

# OIL AND GAS SERVICES

## SERVING THE UPSTREAM, REFINERY, TERMINAL & PIPELINE INDUSTRIES

TRADEBE's patented remote tank cleaning technology provides increased project safety to personnel and the environment while simultaneously reducing the disruption to our client's production time.

*Our clients include: Petroleum Refineries, Terminals, Pipelines, Pulp and Paper facilities and Chemical plants - services include: large, automated tank cleaning and industrial maintenance projects.*

Experience  
combined with  
modern, patented  
technology &  
specialized  
equipment

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TRADEBE

*Sustainability at Work*

TRADEBE's automated tank cleaning process is accomplished through the use of patented technology.

Our technology eliminates man entry into the tank, and allows Tradebe to de-inventory the tank while it is in service.



## SRS – Solids Reduction System:

### De-inventory and Extract Sludge from Tanks

TRADEBE has a unique **technology to fluidize and extract waste material through any valve 6 inches or larger with no personnel tank entry required.** The Solid Reduction System (SRS) inserts 2 inner pipes contained in an outer pipe in through the tank valve.

The first inner pipe is a 2 inch high pressure wash diluent stream, which fluidizes the sludge and suspends, as a slurry, inside the tank. The second 4 inch outer pipe extracts the suspended sludge and diluent stream with suction.

The material is then pumped into our separation equipment and the diluent is reused in the process. The sludge is then disposed or reprocessed.

#### Technology/Equipment includes:

**Solid Reduction System (SRS)**

**Camera Manway Cannon**

**Sludgebuster Cannon**

**RUFF Unit (Hydraulic Power Source)**

**Centrifuges & Filter Presses**



#### **Closed System Benefits include:**

- Simplified cleaning process
- Minimization of costly diluent
- Minimization of diluent reprocessing impact
- Waste material can be drawn from the tank in minutes
- SRS can process up to 200 tons of sludge per day
- Double block valve with packing gland for leak protection
- Self-leveling using hydraulic control valves and pin locks



### Camera Manway Cannon: Re-suspend and Extract Sludge from Tanks

The Camera Manway Cannon is **robotic technology that liquefies sludge while the tank remains sealed.** This is a benefit to our customers and the environment because the Camera Manway Cannon enables compliance with stringent emissions regulations.

This sludge is then pumped out of the tank and can be separated by processing with our separation equipment, such as filter presses, centrifuges or thermal desorption units.



# Oily & Biological Sludge Minimization and On-Site Processing

## The Main Features are:

- Tank remains sealed while robotic cannon liquefies sludge. The liquefied sludge is then pumped out of the tank.
- Sludge can be further separated by processing with our Separation equipment.
- No need for Vapor Recovery equipment, which saves time, money, and disposal costs
- No need for personnel to enter into the tank during the cleaning phase
- Enables compliance with stringent emissions regulations



## Sludgebuster Cannon: Re-suspend and Extract Sludge from Tanks

TRADEBE's "Sludgebuster" cannon is **stainless steel robotic equipment, which can be folded and fitted through a 24" manway.**

It is capable of tracking forward and backward and passing solids up to 2" in diameter. TRADEBE is the industry leader with this technology - owning the patent for the equipment and processes.

The process includes the RUFF Unit, which is trailer mounted with a removable skid consisting of hydraulic pressure pack, fluidization pumps and fuel oil storage tanks - everything required to complete your tank cleaning project.



TRADEBE provides sludge processing solutions including pre-treatment, centrifugation, stabilization or thermal treatments. These solutions include semi-fixed or fixed plant options tailored to suit your specific needs.

If your facility regularly generates large quantities of bio-sludge, slops or tank bottoms, the solution may well be a fixed centrifuge plant that can continuously process the incoming sludge. This can lead to the recovery of significant amounts of oil that can be re-processed via the refinery and minimize your waste streams.

At TRADEBE, our professional team has the technical knowledge and experience to handle your unique sludge processing requirements on time and in budget - waste extraction, minimization, and/or waste disposal.

## Application-Specific Technologies >>

# Waste Minimization - Application Specific:

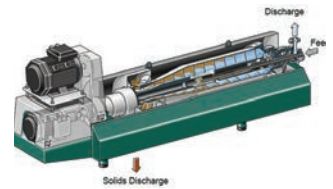
## Filter Press

Filter presses use a high pressure pump to force sludge through a 50 micron filtration screen. This mechanical force dewateres sludge for disposal, purifies a product or breaks emulsified slop oils. TRADEBE has been able to break and separate many slop oil emulsions that cannot be chemically separated. If waste cannot be separated using filtration, centrifugation can be used.



## Decanters - Horizontal Centrifugation

Sludge can be separated by using differences in density between water, oil and solids. Decanters use centripetal force to separate the two or three phases. Two phase centrifugation separates liquids and solids, while three phase centrifugation separates difficult oily sludge into water, oil and solid cake. Good quality recovered oil can be separated and re-used by the refinery. Water removed can be treated through the refinery's effluent treatment system. The solids produced are easy to handle and can be stored in containers prior to thermal treatment or disposal.



## Vertical Disk Stack Centrifugation

Vertical centrifuges are able to clean liquid phases using centripetal forces generated by high speed rotation in a centrifuge. These are usually used on the oil phase after treatment through a horizontal centrifuge, but they can also be used to treat slurry oils to remove catalytis. With Vertical Disk Stack Centrifugation, a disc stack centrifuge separates solids; and one or two liquid phases from each other in a continuous process. The denser solids are forced outwards by centrifugal forces while the less dense liquid phases form inner concentric layers. By inserting special plates, (disc stack), where the liquid phases meet, maximum separation efficiency is ensured. The solids can be removed manually, intermittently or continuously depending on the specific application. The clarified liquids overflow in the outlet area on top of the bowl into separate chambers sealed off from each other to prevent cross contamination. This enables us to achieve oil with water and solids content of less than 0.5%.



## Thermal Desorption

Thermal desorption vaporizes water and volatile contents in sludge through indirect heating in an anaerobic chamber. TRADEBE can apply for all permits necessary to install and operate a Thermal Desorption unit on your site.

- Low Temperature (150-300°C [302-572°F]) produces a final solid for disposal.
- High Temperature (above 400°C [752°F]) achieves a higher level of minimization by extracting all organic compounds.



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Sustainability at Work