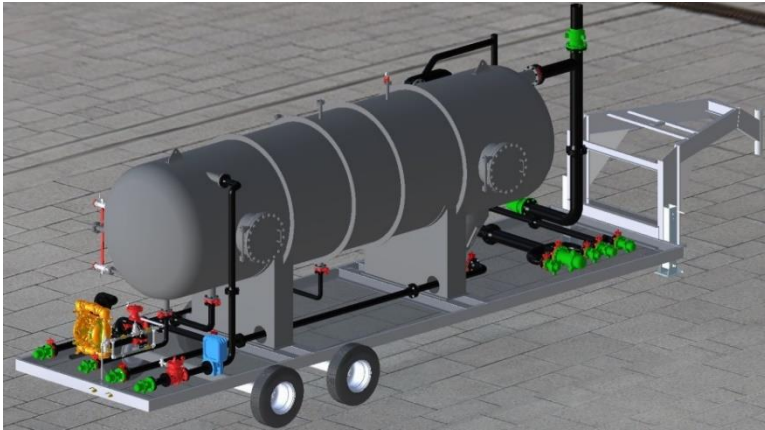


## 72" 120 psi BAT TANK TRAILER MOUNTED VESSEL



**The BAT trailer mounted pressure vessel** is designed to capture fugitive gas emissions during plug drill-out, clean out and well testing operations. This vessel is engineered to accept multiple flow streams simultaneously by using an inlet manifold system. The all-in-one pressure vessel is composed of three compartments. The first compartment contains an inlet diverter that directs the flow toward a solid handling space. The accumulated liquids spill over from solid handling section to a water compartment where liquids have sufficient residence time to separate further. Water level is controlled by liquid pilot and actuated valve system. The remaining lighter liquids spill over to the oil compartment for the subsequent transfer to oil tanks. Collected gas exits through a gas vent line to be measured by a gas meter before diversion to gas flare stack.

TSI Fabricators separators are engineered to meet or exceed industry standards such as ASME, ANSI, and NACE. TSI separators design and fabrication are documented in each of the equipment's data books.

### TECHNICAL DESIGN SPECIFICATIONS

<b>Vessel Diameter</b>	<b>72in. (183 cm)</b>
<b>Vessel Seam to Seam Length</b>	<b>20ft. (6.1 m)</b>
<b>Trailer Dimensions</b>	<b>8.5W x 13H x 32L ft (2.4W x 4H x 9.8L m)</b>
<b>Gross Weight</b>	<b>18,700 lb. (8,500 Kg)</b>
<b>Working Pressure</b>	<b>100 psi (7 bar)</b>
<b>Temperature Range</b>	<b>-20°F to 200°F (-29 to 93°C)</b>
<b>Gas Rate</b>	<b>1 MMSCFD (28 Mm<sup>3</sup>)</b>
<b>Liquid Rate</b>	<b>10,000 bbl./day (1,590 m<sup>3</sup>/day)</b>
<b>Pressure Safety Valve</b>	<b>6" Rupture Disk</b>
<b>Connections</b>	
<b>Inlet</b>	<b>2"x 3" Fig. 206 Female</b>
	<b>2"x 2" Fig. 1502 Female</b>
	<b>6 in. Fig 206 Female</b>
<b>Gas</b>	<b>3 in. Fig 206 Male</b>
<b>Oil</b>	<b>2 in. Fig 1502 Male</b>
<b>Water</b>	<b>3 in. Fig 206 Male</b>
<b>Relief</b>	<b>6 in. Fig 206 Male</b>
<b>Codes and Standards</b>	<b>ASME Sec. VIII Div. 1, ASME B31.3 NACE MR0175, AGA 7</b>

### FEATURES

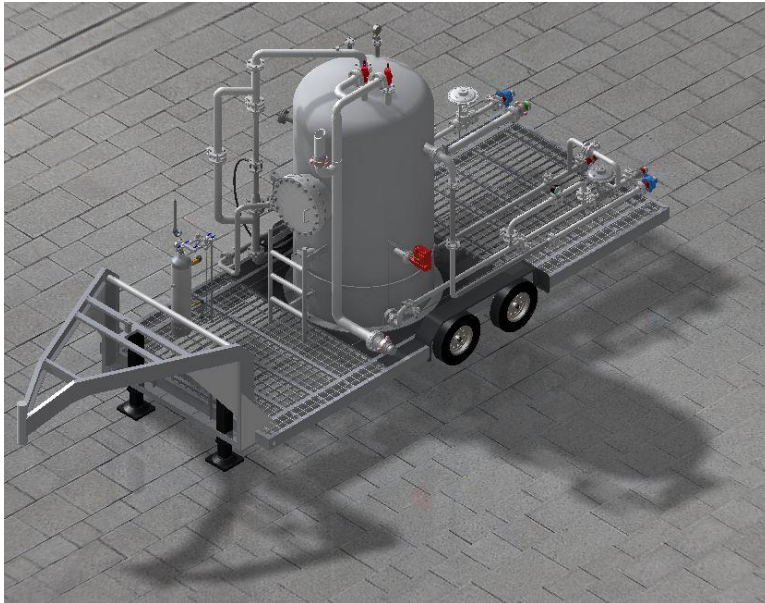
- Inlet manifold equipped with five inlet connections.
- 6" Relief System
- Gas Meter turn down ratio of 1:160
- Solid handling section
- Pneumatic Pump capable of 10,000bbl/day liquid flow

### BENEFITS

- Easy to transport and rig up
- Capture and measure fugitive gas emission from several receiving points
- Drain solids during operations
- Pressure Vessel to handle wide pressure upsets

### APPLICATION

- Drill-Out Operations
- Clean-Out Operations
- Well Testing Operations



**The Vertical Low-Pressure Separators are primarily used for the second stage of Separation.** The large diameter vertical three phase separator operates at lower pressure than the first stage three phase separators. In the second stage the large volume and lower pressure allow dissolved and entrained gases to separate before the liquid hydrocarbons are transferred to stock tanks for storage. TSI vertical Pressure Vessel is able to achieve separation by using internal components to aid in separation. The vessel further eliminates entrained liquids in exiting gas stream by directing the flow through the vane type mist extractor to coalesce the remaining liquid droplets. The vessel is equipped with measurement meters to gauge various phases. TSI vertical low-pressure separator is able to function as two or three phase separator.

TSI Fabricators Separators are engineered to meet or exceed industry standards such as ASME, ANSI and NACE. TSI separators design and fabrication are documented in each of the equipment's data book.

## TECHNICAL DESIGN SPECIFICATIONS

<b>Vessel Diameter</b>	<b>60in. (152 cm)</b>
<b>Vessel Seam to Seam Length</b>	<b>6 ft. (1.8 m)</b>
<b>Trailer Dimensions</b>	<b>8.4W x 12.8H x 20L ft (2.6W x 3.9H x 6.1L m)</b>
<b>Gross Weight</b>	<b>9,500 lb. (4,300 Kg)</b>
<b>Working Pressure</b>	<b>250 psi (17 bar)</b>
<b>Temperature Range</b>	<b>-20 to 200°F (-29 to 93°C)</b>
<b>Gas Rate</b>	<b>5 MMSCFD (142 Mm<sup>3</sup>)</b>
<b>Liquid Rate</b>	<b>5,000 bbl./day (795 m<sup>3</sup>/day)</b>
<b>Pressure Safety Valve</b>	<b>2 x 2" Taylor</b>
<b>Connections</b>	
<b>Oil Inlet</b>	<b>2 in. Fig 206 Female</b>
<b>Gas</b>	<b>3 in. Fig 206 Male</b>
<b>Oil</b>	<b>2 in. Fig 1502 Male</b>
<b>Water</b>	<b>2 in. Fig 1502 Male</b>
<b>Drain</b>	<b>2 in. Fig 1502 Male</b>
<b>Relief</b>	<b>4 in. Fig 206 Male</b>
<b>Codes and Standards</b>	<b>ASME Sec. VIII Div. 1, ASME B31.3, NACE MR0175, AGA 7</b>

## FEATURES

- Liquid and gas measurements
- Liquid and gas controls
- Nozzles for optional Hi/Lo Level and pressure alarms
- Nozzles for optional heating coils

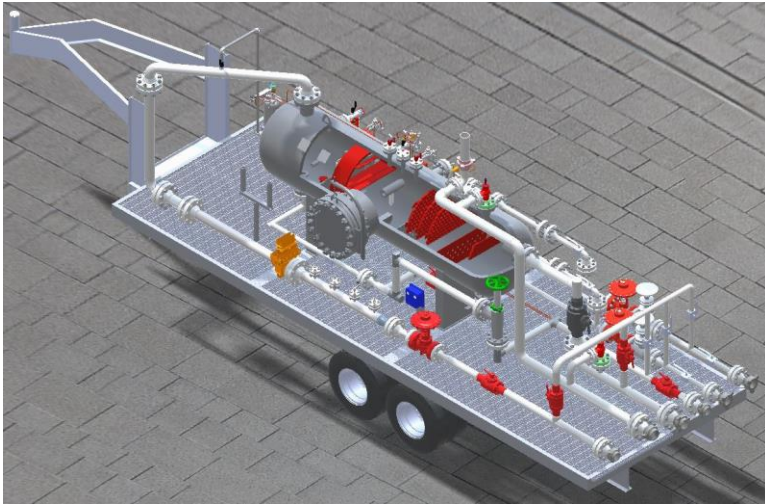
## BENEFITS

- Two phase or three phase low pressure use
- Able to measure three phases
- Reduce emitted gas before liquid directed to stock tanks
- Easily portable

## APPLICATION

- Frac flow back operation
- Production well testing operation
- Temporary production facilities operation

## TRAILER MOUNTED HORIZONTAL THREE PHASE SEPARATOR



**The trailer mounted horizontal three phase separators** are pressure vessels used to separate and measure water, oil and gas flowing from a wellhead. In the upstream applications they are typically placed downstream of a choke manifold. The choke valve is required to drop well head pressure down to working pressure range of the three-phase separator.

In order to achieve the separation and measurement, separators are equipped with the internal and external devices. For efficient phase separations, TSI separators are designed with internal inlet diverter, vane type mist extractors, wave and foam breakers, and vortex breaker. The separator features control pilots to maintain consistent liquid level and gas pressure to optimally operate the separator. The resultant separated phases are measured by devices such as dual chamber orifice meter and turbine meters for gas and liquids respectively.

TSI separators are engineered to meet or exceed industry standards such as ASME, ANSI, and NACE. TSI separators design and fabrication are documented in each of the equipment's data books.

### TECHNICAL DESIGN SPECIFICATIONS

<b>Vessel Diameter</b>	<b>36in. (91 cm)</b>
<b>Vessel Seam to Seam Length</b>	<b>10ft. (3 m)</b>
<b>Trailer Dimensions</b>	<b>8W x 10H x 25L ft (2.4W x 3H x 7.6L m)</b>
<b>Gross Weight</b>	<b>24,000 lb. (10,900Kg)</b>
<b>Working Pressure</b>	<b>2,000 psi (138 bar)</b>
<b>Temperature Range</b>	<b>-20 to 200°F (-29 to 93°C)</b>
<b>Gas Rate</b>	<b>30 MMSCFD (850 Mm<sup>3</sup>)</b>
<b>Liquid Rate</b>	<b>5,000 bbl./day (795 m<sup>3</sup>/day)</b>
<b>Pressure Safety Valve</b>	<b>2 x 2" Taylor</b>
<b>Connections</b>	
<b>Inlet</b>	<b>4 in. Fig 206 Female</b>
<b>Gas</b>	<b>3 in. Fig 206 Male</b>
<b>Oil</b>	<b>2 in. Fig 1502 Male</b>
<b>Water</b>	<b>2 in. Fig 1502 Male</b>
<b>Drain</b>	<b>3 in. Fig 206 Male</b>
<b>Relief</b>	<b>3 in. Fig 206 Male</b>
<b>Codes and Standards</b>	<b>ASME Sec. VIII Div. 1, ASME B31.3, NACE MR0175, API 14.3 (AGA3), AGA 7</b>

### FEATURES

- Inlet and Vessel Pressure Safety Valves
- Include computerized gas calculator & Barton Chart Recorder
- Removable internal accessible by man way
- 3" choke line for high volume water flow back
- Gas and liquid lines can be operated manually and pneumatically

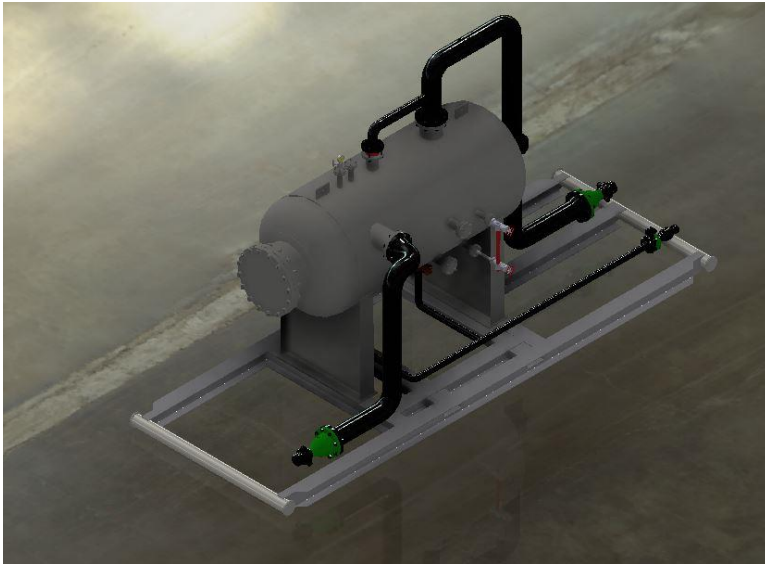
### BENEFITS

- Portable reducing transportation costs
- Internal parts are serviceable
- Designed to minimize emission to atmosphere
- Sour service separators are standard

### APPLICATION

- Frac flow back operation
- Production well testing operation





**The Skid Mounted Knock Out Drum** is designed to separate suspended liquid particulates in a gas stream before the flaring process. TSI Fabricators has engineered a knock out drum that is able to remove 100% of liquid particulates greater than 5 microns and average of 95% for particles between 2 to 4 micron range. The accumulated liquid in the drum is drained through two drain nozzles at the bottom of the vessel. Liquid level is monitored using sight glass attached to two nozzles on the separator.

TSI Fabricators separators are engineered to meet or exceed industry standards such as ASME, ANSI, and NACE. TSI separators design and fabrication are documented in each of the equipment's data books.

### TECHNICAL DESIGN SPECIFICATIONS

<b>Vessel Diameter</b>	<b>42in. (107 cm)</b>
<b>Vessel Seam to Seam Length</b>	<b>6ft. (1.8 m)</b>
<b>Trailer Dimensions</b>	<b>4.5W x 7H x 11L ft (1.4W x 2.1H x 3.4L m)</b>
<b>Gross Weight</b>	<b>4,100 lb. (1,860 Kg)</b>
<b>Working Pressure</b>	<b>250 psi (17 bar)</b>
<b>Temperature Range</b>	<b>-20°F to 200°F (-29 to 93°C)</b>
<b>Gas Rate</b>	<b>30 MMSCFD (4.5 Mm<sup>3</sup>/day)</b>
<b>Liquid Rate</b>	<b>30 bbl./day (4.5 m<sup>3</sup>/day)</b>
<b>Pressure Safety Valve</b>	<b>3" Rupture Disk</b>
<b>Connections</b>	
<b>Inlet</b>	<b>6" ANSI 150 RF Flange</b>
<b>Outlet</b>	<b>6" ANSI 150 RF Flange</b>
<b>Codes and Standards</b>	<b>ASME Sec. VIII Div. 1, ASME B31.3 NACE MR0175</b>

### FEATURES

- Mist extraction system
- 18" Manway to service internals
- Two nozzles for Hi/Lo alarm system installation

### BENEFITS

- Portable reducing transportation costs
- Internal parts are serviceable
- Designed to minimize dispersion of liquid particulates from flare gas stream
- Sour Service Knock Out Drums are standard

### APPLICATION

- Frac Flow Operations
- Production well testing operation
- Pipeline clean up operations



**TSI Fabricators provides a newly designed versatile portable flare stack** for combustion of well stream gases during frac flow back and well testing operations. TSI Supply offers a new dual flare stack mounted on a trailer. The trailer is equipped with side arms, hydraulic jack and supporting guy wire to rig up the stacks on location without assistance of other equipment and support anchors.

Each portable unit has a 6 in. and 3 in. stack. The 6in. flare stack may be used to flare higher rates during clean up and flow back operations. The 3 in. flare stack may be used for vented or released gas from low pressure separators.

The flare stack can be used in both standard and sour applications. As an added value TSI Fabricators offers flare simulation and dispersion modeling to support client's flaring preparations.

## TECHNICAL DESIGN SPECIFICATIONS

<b>Skid Dimensions</b>	<b>7.5W x 8H x 23L ft (2.3W x 2.5H x 7L m)</b>
<b>Gross Weight</b>	<b>8,760 lb (3,974 Kg)</b>
<b>Gas Flare Rate</b>	<b>30 MMSCFD (850 Mm<sup>3</sup>)</b>
<b>Connections</b>	
<b>Inlets</b>	<b>6 in. ANSI 150 Flange</b>
	<b>3 in. ANSI 150 Flange</b>
<b>Drain</b>	<b>1 in. Ball Valve</b>
<b>Codes and Standards</b>	<b>ASME B31.3, NACE MR0175</b>

## FEATURES

- Electric pilot ignition system with continuous pilot
- Dual stacks as a standard
- Self-supporting arms

## BENEFITS

- Reducing footprint on location
- Quick rig up
- Continuous pilot
- TSI Supply flare simulation support

## APPLICATION

- Frac flow back operations
- Clean up operations
- Production well testing operations
- Pipeline clean out operations