TECHNICAL INFORMATION SHEET

# RELIEF WELL INJECTION SPOOL

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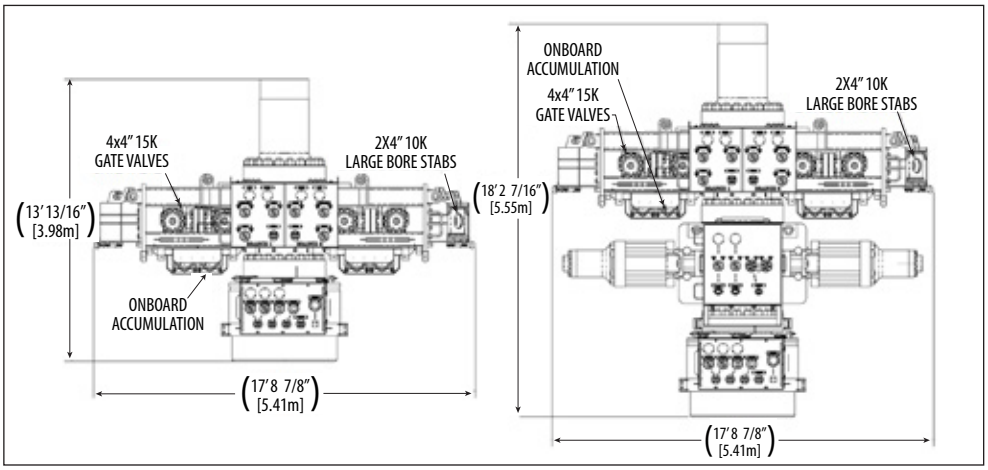
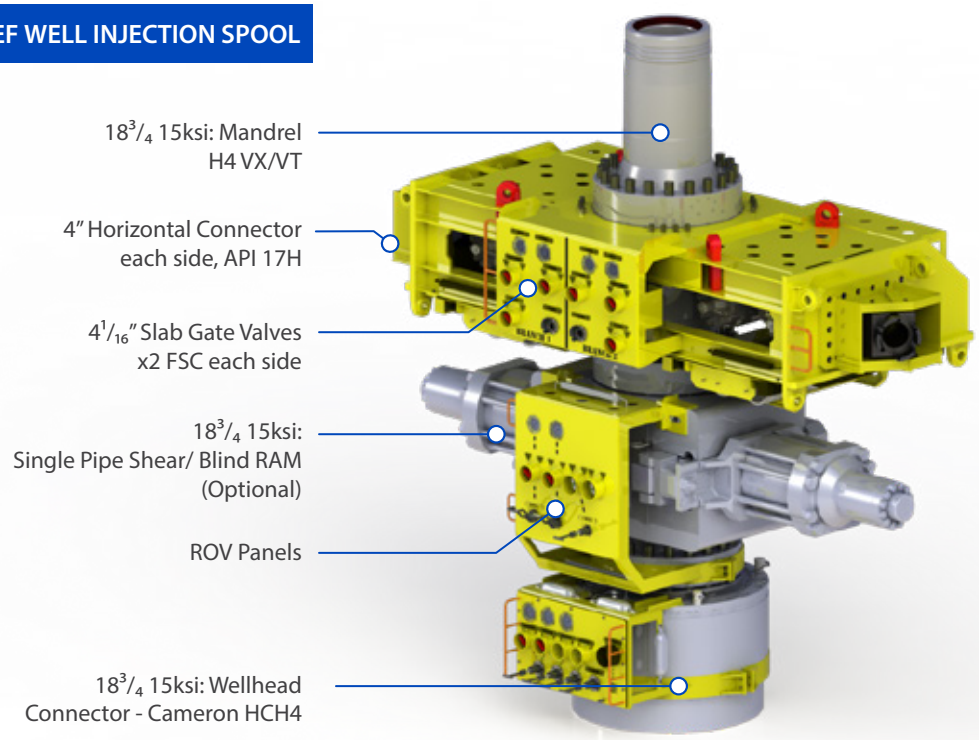
## RWIS - *Patented technology , transports quickly for dynamic kill relief*

Trendsetter Engineering and Add Energy have teamed up to develop the Relief Well Injection Spool (RWIS). Utilizing both Trendsetter's subsea engineering experience and Add Energy's expert knowledge of blowouts and well control incidents, the two companies have created a breakthrough tool for high rate dynamic bottom kill relief well applications that is both designed to API Specifications and I3P verified.

The RWIS is a valve based device that increases the flow capacity of a single relief well. In many scenarios, this is a safer and less challenging option to drilling multiple relief wells. The 15,000 psi rated RWIS sits between the relief wellhead and the BOP at a maximum water depth of 10,000 ft, and provides inlets for multiple pumping vessels to hydraulically connect via flexible lines and inject kill fluid into the relief well. For blowouts where the kill requirements are lower, the RWIS may still provide benefits by allowing a shallower intersect that saves time and limits the spill volumes. In cases where the dynamic kill requirements drive the well design, the RWIS may provide significant savings on the casing, completion and field development. Moreover, the system is both air freightable and rapid deployable.



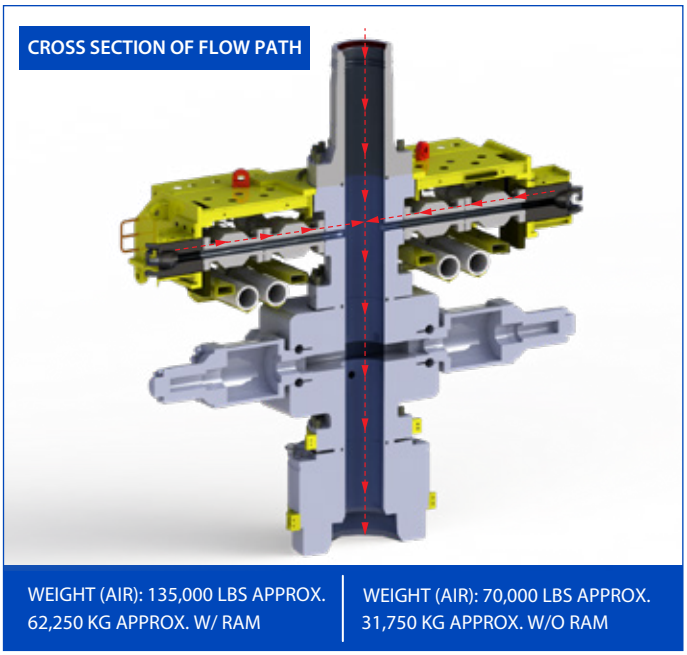

## RELIEF WELL INJECTION SPOOL




## KEY FEATURES

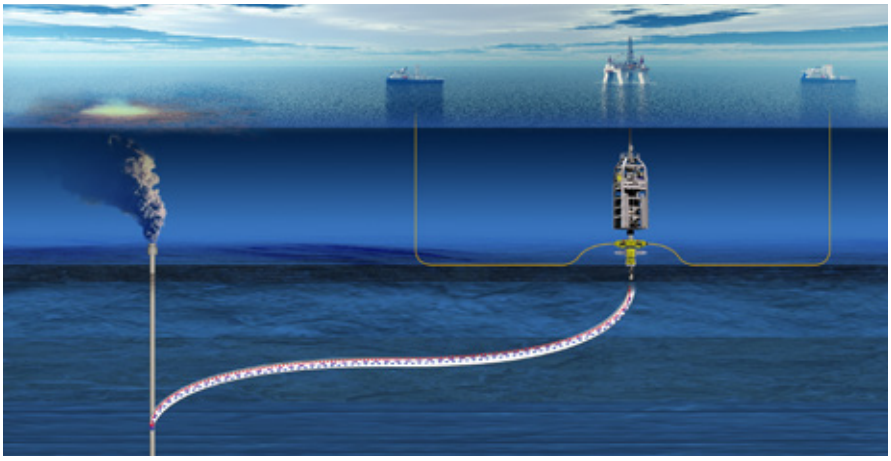
- Device developed to ensure single relief well contingency for offshore blowouts
- Gives operators permission to drill wells in challenging/sensitive areas
- Offers cost savings on well and field development projects
- Mounted on top of the Relief Well Wellhead
- Sits between the wellhead and the BOP and has the same bore as the BOP (18 ¾")
- Includes two valve inlets for high rate pumping
- Permits significantly more flow capacity
- Requires no modifications to existing rig systems
- Does not interfere with primary well control equipment
- Includes additional well isolation barrier (Optional Lower Pipe Shear RAM)
- Operated from surface (RIG) and ROV

*Patented tool for high rate dynamic bottom kill relief well applications.*




WEIGHT (AIR): 135,000 LBS APPROX.
62,250 KG APPROX. W/ RAM

WEIGHT (AIR): 70,000 LBS APPROX.
31,750 KG APPROX. W/O RAM




## SPECIFICATION

### Relief Well Injection Spool

| | |
|---|---|
| Design Life | 20 years |
| Design Life (pumping) | 249 hours |
| Water Depth Rating | 10,000 ft |
| Design Pressure – System | 10,000 psig |
| Design Pressure | 15,000 psig |
| Design Pressure 4" Horizontal Connectors | 10,000 psig (minimum) |
| Operating Temperature Rating (Structures) | -20°C to 60°C [-4°F to 140°F] |
| Operating Temperature Rating (Flowline Equipment) | -4°C to 60°C [25°F to 140°F] |
| Storage Temperature (Equipment and Structures) | 20°C to 60°C -4°C to 60°C |
| System Hydraulic Fluid | Pelagic 100 |
| Product Specification Level | PSL 3 |
| Material Trim per API 6A | DD minimum |
| NACE MR0175 Compliant | Yes |

add energy

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