with excellent, newly built facilities laid out for Lean Manufacturing and ISO Certified!

Loading Stations built in Houston plant



Marine & Energy: Houston Plant

- 101,000 sq. ft. facility; 86,000 sq. ft. of production space and 14,000 sq. ft. of office and engineering space
- Includes overhead cranes (10 Ton) and Jib Cranes
- Modern CNC machines (8) and water Jet machine
- Designed and laid out to support Lean manufacturing
- ASME Code Shop



Industrial: Oklahoma City Plant

- 99,000 sq. ft. facility; Over 87,000 sq.ft. of production space and 12,000 sq. ft. of office and engineering space
- Includes overhead Cranes (10 Ton) and Jib Cranes
- Modern CNC machines (12)
- Designed and built to support LEAN manufacturing

REELPOWER
MARINE & ENERGY

ISO 9001:2015

World's Most Compact Loading Station for offshore vessels (Patented and Patents Pending)



Noble Bully I Drillship



Statoil Peregrino Platform



Fieldwood Fixed Platforms



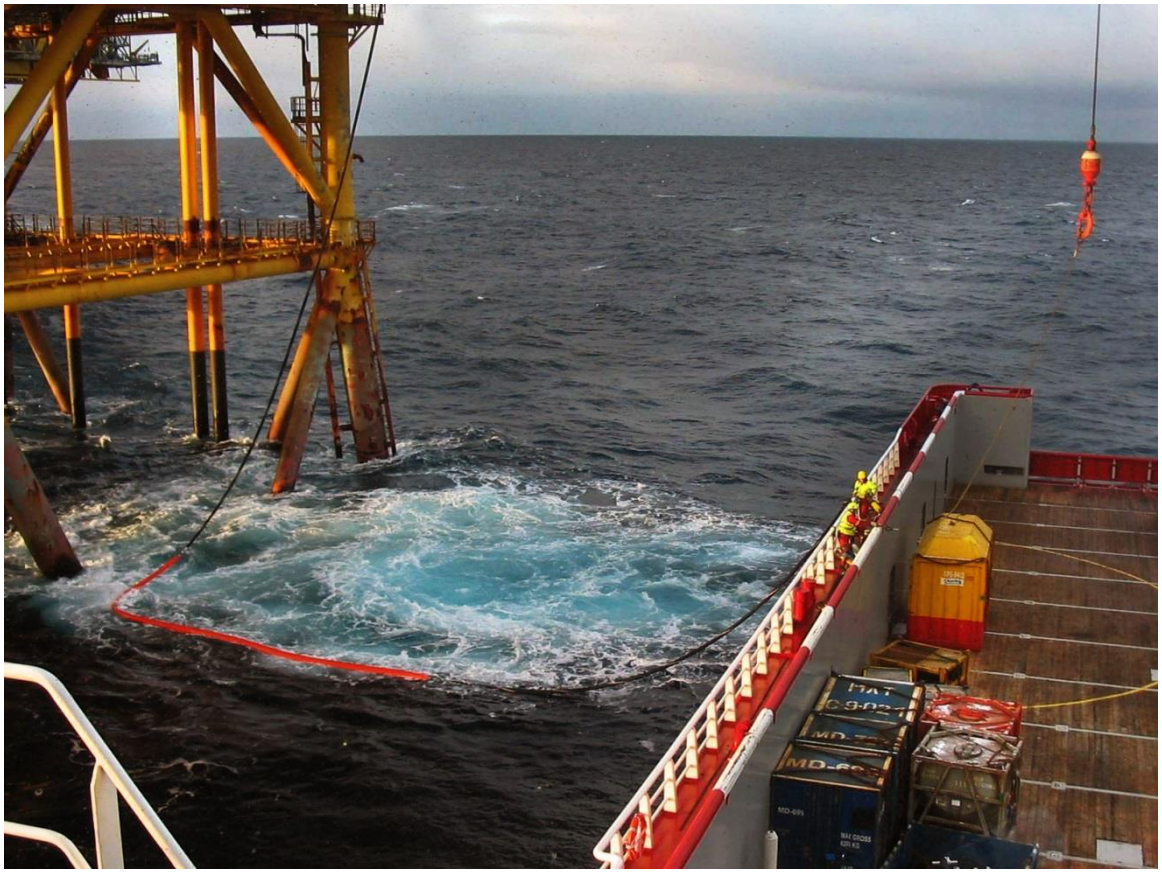
Hess Stampede TLP Platform



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Available for New Build Construction and Retrofit for Existing Vessels

Typical Offshore Transfer Operation



- Platform/Rig Crane attaches to lift eye end of hose.
- Crane lowers hose end to service/supply vessel.
- Service crew connects end of hose and valves are opened.
- SV transfers material to Platform by pumps on SV.
- Material in hose drained back to SV.
- Hose end is disconnected, and SV hose end attached to crane.
- Crane returns end. Hose wound on reels or laid over saddles or on deck.

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Loading Station APPLICATIONS - Any offshore rig/vessel/structure that requires dry and wet materials on-board delivered by supply vessels.



Drill Ship



Semi-Submersible Drill



Jack-up Drill



Offshore Platform



Semi-Submersible Drill & Oil Production



FPSO/FSO



SPAR



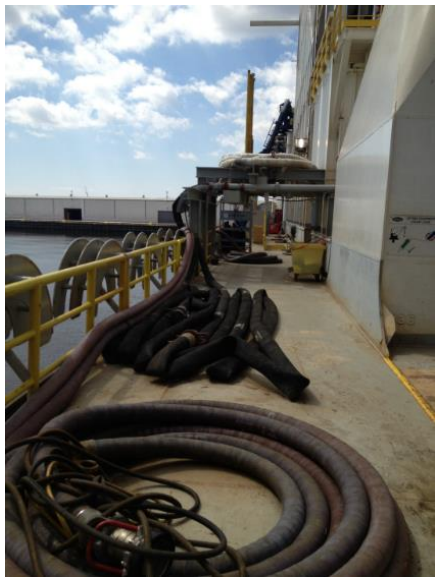
TLP



Accommodation

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Typical Offshore Transfer Hose Installation (Over 53% Floaters built 2013 to present include Loading Stations reels)



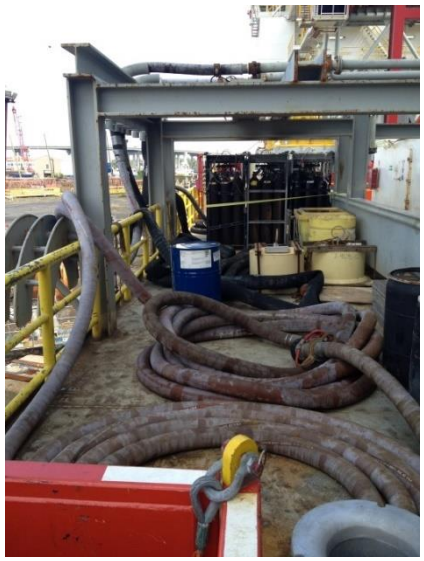
Laid on Deck

Dangling on Saddles



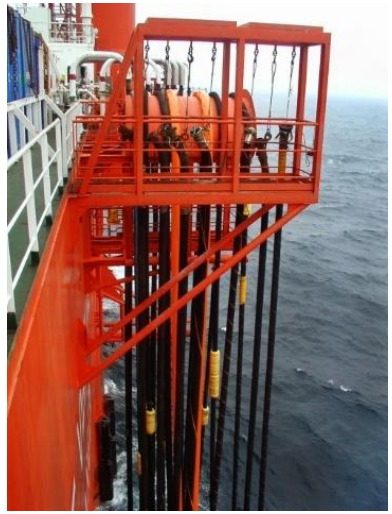
SHORTENED LIFE OF HOSE:

- **UV Exposure**
- **Kinking of Hose**
- **Stepped On & Tools Dropped On**
- **Fatigue Failures– Rubbing on Saddles**



SAFETY CONCERNS:

- **Trip Hazards**
- **Dangerous Hose Hang Ups & Snap Back**
- **High Operator Involvement and Handling to Deploy**



ENVIRONMENTAL – Greater Chances of Spills:

- **From Hose Breaks**
- **From Decoupling & Recoupling**
- **Hoses Hanging over Water (No Containment)**

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Loading Station Easily Retrofit able – Less Manpower, Clean Up Deck Space and Extend Hose Life





Before…



…and After

- **3+ Times Greater Hose Life** – *Compared to Saddles* & **7+ Times Greater Hose Life** – *Compared to Laying on Deck*
- **Safest Means for Storing & Deploying Hose** – *Cleaner Deck Space & Less Operator Involvement*
- **Decreased Chance of Spills** – *Less Wear & Tear on Hoses*

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REPORTED OFFSHORE SPILLS IN THE US

REPORTED SPILLS

Cause of Incident	Transfer Operation	Unknown (May be Transfer)	Total
Hose Failures	**203**	23	226
Coupling & Uncoupling Hose	**71**	8	79
Other Mechanical Failures	35	43	78
Operator Error	24	13	37
Overfill	23	11	34
Unknown	10	19	29
Total for Transfer Operation	**366**	**117**	**483**

Note: Does Not Include Hydraulic or Crude Oil Leaks

Note: Hydraulic leaks accounted for 614 reported spills

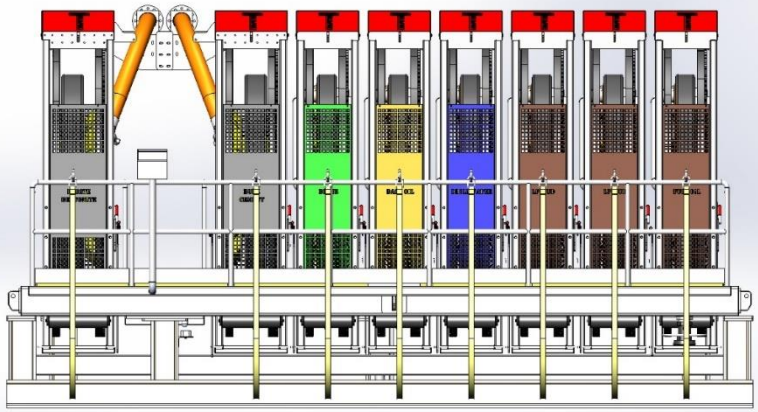
National Response Center (Sept 24, 2000 thru Sept 24, 2013 Data)

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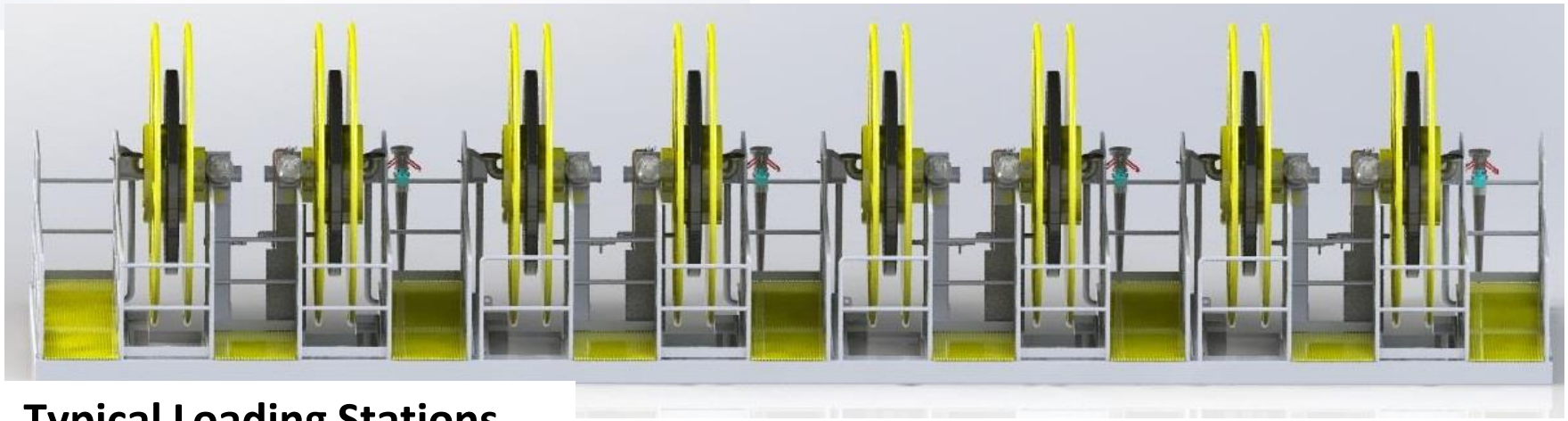
WORLD'S MOST COMPACT LOADING STATION - 37% Smaller Footprint and 19% Lighter Weight than Competition

Patented

Reel Power Loading Stations



		Competitor	Reel Power	
# Reel Positions		8	8	Savings
Deck Length	m	12	7.6	36.70%
	ft	39.37	25.2	
Weight	kg	20,000	16,300	18.50%
	lbs	44,090	36,000	



Typical Loading Stations

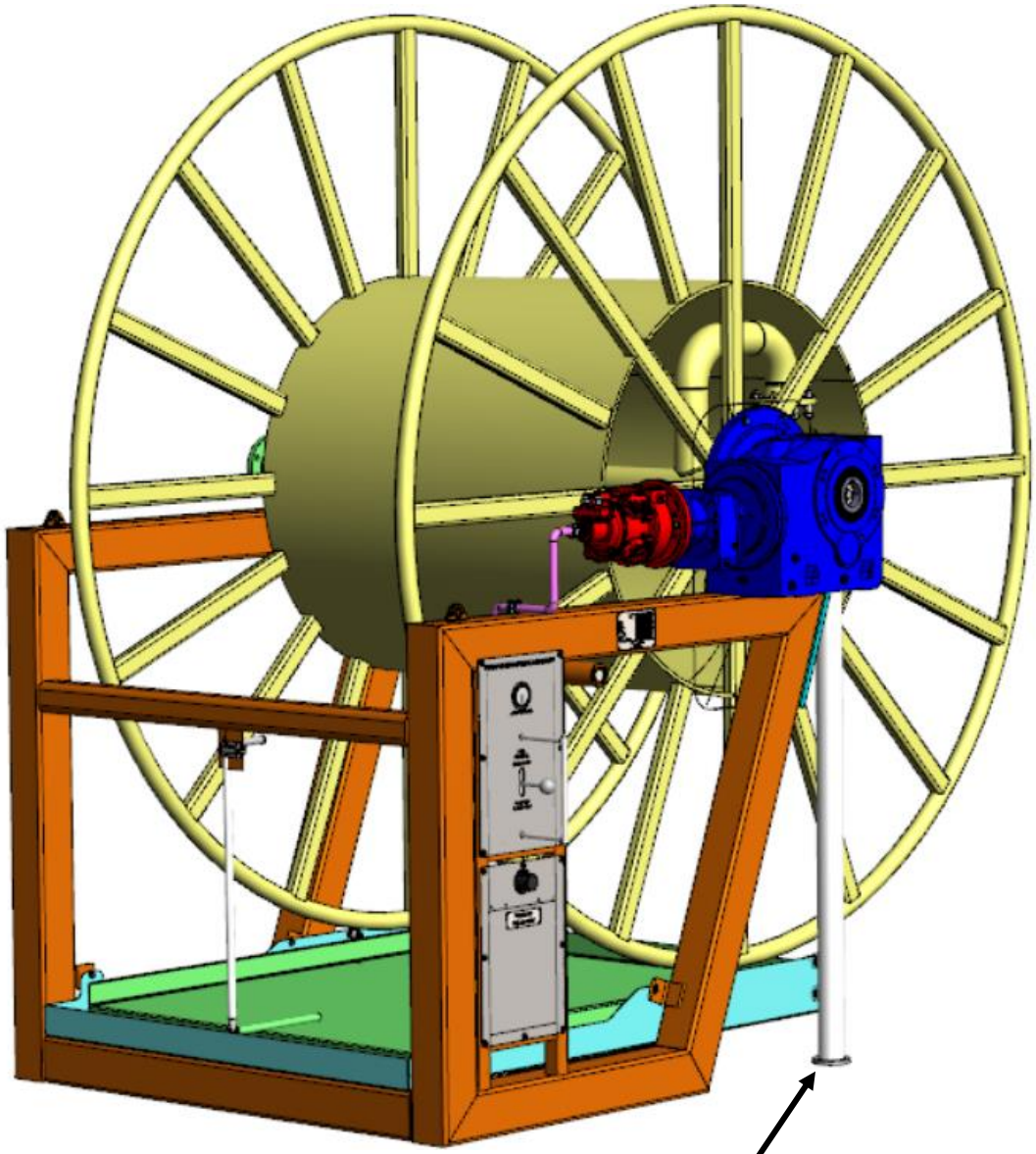
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Large Capacity MUD Single Position Loading Station - **Development**

1. Early 2023 Large Middle East Drilling Contractor Approached RPME for Loading Stations for Jack-up Drilling Rigs
2. Needed greater volume of MUD than rig could produce for gas drilling – Drilling through High Pressure gas formation (known as KUFF) with mud losses. Delivering MUD to DP supply vessel from offshore platform
3. Existing rig hoses were 100 – 150 ft long. ARAMCO wanted greater reach so can continue transferring MUD in bad weather conditions – Selected 120 m hose length
4. One loading station on each side of the rig required
5. RPME decided, due to hose length, best to design LS largely based on existing raw water reel design
6. Design is complete and the first two (2) are released to manufacturing at RPME – Expect to ship 2nd Qtr 2024

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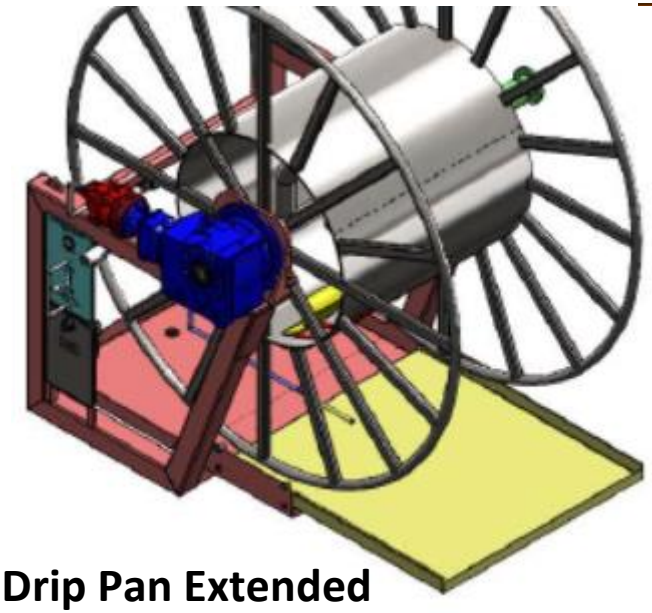
Large Capacity MUD Single Position Loading Station



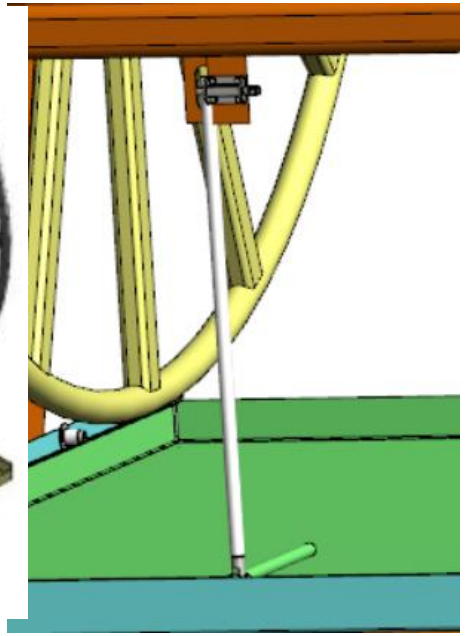
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- 120m (395ft) + capacity
- Air driven
- Retractable drip pan
- 4” rotary union
- 4” hose with breakaway and float section
- Mechanical lock pin
- Certified Lift eyes
- Reel designed for survival wind loading of 100 knots
- Designed to lift weight of hose with MUD from breakaway to reel

Large Capacity MUD Single Position Loading Station - **Features**



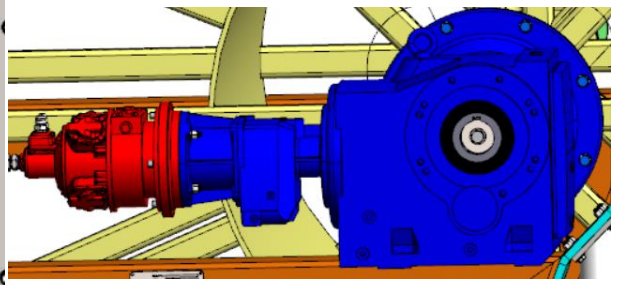
Drip Pan Extended
(Hose Storage Position)



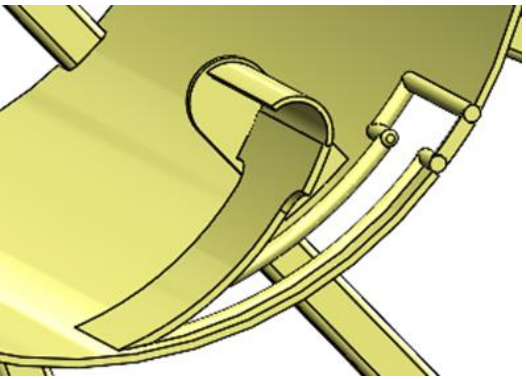
Drip Pan Handle



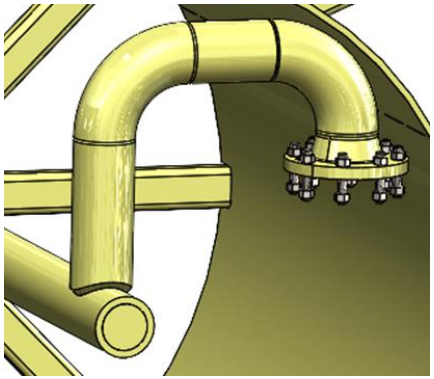
Reel Controls



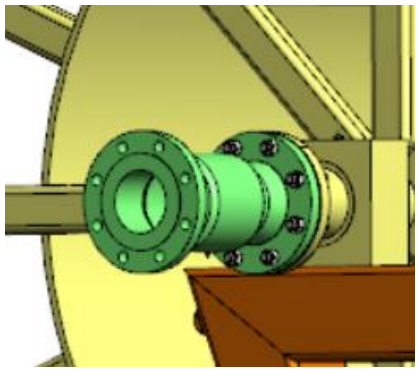
Air Motor and Right Angle Reducer



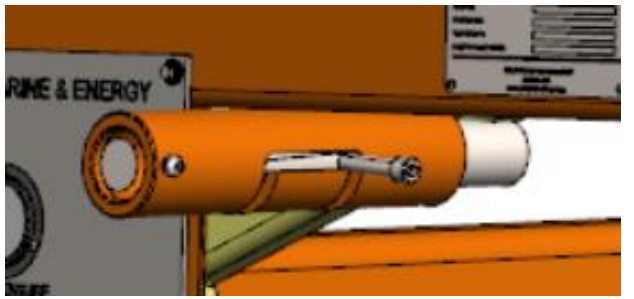
Hose Ramp



Drum Piping – 4”
150# ANSI – Heavy Wall

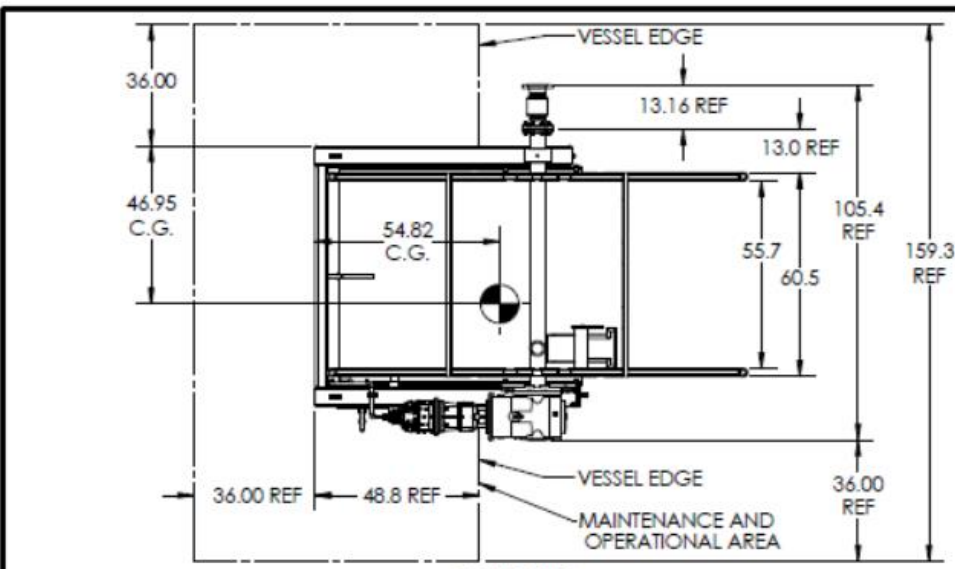


Single Plane Rotary Union

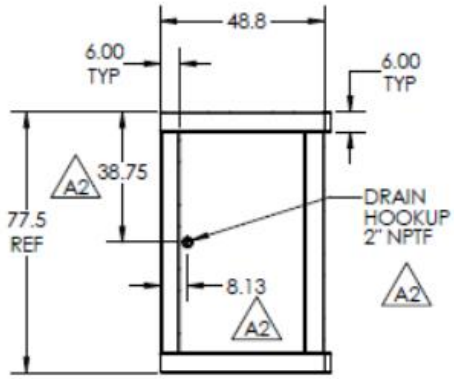


Mechanical Lock Pin

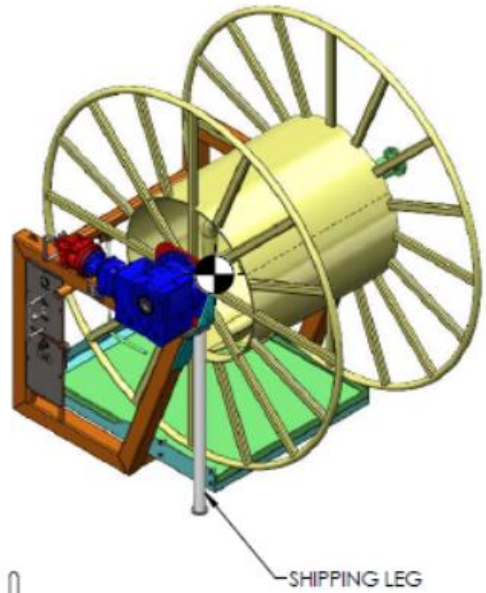
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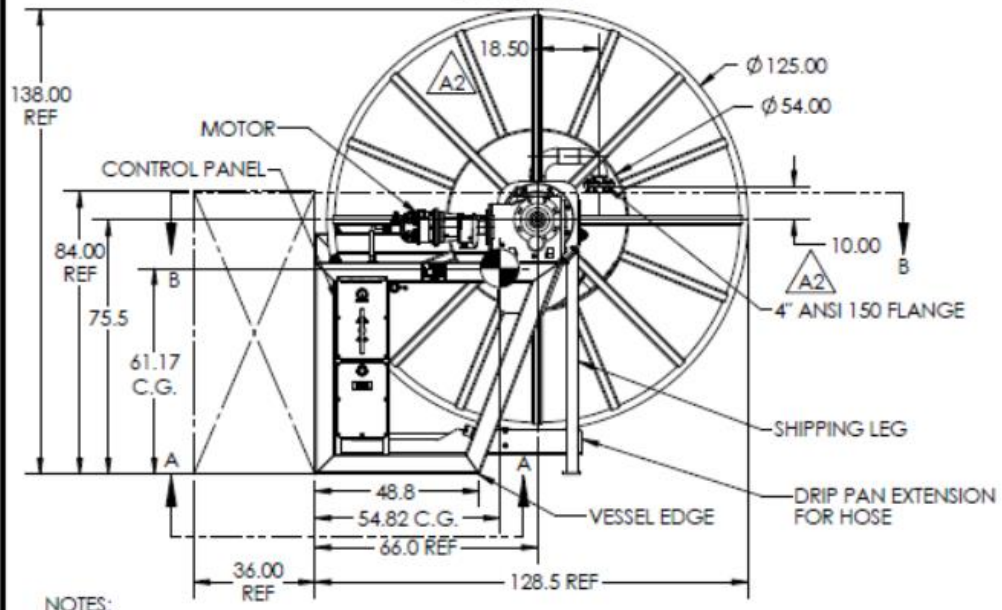


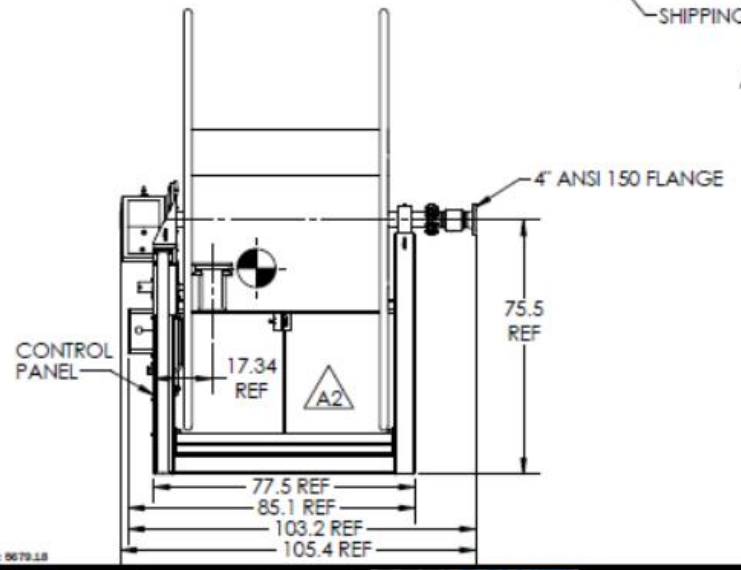
SECTION B-B



VIEW A-A
FOUNDATION FOOTPRINT







NOTES:

1. ESTIMATED REEL WEIGHT IS 5700 LBS, ESTIMATED HOSE WEIGHT IS 3000 LBS (TOTAL 8700 LBS)
2. UNIT IS DESIGNED FOR SURVIVAL WIND LOADING OF 100 KNOTS
3. MAINTENANCE AND OPERATIONAL SPACE IS 36" AROUND UNIT.

WEIGHT: 8679.18

MATL: RMS-NOTED	H.T.: NA	COATING: NA	
REV. DATE REV. BY CK BY: APP. BY:	ADDED TIE IN POINT INFORMATION		
DRAWN BY: JEM	CHECKED BY:	APPROVED BY:	RELEASE DATE 02/06/2024

UNLESS OTHERWISE SPECIFIED, DIM. IN INCHES, ⊕ .010 T.I.R., FRAC ±1/8, 1 PLACE ±.060, 2 PLACE ±.030, 3 PLACE ±.010, ANGLE ±0° 30', 125 RMS MAX, BREAK CORNERS .010

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HOUSTON, TX. USA

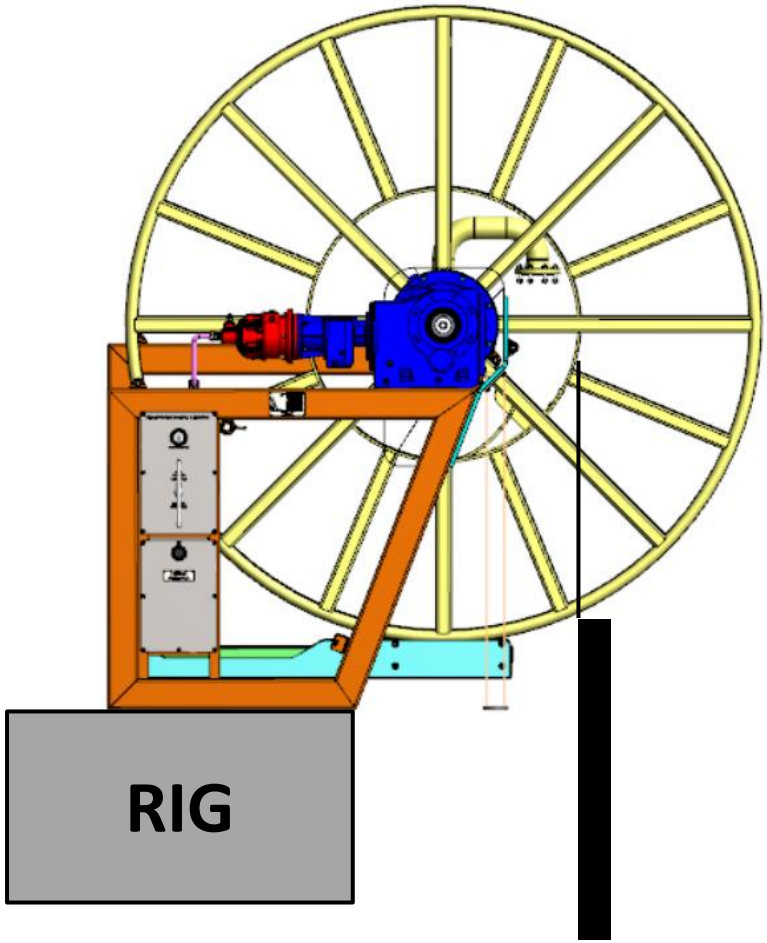
LOADING STATION, 4IN X 400FT, AIR, LH, SINGLE PLN

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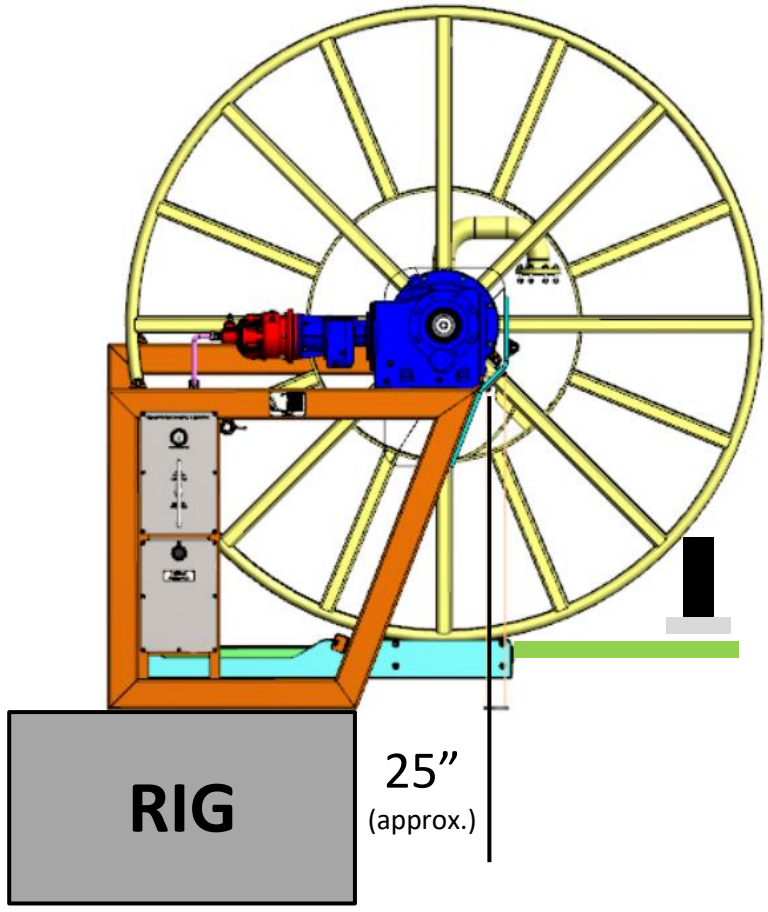
SHEET 1 OF 2 | REV: A2

LS-HC-125-01 GA

Side View of Loading Station mounted on Rig



- Hose Deployed



- Hose Wound on Reel
- Drip pan extended

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Offshore Transfer Hose Assembly (Large Capacity Loading Station)

Hard Wall hose – 4”

- Can leave layers of hoses on reel
- 300 psi (20bar) Standard
- UV resistant

Breakaway Coupling

- 8,000 lb rated
- Dual valve on all
- Wet fittings 316SS

Soft Wall hose – 4 ”

- Reduces kinking damage
- Easier for SV personnel to handle
- 300 psi (20bar) Standard
- UV resistant

Supply Vessel Connection – 4”
CamLock with Dust Cover



40 M (131 ft) | **60 M (197 ft)** | **20 M (66 ft)**

Reel Side

SV Side

Reel Flange (4” 150# ANSI) with Low Friction Swivel -
Prevents hose kinking due to twist (when fully deployed)

Low Profile Floating Section

- Flexible, Slimline design- Reduces hang-ups
- Floats even if jacket is compromised

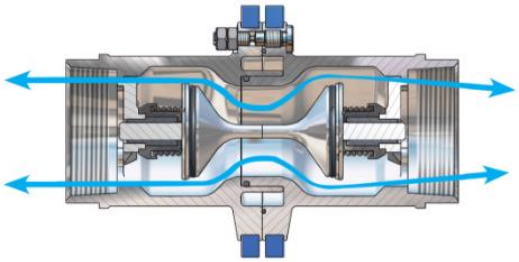
Crane Lifting Eye

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Standard 316SS wet & painted CS dry

Typical Offshore Loading Station Hose Fittings



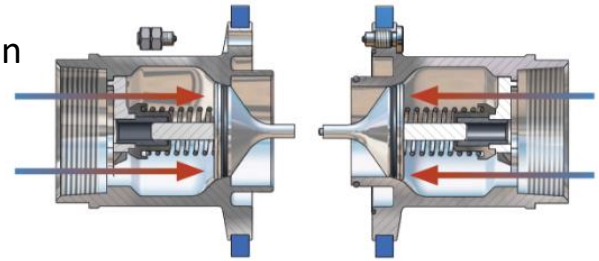


SBCoupling before emergency disconnect

The safety break-away valve consists of two halves, each with a valve that has a o-ring seal.

Break-away Fitting

- Parts under high tension due to SV move away
- Hazardous material include spring loaded valve to automatically seal both sides
- Non-hazardous material fittings do not include the self-sealing valve



SBCoupling after emergency disconnect

When the SBCouplings separate, it allows the valves to close. The two valves closes rapidly, minimizing exposure to personnel and the environment.

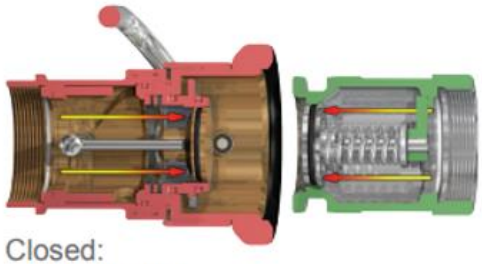
DryBreak – Supply Vessel Coupling for Hazardous Materials





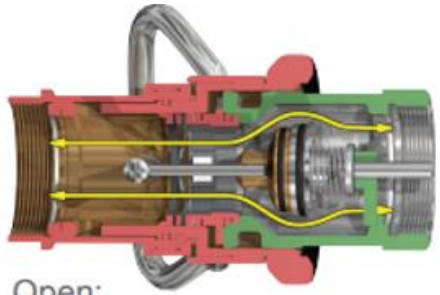
DryBreak – Mounted to Hose

Mating SV Fitting



Closed:

- Turn and pull it's released - no spillage

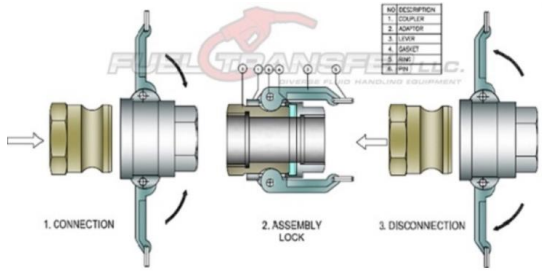


Open:

- Push and turn it's coupled - full flow

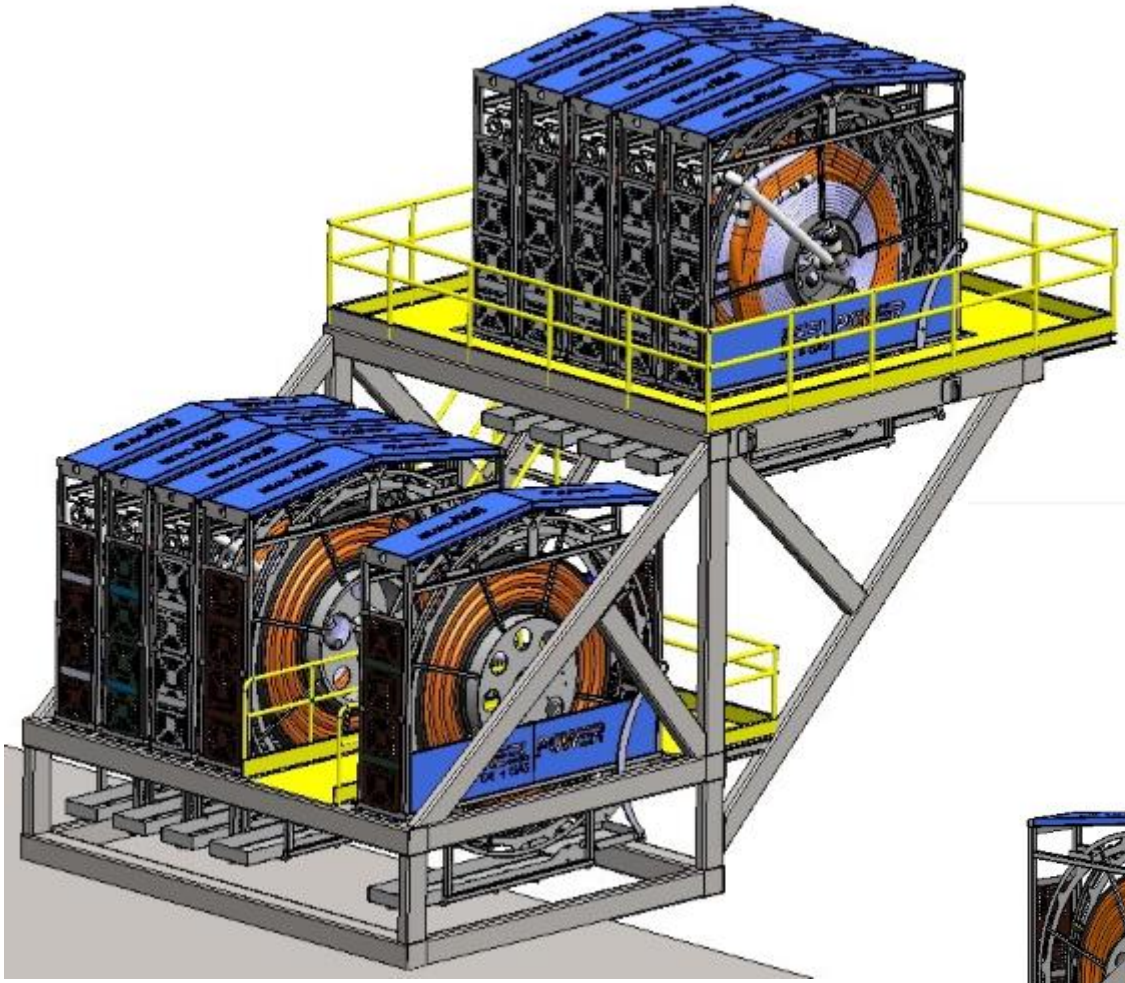


Camlock – SV Coupling for Non-Hazardous Materials



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Doubledecker design – Even greater footprint savings

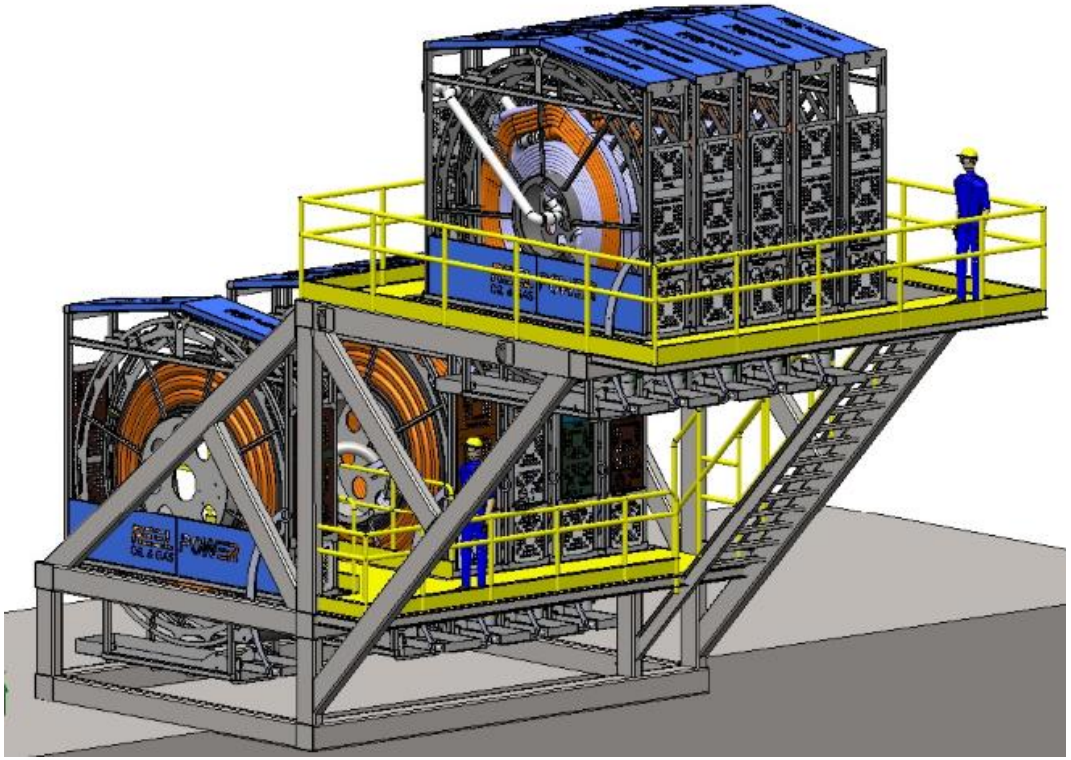


Double Decker – 6 Reel Positions (approx.)

- 11.25 ft (3.4 m) Wide
- 11.5 ft (3.5 m) Depth

Double Decker – 10 Reel Positions (Shown)

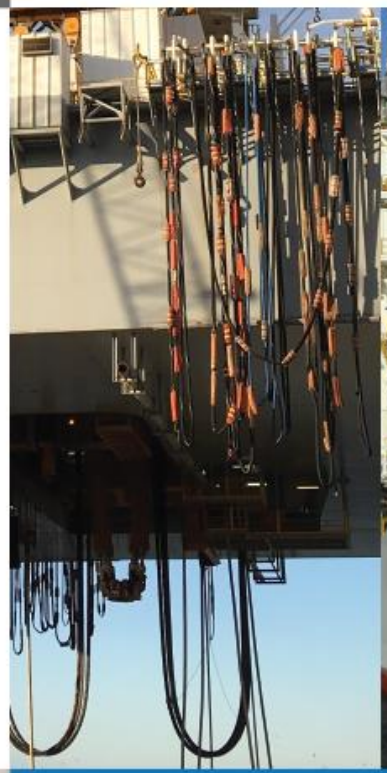
- 29 ft (8.8 m) Wide
- 11.5 ft (3.5 m) Depth



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WORLD'S MOST COMPACT OFFSHORE LOADING STATION

REELPOWER
OIL & GAS





Safer for the Environment. Safer for your Crew.

- Four times longer hose life & reduced chance of spills
- Neat storage of hose reduces trip & handling hazards
- Reduced manpower – Only one operator to deploy & retrieve
- 37% Smaller Footprint and 20% Lighter Weight than Competition

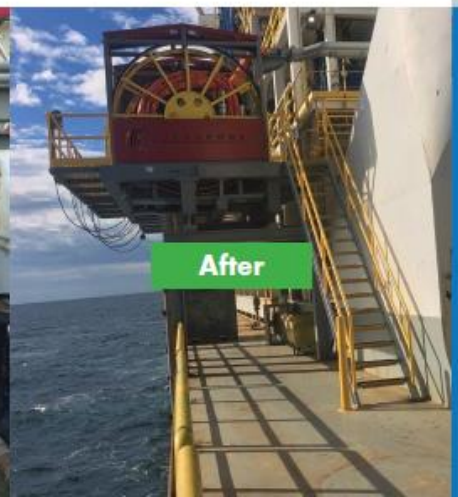
Patents Pending

Available for New Build Construction and Retrofit on Existing Vessels

Reduce Manpower, Clean Up Deck Space and Extend Hose Life







DON'T DANGLE YOUR FUEL OVER THE OCEAN

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APPENDIX 2

Company Products

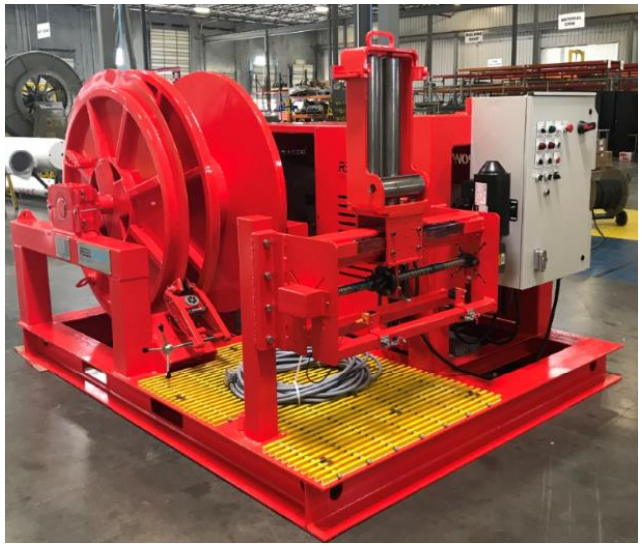
REELPOWER
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Specialty Winches – Towing, Oceanographic, Research Winches

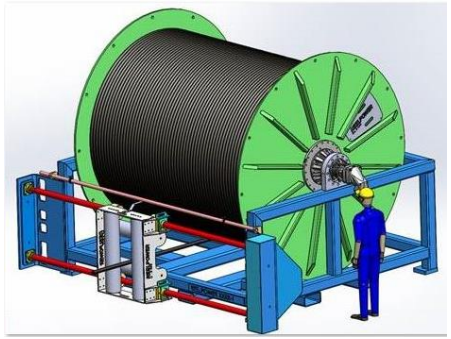




Oceanographic Winch



Downhole Deployment Winch



Specialty Winches

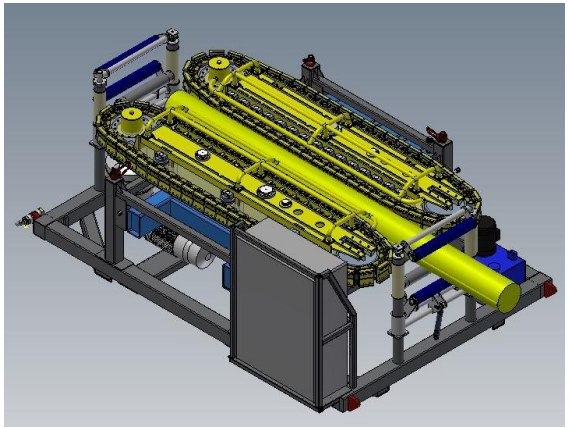
Reel Power Marine & Energy has hundreds of years of specialty winch and winding expertise

REELPOWER
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Tensioner/Haul-offs for Deployment of Offshore Cables, Umbilical, Powerline & Flowline







3 to 40 T Tensioner with Electric or Hydraulic Drive;
Horizontal & Vertical Track Configuration available

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Linear Engine & Traction Winches – For Offshore Cable & Umbilical deployment







- Linear Engines are especially useful for passing bodies (cables with Lumps)
- Mounted within shipping container for easier mobilization

- Traction Winches for cable and braided line deployment
- Up to 30,000 lbs of tension

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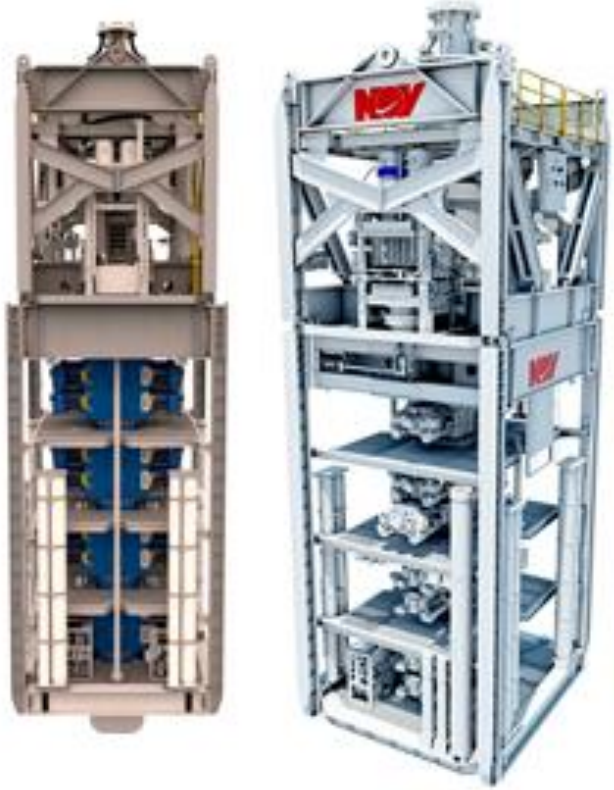
Radoil products primarily focuses on innovative, patented deep water drilling blow out preventer solutions





BOP Control Reels

7 Patented Features





Depth Compensated Accumulators – Patented

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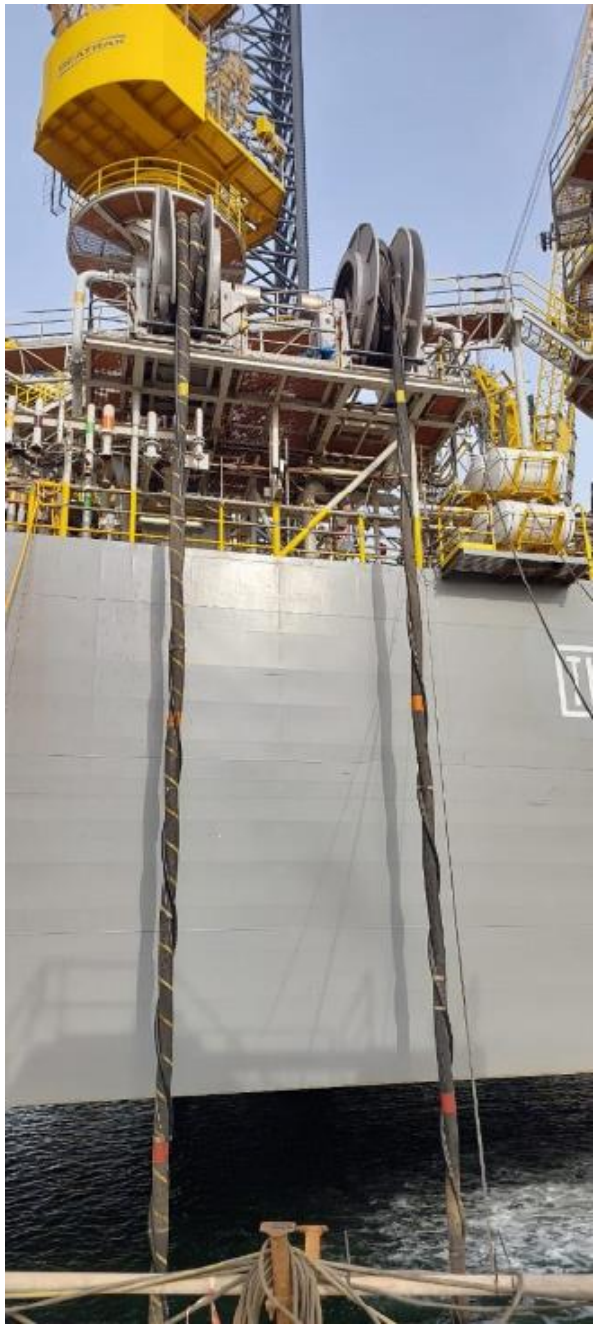
Jack-up Drilling Rig – Raw Water & Preload Reel Systems



Middle East Jack-up Rig - Pneumatic Reel with Pump & Pump Guard

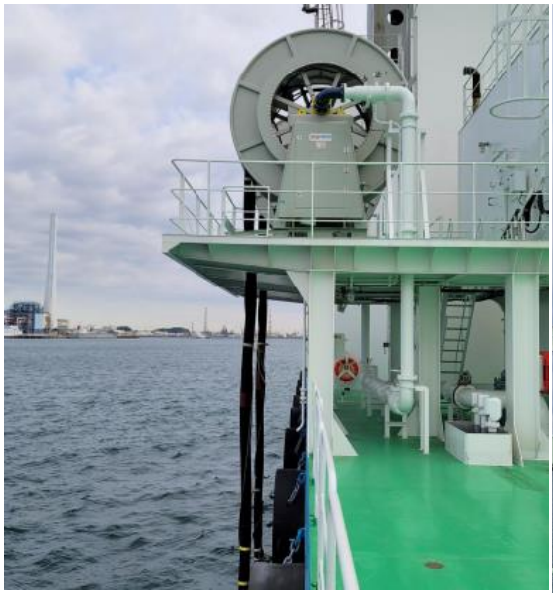






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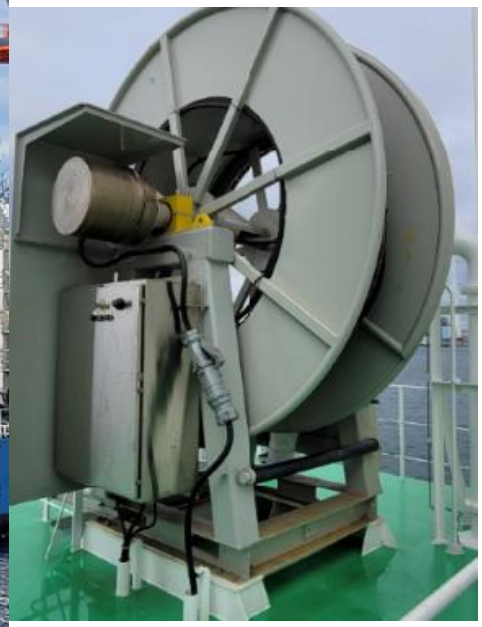
Recent Hose Reel Pumping System Installations

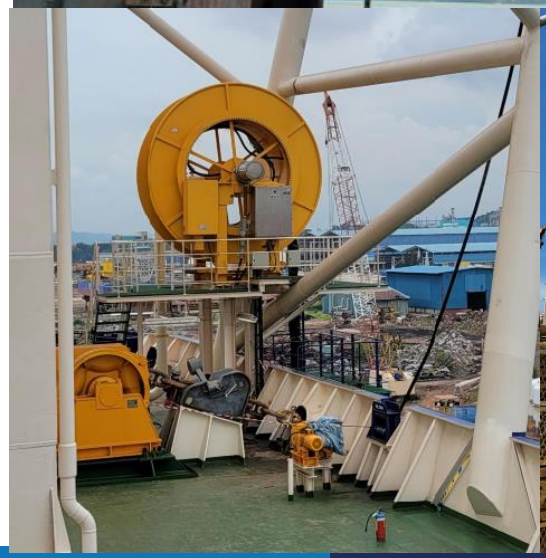




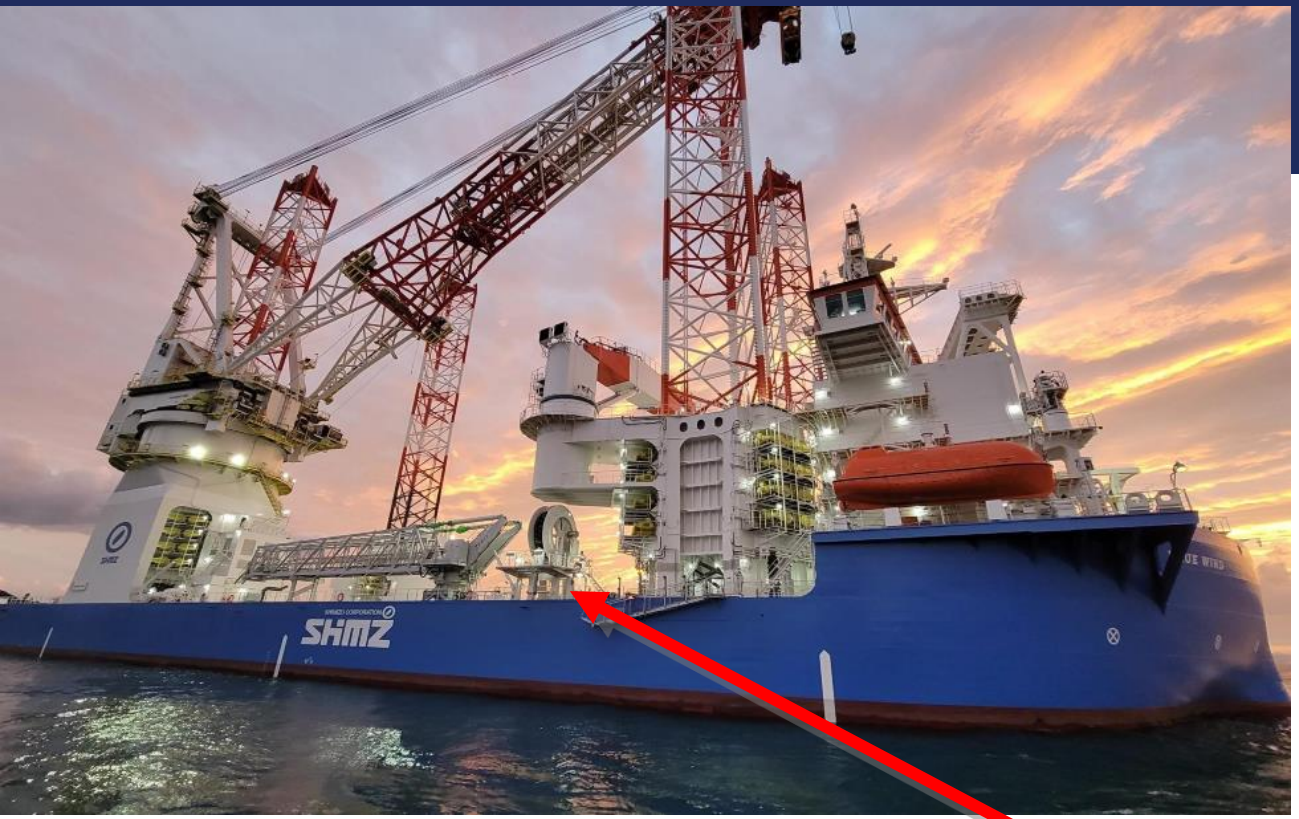




















WTIV-Japan – (1) Reel Starboard (2) reels Port – Hose Reels on Platforms w/ VFD Pump Control & Pump Guard Installed

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RPME Drill Line Spoolers Offshore & Land

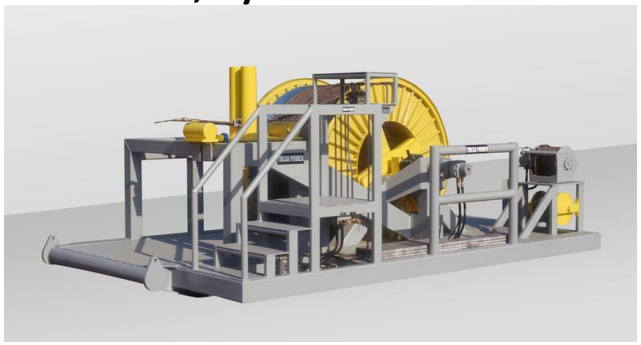








- ¾” thru 2” Drill Line
- 5,000 thru 10,000 ft
- Air, Hydraulic & Electric

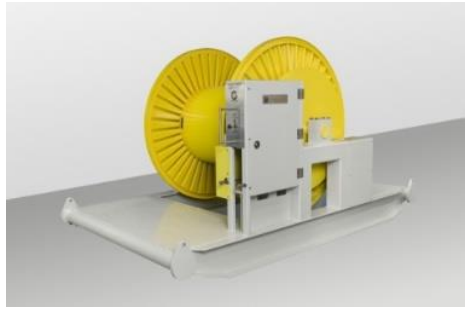








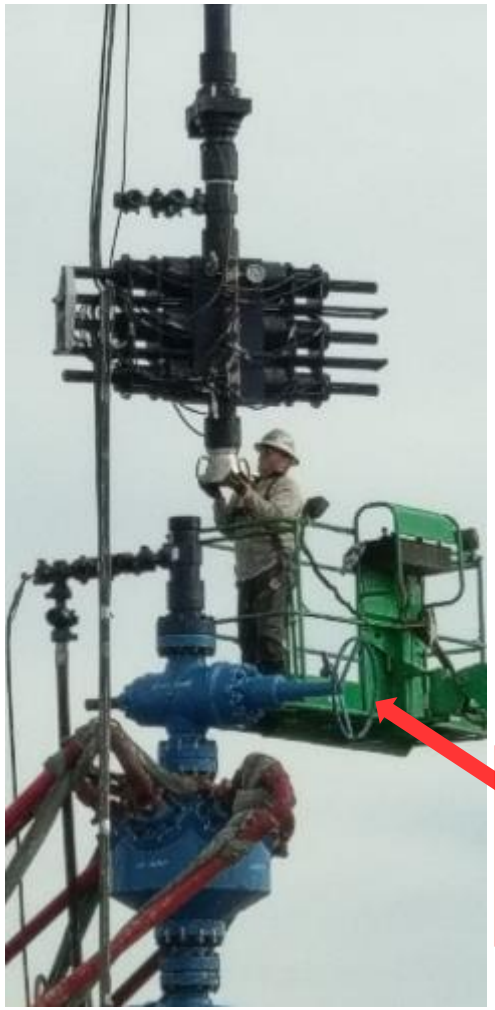




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RPME Loc-Torus II Frac Connector - Improved Safety - Need to Remove the Man from the Operation

Original Lubricator Connection Method



Remotely Connected by Company Man – Outside of Red Zone

Manually Connected by Man in Manlift

Upgraded Lubricator Connection Method



Hazards Related to manually connecting wireline lubricator

- Dropped objects
- Working from heights
- Restricted mobility
- Hand placement
- Large overhead loads
- Manlift hydraulic failure
- Crane communication
- Dropped wireline tools
- High wind on manlift
- Collision with equipment
- Driving over hoses
- Transferring fluids

Need to remove the man from the operation

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Thank you!

Any questions?

We appreciate the opportunity to share our capabilities.

Our next steps would be to understand your specific needs, identify synergies, then design a solution to meet you application needs!

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