



ESC

ELECTRO SEPARATION TECHNOLOGY

ULTRAFINE LOW GRAVITY SOLIDS (LGS)
REMOVAL SYSTEM



GROUND EFFECTS
CLEAN MUD SOLUTIONS INC.



**“THE
MOST
EFFECTIVE
ULTRA FINE
LGS REMOVAL EQUIPMENT
ON THE
PLANET.”**

Sean Frisky, Founder and CEO
Ground Effects Clean Mud Solutions Inc.



COMPANY PROFILE

GROUND EFFECTS CLEAN MUD SOLUTIONS INC. (GECMS)

leads the way by offering the most effective Ultrafine Low Gravity Solids (LGS) removal process available in the world. Exceeding the ever-changing needs of the oil and gas industry since 1998, GECMS is shaping the direction of solids control through leading edge technology.

GECMS is a dedicated technology manufacturer that provides specialized products for drilling waste management and solids control companies.





OUR APPROACH

Our commitment is to be a global provider of innovative, high performance Drilling Waste Management and Solids Control Products backed up by world-class training and technical support that exceeds our clients' needs.

We are currently looking for strategic global partners to be service providers for the ESC technology. Our approach is to bring together senior leadership teams with the experience and depth for both strategic vision and strong day-to-day operations.

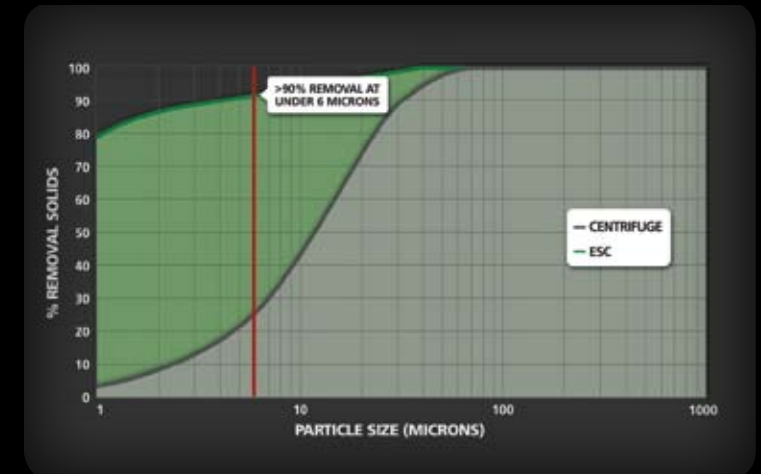




ULTRAFINES REMOVAL OPTIONS

THE ESC CAN CONSISTENTLY REMOVE LGS SMALLER THAN 6 MICRONS

from Synthetic and Oil-Based Mud. ESC has a dual mode option; it can be operated in batch mode for pure oil recovery or flow through mode for solids control on an active mud system. Plus, with the ESC system you can program the desired density output on the human machine interface to your exact customer density specifications. The result is exactly what you require, which results in huge savings.

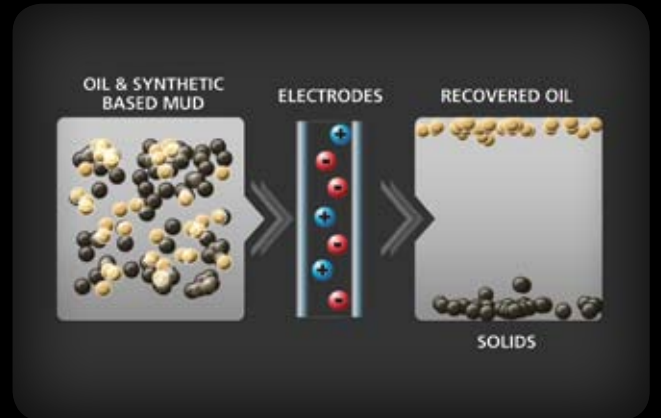




THE SCIENCE BEHIND ESC

THE ESC WORKS ON THE PRINCIPLE OF ELECTROKINETICS.

Via proprietary coated electrodes, the ESC applies a high voltage electrical field to the Oil-Based Mud. The electrical field destabilizes the molecular bonds between the solids and the oil. Through the destabilization process, the solids settle out as a result of gravity, and the oil rises where it is skimmed. The process does not use heat or chemicals and has very low energy use (1-2 kW/m³ of fluid processed).





OFFSHORE AND ONSHORE

THE GROUND EFFECTS ESC is installed on a compact, rugged portable skid for easy set up. The drive system uses an explosion-proof hydraulic drive to power the pumps/vibrators and electrode wipers. The ESC uses no consumables, only electricity to operate.

For offshore applications, the ESC is:

- Designed with a small footprint for minimal space usage
- Highly mobile and rugged
- Easy to install and operate
- Certified DNV 2.7.1 – with crash frame option available
- ATEX, CSA, UL, IECEx, Class 1, Zone 1 certified



EASY OPERATION

THE CONTROL PANEL IS DESIGNED FOR EASE OF OPERATION.

Simply enter in the Electrical Stability of the fluid and the system automatically adjusts the voltage and amperage to optimize the process. The control package allows the operator to fine tune the machine for desired density output. A mobile app is now available for all smartphones, including Android.

The ESC is nearly impossible to “pack off.” The electrode wipers (utilizing 120,000 foot-pounds of torque), combined with the multidirectional screw auger, ensure the sludge keeps moving smoothly and efficiently. As additional safety precautions, all units are wired with a low level/high temperature oil shutdown switch and low cell pressure, HHL and high pump pressure automatic shutdowns as well.



DIAGNOSTICS

ADVANCED OPTIMIZATION AND TROUBLESHOOTING

The ESC has an integrated 24-hour diagnostics program that provides the operator with critical status information that can be accessed online or from our proprietary smartphone app. Real-time trends of main data can be seen at any time, from anywhere around the world. Continuous monitoring ensures a consistent and reliable runtime and advanced troubleshooting access and control.



GE ESC ELECTRO SEPARATION CELL SYSTEM CHARACTERISTICS

- Loading / Unloading Time: 10 minutes
- Unloading Auger: Multidirectional Screw
- Electrodes: Proprietary Coated Electrodes
- Electrode Wiper: 120,000 ft/lbs of torque
- Electrode Vibrators: 9,000 Force lbs; 4000 VPM
- Safety: Lid open shut off; low cell pressure shut off safety switch; high tank level shut off; low oil level shut off; high oil temperature shut off; DC rectifier; phase loss; thermal; over voltage trip; over current trip; cleared fuse; excessive program voltage; run dry protection; and high pressure shutdown

TECHNICAL SPECS

ESC “M” SERIES ELECTRO SEPARATION SPECIFICATIONS

Area Classification: Class 1, Zone 2 (Option: Class 1, Zone 1)

MODEL	Height	Width	Length	Capacity - Oil Recovery Mode	Capacity - Solids Control Mode	Dry Solids Removal Rates
3M	8’4” (2.540 m)	8’ (2.438 m)	20’ (6.096 m)	160 bbl/day	0-50 gpm	10-20 M tonne/day
6M	8’4” (2.540 m)	8’ (2.438 m)	20’ (6.096 m)	320 bbl/day	0-100 gpm	20-40 M tonne/day
12M	8’4” (2.540 m)	8’ (2.438 m)	38’ (11.582 m)	640 bbl/day	0-200 gpm	40-80 M tonne/day
18M	8’4” (2.540 m)	8’ (2.438 m)	53’ (16.154 m)	960 bbl/day	0-300 gpm	60-120 M tonne/day

ESC ADVANTAGES

- Removes colloidal ultrafine solids less than 6 microns in size
- Huge savings for customers
- Compact footprint
- Easy one-man operation
- Mobile
- Low energy usage; 1-2 kW/m³ of fluid processed
- Consistent and reliable
- Easy to use: Integrated pumps built into skid
- Low operating costs: Non-sacrificial electrodes with proprietary coating
- Low Maintenance features:
 - High torque electrode wiper assembly keeps the ESC M series clean
 - Non-plugging unloading due to multidirectional screw auger and PC pump
- Coriolis meter provides exact customer mud densities outputs.

OPTIONS

- Integrated air compressor
- Electrical configurations: 380/460/575 VAC – 50/60 Hz
- Class 1, Zone 1
- IECE_x, UL, CSA, CE/ATEX certification
- Full electric drive
- Controls/compressor/N2/HYD Pack – containerized in NEMA 3R or purged DNV.2.7.1 rated container
- Remote telemetry
- DNV.2.7.1 rated skid or crash frame

ADD ESC

Adding ESC for solids control to your existing approach gives you flexibility and increased control. You can remove colloidal ultrafine solids less than 6 microns in size with the system's continual flow-through approach. Plus, the system is easily operated by one person and easy to maintain—with low operating costs. Essentially, ESC is a win-win for any industry and any solids control situation.

For more information about the ESC, or for solids control
partnership opportunities, please contact:

Ground Effects Clean Mud Solutions Inc.

Box 1605

2251 Industrial Drive

Regina, Saskatchewan, Canada

S4P 3C4

Tel: +1 306 352 1400

Email: gee@groundeffects.org

www.gecleanmud.com



GROUND EFFECTS
CLEAN MUD SOLUTIONS INC.