



**DUSTER™
Cuttings Dryer**



The DUSTER, with its horizontal-basket design, is advanced technology for optimal drying of synthetic-, mineral-oil- and diesel-base drilled cuttings

OPTIMUM DRYING FORCES

SWACO® and Hutchison-Hayes International have joined forces to offer the patent-pending DUSTER Cuttings Dryer — an innovative solution for solids processing and environmental remediation. The new DUSTER dryer features the unmatched ability to independently and simultaneously vary G-force and solids retention to achieve optimum solids drying performance. This unique capability yields superior drying of synthetic-, mineral-oil- and diesel-base drilled cuttings.

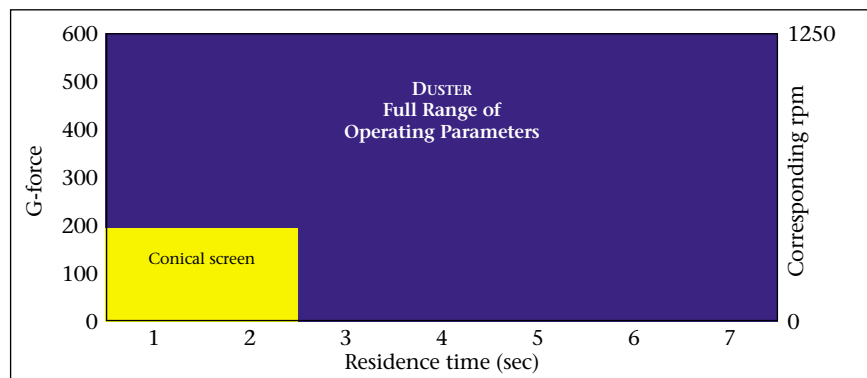
The DUSTER Cuttings Dryer provides unmatched oilfield solids drying performance.

The DUSTER dryer is engineered to provide better results than other horizontal or vertically oriented dryers with conical screens. It features a horizontal basket with a cylindrical screen. This design ensures that cuttings are exposed to uniform G-forces over the entire screen surface. Liquid-solid separation is enhanced, yielding consistently drier cuttings compared to other dryer designs.

The DUSTER dryer gives equipment operators unprecedented control over the drying process. Fully variable-speed bowl and scroll components allow quick, easy setting changes. This enables operators to make real-time adjustments to the drying process while drilling operations are under way, ensuring optimal results.



OPERATING ENVELOPE



USER-FRIENDLY, AUTOMATED OPERATION

The DUSTER dryer control panel features a fully functional Programmable Logic Controller (PLC) that facilitates real-time adjustments to achieve optimum dryness output. Under routine operating conditions, this allows virtually hands-free operation of the unit. In addition, the system delivers single-button startup and shutdown, complete manual control capabilities and simultaneous access to critical performance information. The PLC also features remote alarms and other important safeguards that make the DUSTER dryer inherently safer to operate.

HIGH OUTPUT, SMALL SPACE

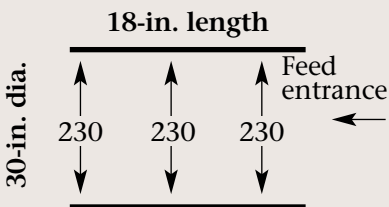
Despite its small footprint, the DUSTER dryer has a large cuttings processing capacity. In field tests, it has effectively dried from 30 (continuously) to 90 tons (intermittently) of material per hour. Variances in processing capacity occur because of changes in feed rates and feed material consistency (fluid content).

METHOD OF OPERATION

To begin liquid-solid separation, drilled cuttings from the rig shakers are transferred to the DUSTER feed conveyor via conventional conveyance systems (augers, vacuums, pneumatic transfer, etc.). Cuttings pass into the feed hub, which evenly distributes cuttings

on the rotating screen. Uniform application of centrifugal force thoroughly dries the cuttings according to operator-determined G-force levels. The main conveyor continues operation at the selected speed, distributing cuttings evenly across the screen for optimum separation efficiency. Solids are then conveyed to a discharge hopper while recovered liquids are transferred to an effluent tank.

DESIGNED FOR UNIFORM EFFICIENCY



Uniform G-force throughout length of screen

Cuttings drying efficiency is a function of:

- Effective G-force
- Screen area at G-force
- Residence time on screen
- Cuttings thickness on screen

FEATURES AND BENEFITS

Cylindrical screen design

- Applies constant, uniform G-force over the screen area for optimum drying

Variable main and back drives

- Achieves optimal dryness over a wide range of cuttings characteristics via:
 - G-force variance (100 to 600 g's)
 - tonnage throughput variance (30 to 90 tons/hr)
 - residence time variance (0.5 to 7 seconds)

Tight scroll tolerance

- Close tolerance between the scroll and screen minimizes plugging and controls filter cake production for the optimum drying environment

Wide range of process capacity

- Easily processes a constant feed rate of 30 tons/hr with a maximum intermittent throughput capacity of 90 tons/hr

Full PLC capability

- Control panel uses a fully programmable PLC with single-button startup and shutdown
- Controls variable-frequency drives via a 10-in., high-resolution, color touch-screen monitor
- Monitor displays a wide variety of operating parameters and alarms

Operator pager system

- Control panel automatically activates operator's pager to signal alarm status and identify problems; auto-paging speeds problem resolution and reduces downtime

Compact design

- Footprint, height and weight are less than any other conventional cuttings dryer

Easy to maintain

- Design allows routine field maintenance to be performed safely, quickly and efficiently

Automated Clean-In-Place (CIP) system

- Capable of periodically cleaning the screen during operation to reduce inefficiency due to blinding and plugging

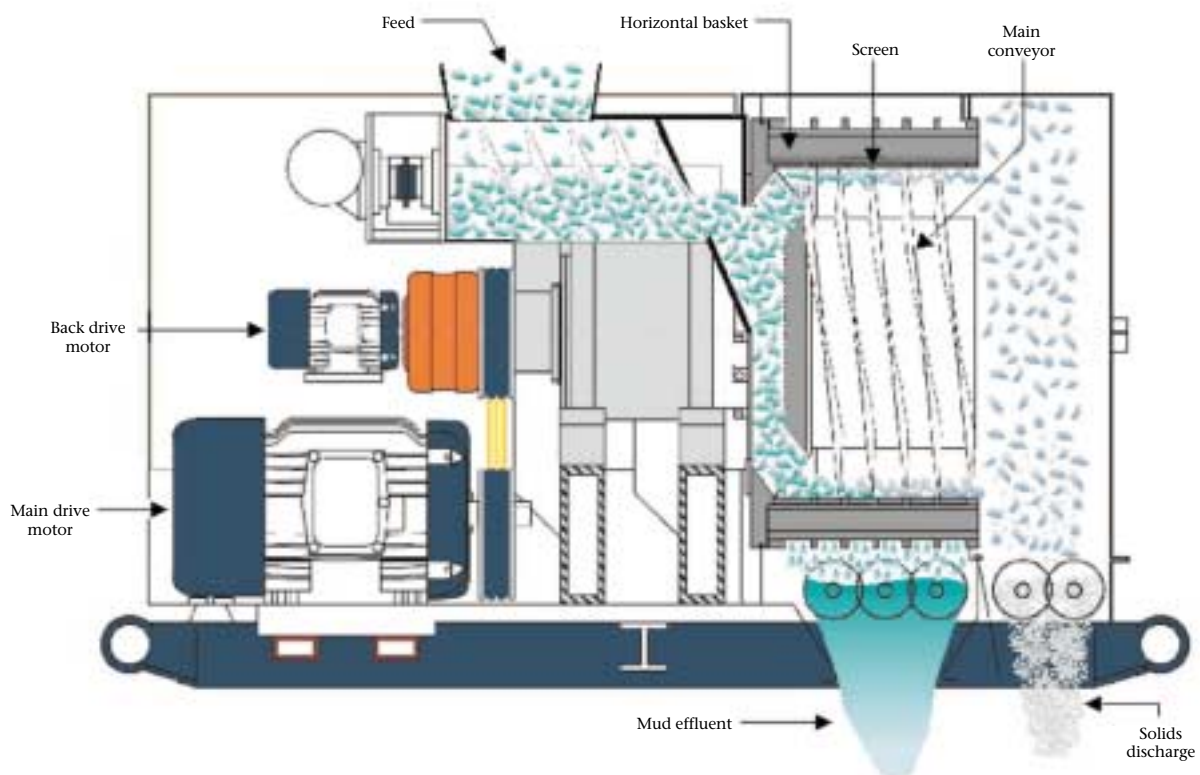
Eliminates feed cuttings dilution

- Unique self-cleaning feed zone scroll does not require dilution to convey cuttings through the DUSTER dryer; solids are fed directly from the primary shakers

Minimal electrical requirements

- Completely electric motor driven; requires only 77 hp (100-amp breaker)

CROSS-SECTION OF THE DUSTER CUTTINGS DRYER



DUSTER Cuttings Dryer Specifications

Dimensions

- Length 87 in. (2,210 mm)
- Width 47 in. (1,194 mm)
- Height 51 in. (1,295 mm)
- Weight 9,700 lb (4,401 kg)
Including control panel

Operating Range

- Variable-speed bowl of 100 to 600 g's

Solids Conveyance

- Fully controlled through variable-speed scroll

Maximum Operating Capacity

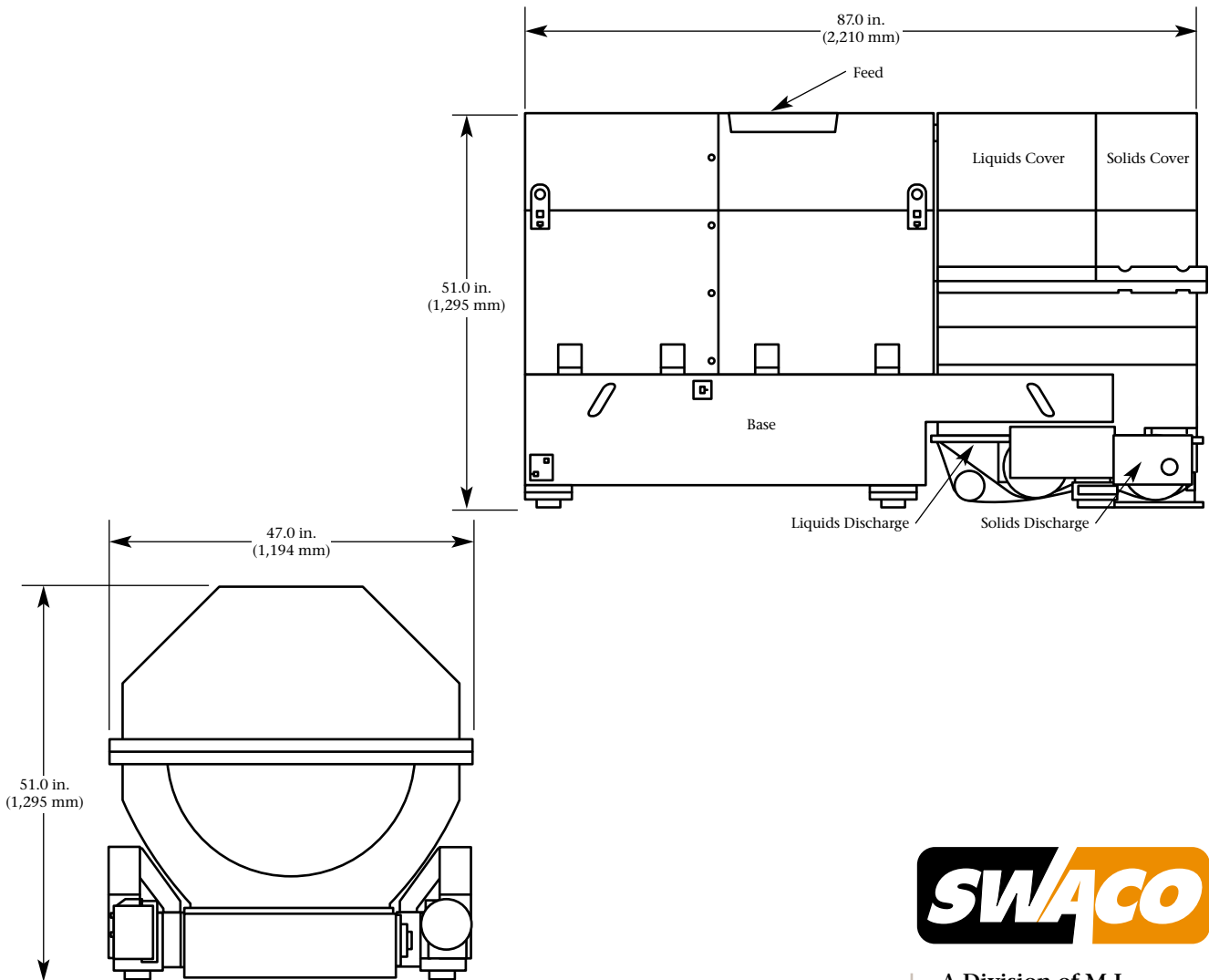
- Ninety (90) tons/hr

Motor Specifications

- 40-hp main drive, 20-hp back drive, 17 hp for internal conveyors and pumps
- Maximum starting power: 90 Kva
- Electrical requirement: 100 amp
- Control panel: Fully programmable PLC with single-button startup and shutdown
- DUSTER electric motors are UL Class I Division I and CSA approved for 380/460 volts and 50/60 Hz. The control panel purge motor (½ hp) is UL Class I Division I and CSA approved for 460 volts/60 Hz only.

Environmental Compliance

- Solids dryness typically between 3 to 5% oil-on-cuttings by weight



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