

SCM-CEC™ CHEMICALLY ENHANCED CENTRIFUGATION



Traditional methods of removing ultrafine solids from drilling fluids utilizing chemical techniques either rely upon a batch approach or by using separate pieces of equipment to dose, dilute, and treat. The batch approach is inefficient, as overdosing with expensive chemicals is possible. Also, controlling the feed conditions for centrifuge processing is difficult. Using separate pieces of equipment to dilute, dose, and treat is an improved method but has the disadvantage of increasing installation time and cost. Our Chemically Enhanced Centrifugation (CEC™) System eliminates both of these problems by offering real-time fluid treatment as an integrated package. Our Inc CEC™ System allows the operator to use dry-form Coagulants and Flocculants, those significantly reduce the purchase and transportation costs when compared to liquid form chemicals. The Scomi Equipment Inc CEC™ System is the culmination of over twenty-one-years experience and offers an efficient method of colloidal-particles treatment.

CONCEPT

Our CEC™ System comprises the following basic processes: pH Control, Coagulation, Flocculation, and Separation. Some or all of these processes can be employed to remove colloidal particles. All of these processes are self-contained in an ISO standard container called an FCU (Flocculation and Coagulation Unit). A decanting centrifuge normally located on top of the FCU carries out the separation process.

Depending upon the chemical make-up, the fluid requiring treatment is passed through a combination of pH Control, Coagulation, and Flocculation before being processed by the centrifuge to remove the solids

Pre-testing is normally necessary to ensure maximum chemical efficiency. This can be done in the laboratory facility which is incorporated within the container.

Various chemicals can be used to achieve the desired result, e.g. Hydrochloric Acid to reduce pH, Ferric Chloride for coagulation and Cationic / Anionic flocculation.

APPLICATION

Our CEC™ System is used to remove colloidal particles from non-emulsified fluids such as water-based drilling fluids that are too small to be removed by a decanting centrifuge.

By employing chemical techniques, the colloidal particles assume the size and mass that facilitates separation by a decanting centrifuge.

TREATMENT AND DISPOSAL

FEATURES & BENEFITS

The CEC™ System can be supplied with or without a Midgard can supply the SCM-4800 or the SCM-5500 Decanter Centrifuge.

The FCU System is totally self-contained and comes completed with the following sections:

- Container – the container is fully insulated and comes equipped with a variable electric fan, heater and thermostat, and an air- conditioning unit
- Coagulants Section – consists of:
 - Mixing and Storage Tank for Coagulants – c/w agitator, two variable speed eccentric screw pumps and level indicators
 - Dispersal Device – for efficient mixing of Coagulants powder
- Flocculants Section – capable of processing Flocculants in granular, powdered or micro-bead form and consists of:
 - Flocculants Make-Up Unit – stainless steel powder dosing unit c/w level indicators
 - Batch Tank – c/w level indicators, agitator and gearbox, and transfer pump
 - Dosing Tank – c/w level indicators
 - Dilution Unit – for reducing the polymer concentration
 - Metering Pumps – two variable speed eccentric screw pumps
- Injection / Mixing Section
 - Coagulants / Flocculants in-line mixing and injection system
- Centrate / Water Section – comprises two centrifugal pumps, two polythene tanks and two filter baskets
- Work / Lab Area – comes completed with workbench, vice and toolkit, fire extinguisher, cupboard, lab chemicals for flocculent tests and a shower
- Water – clarified water can be recycled for re-use, e.g. rig cleaning, mud or cement make up. Water consumption is thus reduced
- Pit volume – reduced or in some instances eliminated as water is reclaimed and re-used. Solids hydration is also reduced as liquids and solids are segregated
- Environmental impact – greatly reduced due to a combination of less water being required to drill the well and less discharge
- Chemical consumption – minimized due to efficient real time mixing and dosing
- Mixing – efficient mixing of powdered, granular or micro-bead coagulants / flocculants reduces the cost of using expensive pre-mixed solutions

SPECIFICATIONS

General		
Centrifuge* (normally mounted above the FCU)	Model	SCM-CEC™
	Type	Full Hydraulic Drive with instantly and infinitely variable bowl and scroll drive
	Bowl Speed	0 – 4,000 rpm
	Scroll Speed	1 – 90 rpm
Flocculation and Coagulation (FCU) Unit	Model	OIL20-AP208.IE
	Container	2 end doors, 1 entrance door – c/w floor drain, non-slip walkway, electric fan, air-conditioning unit, lighting and electrical sockets, stainless steel and PVC pipework, and a work / lab area.
	Pump	2 x Flocculant (1 standby) 2 x Coagulant (1 standby) 2 x Centrate (1 for dilution and the other for dirty water)
	Tanks	Flocculent – 1 x make up tank consisting of 2 chambers (each with 1,000 L capacity) Coagulant – 1 x make up tank (1000 L) Centrate – 1 x tank consisting of 2 chambers (each with 250 L capacity) c/w filter basket
	Mixing	1 x Dilution Unit 2 x Dispersion Units 1 x Injection Spool 1 x Inline Static Mixer
	Safety	Fire extinguisher, first aid kit, eye protection equipment
Dimensions and Weights		
	Centrifuge *	FCU
Length	102" (2,591 mm)	240" (6,058 mm)
Width	70" (1,778 mm)	96" (2,438 mm)
Height	62" (1,575 mm)	102" (2,591 mm)
Height (inside)	N/A	90" (2,300 mm)
Weight	6,200 lbs (2,812 kg)	18,519 lbs (8,400 kg)
Utility Requirements		
Electrical		
Maximum power required	50 hp (37 kW)	30 hp (22 kW)
Water	95 L/m (25 US gpm) approx – for dilution	114 L/m (30 US gpm) approx – for dilutions
Voltage	380 / 460 V	
Phase	3 Phase	
Frequency	50 / 60 Hz	
Safety	Explosion proof electrics	
Options		
<ul style="list-style-type: none"> • 30 ft unit (c/w laboratory) • Acid tank and dosing system (pH control)-800 and 1500 L respectively • Automatic mixing and dosing system for coagulants and flocculants 		

* Values given are for a SCM-4800 Decanter Centrifuge.

Note: Stainless steel or PVC pipe is used throughout the system.