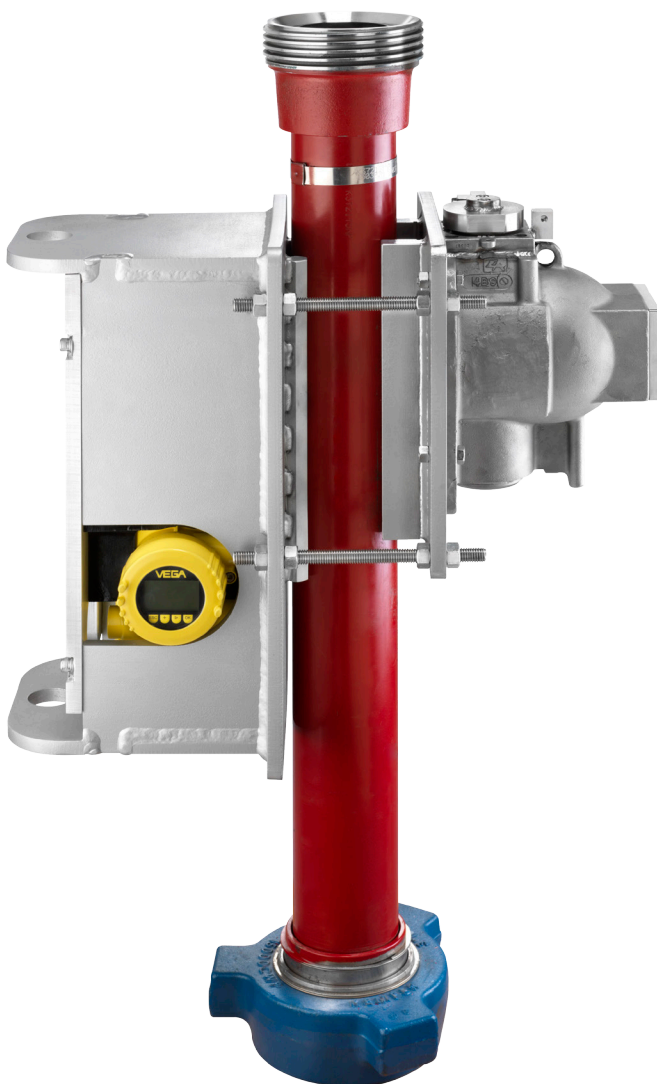


# MiniTrac 32

## Density Detector for Oil and Gas Applications

Radiation-based measurement is non-contact and unaffected by process pressure, temperature, or corrosive properties. In turn, VEGA's MiniTrac 32 can accurately measure slurry densities at well sites to ensure correct solids content in each stage of the process.



### Key Benefits

- Double-encapsulated electronics and a ruggedized scintillator make the system highly resistant to vibration and shock
  - NaI scintillation crystal is very sensitive, minimizing the required source size
  - Integrated electronics eliminate the need for remote evaluation or processing
  - Unique bracketing design optimizes measurement quality\*
  - Repeatability to 0.5% of span
  - Robust bracket design lengthens service life\*
  - Backed by superior service and responsiveness
- \*Benefits vary depending on chosen configuration

### Principle of Operation

#### Source Output

A source holder and detector are mounted on opposite sides of the pipe. A cesium-137 isotope is used as the source of gamma radiation that is passed as a collimated beam through the pipe and material toward the detector.

#### Detector Inference

As the fluid density increases, it absorbs more radiation. The more radiation the detector receives, the lower the process density and vice versa. The detector accurately correlates measured radiation to density and generates a proportional output.

# Component Overview

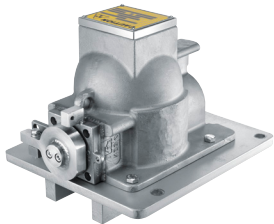


## MiniTrac 32

### Radiation-based sensor for density measurement

- Integral display and adjustment interface (optional)
- Relay input for “auto zero”

Output:	4 ... 20 mA/HART
Ambient Temperature:	-40 ... +140°F (-40 ... +60°C)
Enclosure Rating:	NEMA 4X, IP 66/67
Standard Approvals:	ATEX, CSA, FM, IEC
Power:	20 ... 72V DC, 20 ... 253V AC

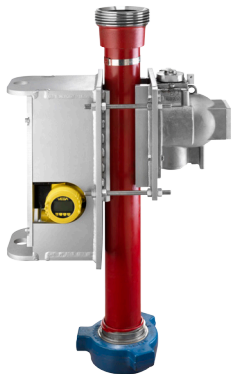


## SHLD

### Lightweight, cast stainless steel source holder

- 316 stainless steel housing
- Lead shielding material
- Lockable rotary shutter

Maximum Source Activity:	Cs-137: 100 mCi (185 GBq)
Fire Resistance:	1,000°F (538°C) for 5 minutes
Collimation Angle:	10°



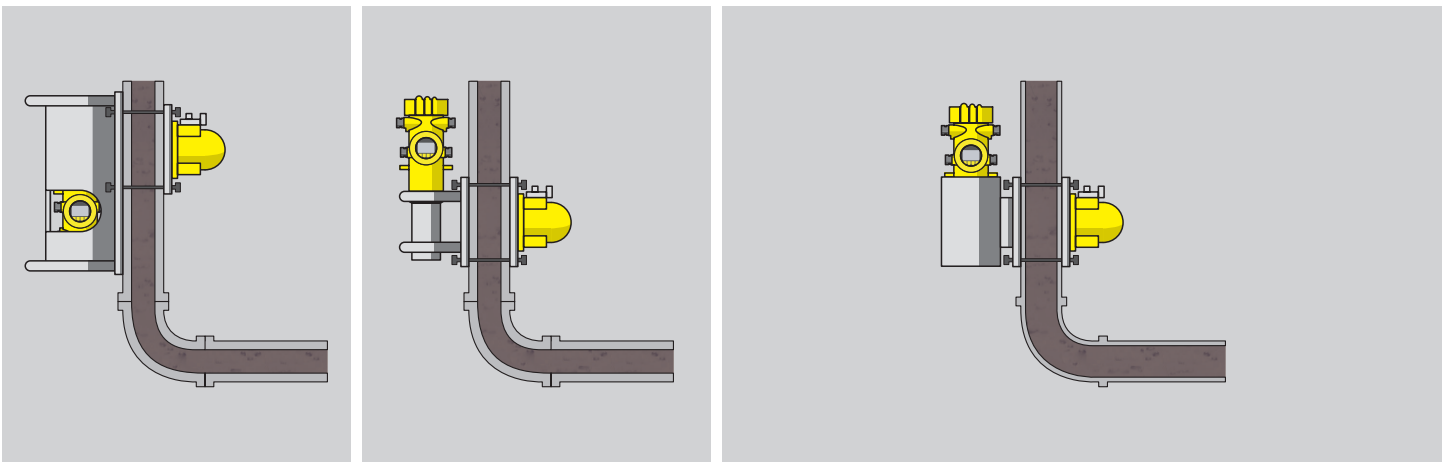
## PTB8 Bracket

### Heavy duty bracket system

- Patented (pending) shock and vibration isolation system (optional)
- 304 stainless steel construction
- Lightweight and truck-mounted versions available (see last page)

# Hydraulic Fracturing Applications

**MiniTrac 32 hydraulic fracturing systems are designed to provide reliable measurements to optimize monitoring and control of proppant concentrations. Available systems are designed for the unique requirements of both high and low pressure measurement applications.**



## High Pressure Measurement at the Well Head

Radiation-based technology is ideal for measuring density in high-pressure lines temporarily installed near well heads. Well fracturing companies need rugged and reliable density measurements to provide documentation of proper stage completion. VEGA's MiniTrac 32 detector accurately tracks density while avoiding contact with the abrasive slurry.

## Low Pressure Measurement at the Blending Truck

Well fracturing companies require a second density measurement at the point where sand is mixed with fluid. This enhances control over the process and provides redundancy. Truck-mounted measurements pose different challenges than the high pressure measurements. VEGA's MiniTrac 32 detector is equally suited to truck-mounted applications.

### Application Benefits

- Requires significantly less radiation
- Provides superior repeatability
- Rugged design lasts longer and requires less frequent adjustment



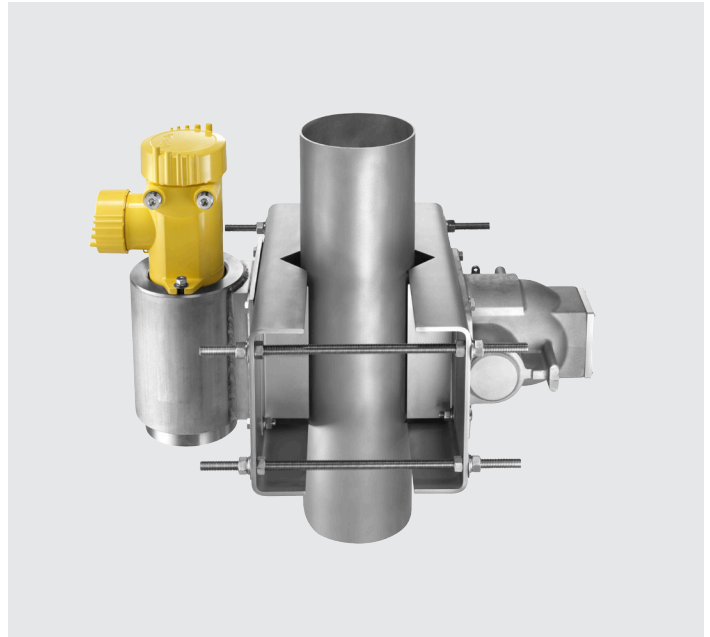
# Optional Configurations

## Lightweight Configuration



The lightweight version eliminates the protective box and urethane isolation. This reduces pup assembly weight substantially to permit easier movement of the system around the job site.

## Truck-Mounted Configuration



The truck-mounted version utilizes a universal bracket system to permit installation on a variety of pipe sizes. It features a detector background radiation shield to minimize errors associated with reflected radiation. These errors are caused by changes in other vehicle proximity from job-to-job.

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