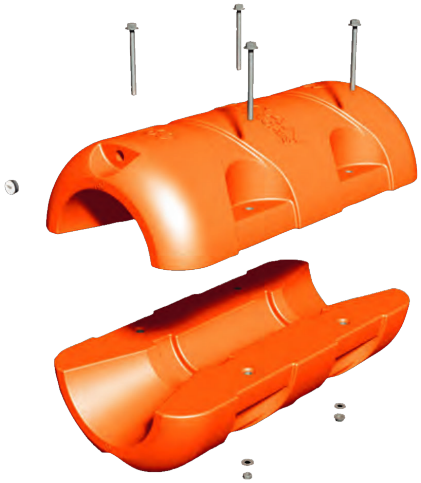
PIRTEK
OIL & GAS



RISK MANAGEMENT PRACTISE

Uncontrolled offshore hydrocarbon spills from MDUs, particularly in, or adjacent to, sensitive marine environments are a major risk factor and need to be tightly managed to avoid damage to the environment, significant penalties and adverse publicity. The highest ongoing risk of an offshore spill is during bunkering operations from an OSV.

HOSE END SEPARATION:
Caused by crimping end terminations onto light-weight industrial hose. It is important to use a hose with a heavy duty construction to allow the crimped ferrule to bite solidly into the hose carcass.

HOSE PARTING PURING OSV EMERGENCY MANOEUVRE:
An OSV's Master must be ready to mobilise the vessel should there be an emergency particularly in unpredictable sea conditions. If the hose string is still attached then it needs to be sacrificed. A breakaway (weak link) coupling will "kill the spill" without damaging the integrity of the hose assembly.

HOSE DAMAGED BY OSV PROPELLERS:
If the hose string is not visible then there is a high risk of the OSV running over it causing damage and a potential hydrocarbon release. An adequate number of high visibility floatation collars will support the hose on the sea surface allowing it to be seen at all times.

SPILL DURING OSV CONNECT/DISCONNECT:
After bunkering, the hose string still contains a large quantity of fuel which needs to remain contained and the use of a Dry Disconnect Coupling ensures zero spillage during connection and disconnection.

LEAKS DUE TO HOSE FATIGUE:
Hose is easily damaged by rough handling while being deployed or stowed. Soft slings used to choke a hose will cause abrasion, kinks and twist damage to the hose helical wires causing premature failure. The use of our double eye swivel hose lifters provides a secure lift point and allows the hose to follow its natural form while being mobilised.

These issues are a real and significant hazard that requires a high level of Risk Management. Pirtek Oil & Gas, is the leading hose supplier to the Offshore Oil & Gas industry and has developed a complete package of products and services that negate most of the risk associated with hose bunkering. We have combined world's best practice to develop a system that best protects the clients' interest.

RISK MANAGEMENT PRACTISE

The following is our methodology when constructing a bunkering string for our clients' needs:

8 STEPS TO THE IDEAL FUEL BUNKERING HOSE STRING

1. DECIDE HOSE STRING SIZE & LENGTH:

- Usually 100mm ID x 60m in assembled in 2 sections; 40m facility end, 20m OSV end.

2 SELECT HOSE TYPE:

- We recommend high quality, non-collapsible fuel rated hose.
- 20 or 34 bar WP with a 4:1 safety factor provides a significant wall thickness for end fitting retention and resistance to abuse.
- Hose is supported by quality certificates to EN10204-2.2.

3. SELECT END TERMINATION FITTING:

- End fittings are crimped or swaged with NPT male threads or ASME welded flanges.
- End fitting stem has a grooved hookie hook section to accept the double eye swivel hose lifter assembly.
- Ferrules can be colour coded to UKOOA standard to denote service.
- Metallic components are marked for material traceability to EN10204-3.1.

4. USE COUPLINGS SUITABLE FOR SERVICE:

- For hazardous materials, use a Dry Disconnect Coupling to NATO STANAG 3756 for universal compatibility.
- Hose boat end is typically fitted with a female coupler to attach to the OSV male adaptor.
- Non-hazardous applications may be fitted with a figure 206 hammer union male sub.
- Use an integral union swage tail to avoid potential leak paths through threaded connections.
- All metallic components are marked for material traceability to EN10204-3.1.

5. FIT BREAKAWAY COUPLING:

- Fit a marine breakaway coupling between hose lengths in either NPT female thread or flanged.
- Coupling can be valved or non-valved as per service. Valveless type is typically used where protection of the hose asset is more important than environmental impact.
- Consider break force requirements; between 33 and 52kN.
- All metallic components are marked for material traceability to EN10204-3.1.

7. EQUIP HOSE STRING WITH FLOTATION DEVICE:

Select high visibility yellow polyethylene floatation collars w/- 316SS bolts, Use a buoyancy rating of 22kg for up to 100nb or 132kg for 125nb or above. Calculate number of floats required with hose full, typically 1 every 2m for up to 100nb and 1 every 3 for 125nb or above.

8. TEST AND CERTIFY:

- Hydrostatic pressure test to ISO1402 considering hose string's lowest rated component.
- Construct hose assembly in line with ISGOTT electrical properties; facility length conductive and boat length non-conductive to prevent galvanic corrosion and static build up.
- Stamp unique assembly ID on each fitting and affix 316SS identification & test tag.
- Supply with Manufacturer's Data Report MDR.