Offshore TCC Hammermill System

Offshore TCC Hammermill System Installation

FEATURES

- Recovers >99% of synthetic oil, diesel or low toxicity mineral oil for immediate reuse
- Reclaims oil with no significant fractioning or degradation
- Allows on-site disposal of treated drill solids
- Consistent treated solids results: <0.1% oil TPH; recovered base oil <1% BS&W
- Completely enclosed system
- Treats a wide variety of muds, cuttings, sludges, soils and tank bottoms
- Effectively treats solids containing up to 60% oil and water, as well as solids containing high percentages of small particles (<100 microns)
- Has consistent throughput of up to 5 MT/hr
- Modular design allows unit to be mobilized rapidly under all geographic and environmental conditions
- Uses electric modular drive
- Requires less mobilization and start-up time as a result of the plug and socket arrangement
- Minimizes oxygen infiltration with an in-built nitrogen purging system

The M-I SWACO Offshore TCC* Hammermill* system delivers proven thermal desorption technology in a compact, highly portable unit.

The TCC Hammermill is ideally suited for remote offshore drilling sites, environmentally sensitive areas, and projects where oil-based mud (OBM) and associated cuttings are expected.

This system incorporates advanced M-I SWACO field-proven TCC thermal desorption technology. The system incorporates the high separation efficiency, recovered oil quality, cost effectiveness and low emissions that have made TCC technology the preference of the offshore industry. The unit offers rugged construction and modular design. This combination of performance, ruggedness and portability makes the TCC Hammermill system the preferred mud and cuttings treatment solution for frontier exploration and drilling.

Environmental Performance

Field proven in Kazakhstan and Germany, TCC Hammermill technology is the most ecologically sound mud and cuttings treatment system available. Processed solids can be discharged safely overboard offshore (depending on geographical location), land-filled or utilized for road or construction aggregate. Unlike direct-fired systems or incineration, TCC technology meets all currently accepted emissions standards in North America, South America and the UK.

How It Works

The TCC is a separation technology designed for separating various components in drill cuttings and contaminated soils where oil-based mud (OBM) is used during the drilling operation, or where the soil has been contaminated with oil. In the TCC unit, the drilling waste or contaminated soil is separated into three main components—mineral solids, base oil, and water. The principle of TCC is to heat the waste stream to a temperature higher than the evaporation temperature of the base oil (normally 250° C to 300° C [482° F to 572° F]). The oil and water then evaporates and condensed in separate condensers.

With TCC, the waste is heated by friction transforming kinetic energy to heat. The core of the technology is a drum-shaped chamber (approximately 1 m in diameter and 1 m long), through which a shaft with a series of hammer arms is mounted. This chamber is referred to as the process mill. An electrical motor or diesel engine drives this shaft.

Prior to start up, sand is fed into the chamber and the shaft is set in motion. The particles are then forced toward the inner wall of the chamber where the end of the hammer arms beat the particles and create frictional heat. The highest temperature in the process stream is actually found in the waste itself.

- Provides durability and extended life from hard-faced hammers
- Energy efficient, using electric drives and air-actuated valves with air from the CleanCut system

ADVANTAGES

- Cost savings from high oil and diesel recovery rate
- Environmentally sound, onsite disposal of treated drill solids
- Elimination of expensive, offsite transport and disposal
- Reduced mobilization costs and rig-up time
- Flexibility to adapt to rapidly changing site conditions with minimal downtime
- High storage throughput
- Safe operation
- Field-proven performance
- Safe and controllable process temperatures
- No drill cuttings exposed to the environment
- Uninterrupted drilling rates
- Hard wearing hammers
- Automatically PLC controlled for minimal manual intervention
- Rated for Zone 2 Use
- DNV 2-7.3 rated containers

COMBINED CleanCut & TCC Hammermill FEATURES

- Pneumatic transfer with CleanCut for distances of 500 m (1,640 ft)
- Total containment
- Minimal crane lifts
- No additional manpower requirements
- CleanCut and TCC Vapormill PLC-controlled reducing manpower requirements

When the temperature is high enough, the waste is fed into the chamber. The liquids in the waste evaporate immediately and after a few seconds leave the chamber as vapors, which are condensed in separate tanks for water and oil. New waste is continuously fed in as the temperature rises, while dried solids are fed out when the load on the motor increases to its set point. The process is controlled by a fully automatic programmed logic control (PLC) system.

The highly commercial base oil is under the influence of high temperature for only a few seconds, thereby resulting in output oil of very high quality that can be re-used in new OBM.

Specifications

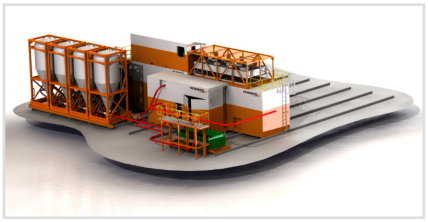
Feed: M-I SWACO CleanCut* system, M-I SWACO vacuum system for skips.

Performance Record

Performance	Specifications	Best Recorded
Oil- on-cuttings (TPH)	< 1%	0.0001%
Flash-point reduction of recovered oil (oC)	< 5	0
Solids in recovered oil (ppm)	< 1000	< 20
Water in recovered oil (%)	< 1	< 0.5
Oil in recovered water (ppm)	< 1000	< 50

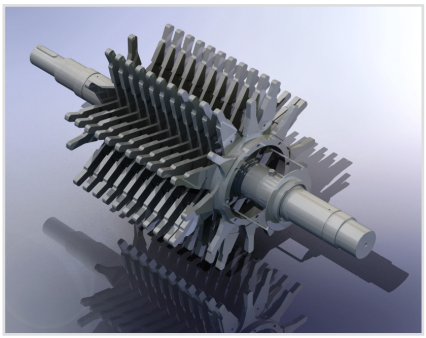
Summary

The TCC Hammermill unit is now specifically designed for offshore use, capable of being installed in the space that would have been used for the skips to collect and transport cuttings to shore. Through the integration of the proven CleanCut cuttings transfer and storage technology with an M-I SWACO Thermo mechanical Cuttings Cleaner (TCC) modular design, we provide the total solution for the treatment and disposal of drill cuttings in an offshore environment.



Combined Offshore TCC Hammermill & CleanCut Installation

M-I SWACO TCC Hammermill Stator



M-I SWACO TCC Hammermill Rotor

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