

- **What is COS64 Solution:**
  - The Clean Oil Solutions (COS) additive COS64 is a non-toxic organic liquid additive which improves the flow performance of crude oil and liquefies oil sludge build-up in pipelines, storage tank and ships permanently. The product also significantly increases oil recovery in oil reserves with paraffin, sludge wax and Asphaltene problems.
- **Application of COS64 solution**
  - The COS64 solution extend in mobilizing
  - Thick oil (sludge) and paraffin wax liquefaction
  - Asphaltene liquefaction, pipeline flow assurance
  - Pipeline cleaning, in-pipe oil refining
  - API lifting, viscosity reduction
  - Enhanced oil recovery (EOR)
  - Secondary oil recovery from storage and ship tanks bottom sludge and corrosion control
- **WHAT ARE THE BENEFITS OF COS64 SOLUTION**
  - Major cost saving for businesses in specific and developing market in the oil industry
  - Low down time for the producer · Allows for no man entry cleaning
  - Can be used for soil and sand reclamation
  - The product is organic and non-flammable
  - Replaces current highly toxic chemical cleaners ( Benzenes, Tolulenes and Xylenes)
  - Liquefies oil sludge permanently · Used for corrosion control
  - Assists in the gasification in natural format and reproduces LNG, and more
  - Emulsion breaker, separates water from oil
- **Oil spills, sand decontamination and sludge pits clean up**

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- **TRADITIONAL TANK CLEANING**
  - Taking storage tank off service for up to 2 – 3 months
  - Revenue loss by not reclaiming crude oil from sludge and tank
  - down time
  - High unnecessary equipment and manpower cost
  - Hot tapping storage tank, high risk toxic cleaning products, high risk
  - procedures and in some cases oil spills
  - Risky tank man entry to clean tank bottom sludge
  - Sludge transportation to other facilities
- **IN-LINE TANK CLEANING**
  - Our method does not require taking the tank off-line
  - The in-line method offers clients a greater than 90% sludge clearance and return to full service within 2-3 weeks
  - Cost effective in equipment and manpower
  - Revenue return from sludge to oil liquefaction
  - Environmentally friendly products & procedures
  - No contamination to the crude oil
  - No unnecessary modification of the storage tank
  - Added benefits include low cap-ex, a low onsite footprint and much improved Health, Safety and
  - Environmental standards
  - Clean Oil Solutions (COS) is continuing to develop
  - unique methods and techniques in utilizing the
  - product

This process involves using COS64 organic solution into contaminated sand and soil

Ideal for sand contamination in petrol station, building sites or on large – scale outdoor environments

WE have the capacity to decontaminate sand large then 1000m<sup>3</sup> per day

Light duty machinery required

Environmentally friendly product and process

Our process leaves sand with only 0.05% of hydrocarbon

- **COS STORAGE TANK CLEANING METHOD:**
  - Top or side tank entry depending on access to the sludge with full tank
  - (No need to drain the storage tank for cleaning)
  - Introducing COS64 solution when agitating the sludge
  - Agitating the sludge for 4-5 days depending on sludge volume
  - Separation time 3-4 days depending on tank volume
  - After separation just drain the bottom of the tank and continue with daily production
  - Detail work procedures and scope of work will be provided to the customer
  
- **COS64 SOLUTION UPSTREAM INJECTION & SYSTEM**
  - Environmentally friendly approach for better results
  - Upstream injection for thick oil, paraffin, asphaltene wax and sludge for permanent liquefaction
  - No settlement in pipeline and storage tanks
  - How does COS64 solution perform
  - Emulsion breaker, separates water from oil in early stages when injected upstream
  - Corrosion control, protects pipeline and storage tanks
  - from corrosion in early stages if injected upstream
  - Viscosity reduction, helps in heavy oil transit
  - Reducing sludge into valuable crude oil during the transit
  - Doesn't harm crude oil or its valuable properties
  
- **PIPELINE INJECTION CLEANING VERSUS PIGGING**
  - Pigging the pipeline sludge is a very risky and costly business
  - Up to 20 and more runs need to be performed before smart pig is use
  - Not all T junctions are cleaned, pigs often get stuck in the pipeline causing more down time and cost.
  
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- **USING THE COS64 SOLUTION**
  - Envier The most effective method with less risk during the production
  - Injecting COS64 solution upstream all the wax, paraffin and sludge are liquefied in pipeline transit permanently
  - No sludge, wax or paraffin is collected in pipeline or storage tank
  - No heavy equipment and manpower need be used
- **ENHANCES OIL RECOVERY**
  - The oil recovery programs utilizing the product offer a unique cleaning solution for liquefying asphaltene, sludge and waxes down hole or underground
  - Important value-add to the product's EOR programs is reduced water cuts
  - Reduction in water produced may be by as much as 50%
  - Gasification. When introduced down well and upstream the product will assist in the gasification in natural format and reproduce LPG, and more
  - No steam injection needed
- **COS64 PRIOR PERFORMANCE TESTING & RESULTS**
  - COS64 was used to clean holding tanks and pipes and following proper procedures and dosing the results were to specifications and thus to the Company expectations and the satisfaction of client
  - COS64 was also used in non-static commercial trials again with successful results
  - All results of testing and commercial applications were verified by corporate clients' independent engineers
  - The results and details of all applications are not for commercial or private release due to confidentiality agreements with the clients
  - COS is prepared to carryout field testing to verify its results in various commercial applications under strict contractual terms