SCM-DCI
DRILL CUTTINGS INJECTION SYSTEM

Drilled Cuttings Injection is a field proven solution for the disposal of drilling waste both on and offshore. The DCI System offers some key benefits over existing designs such as a Venturi Collection System that eliminates the need for Screw Conveyors or Vacuum Systems.

CONCEPT

Our DCI System can be designed to receive an anticipated volume of waste from drilling operations and associated production facilities.

Our typical DCI System consists of the following component:

- **Venturi System**
- **Slurrification System**
- **Batch Holding Tank**
- **Injection Pump Package**

Wastes are transported to the grinding Tank or Slurrification System – which have been pre-filled with water – via the Venturi System. The resultant slurry is passed over a shaker so that it can be classified to client specifications. Any oversized particles pass through a grinding mill and are re-circulated.

The resultant slurry is then transferred to the second mixing tank via the shaker underflow. Here the viscosity and specific gravity is tested to ensure the slurry meets the injection disposal criteria. If required, chemical additions can be made via an optional additive hopper. The resultant slurry can then be injected via the injection pump. During injection operations the first slurrification tank is refilled with water and used after injection operations have been completed to displace the slurry from the injection string thus minimizing the occurrence of string blockage.

A control system is incorporated that allows the system to start automatically. Remote emergency shutdown switches are also supplied. The automatic feature ensures the water is added to the system before the pumps, grinding mill and shaker are energized. A remote alarm is also included that pre-warns the operators of impending system automatic start-up.

High and low level sensors are fitted to both tanks in order to eliminate potential spillage and pump cavitation / loss of suction.

VENTURI SYSTEM

The Venturi System consists of a specially designed hopper and centrifugal pump. The system allows cuttings to be efficiently contained and transferred around a worksite. Cuttings fall into a Venturi at the base of the hopper where high-pressure fluid from the centrifugal pump carries them into the Slurrification System. The system is especially efficient during Injection operations where grinding and water dilution is not an issue.

The system is smaller and lighter than screw conveyor or vacuum systems and requires less power. In addition, the Slurrification process commences directly after the Venturi System, which in turn reduces the time required to produce the slurry.

FEATURES & BENEFITS

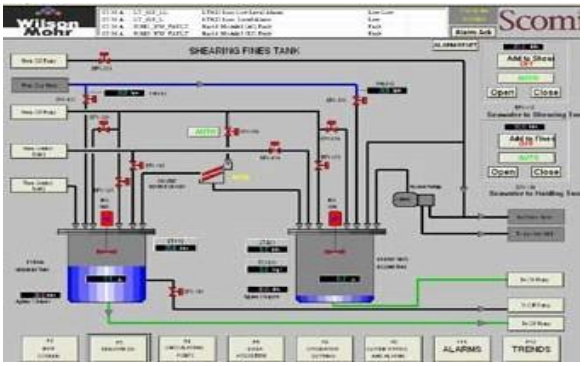
- ARCO license – Midgard is an authorized licensee of the slurrification / injection process
- Modular – the DCI system utilizes a modular concept to maximize configuration solutions and minimize installation costs
- Redundancy – Built in system redundancy ensure minimum downtime e.g. pumps and tanks
- Venturi System – The Venturi System has distinct advantages over traditional screw conveyor or vacuum systems. It requires less maintenance, is less capital intensive and offers a more efficient method of transporting the waste, especially over long distances
- In-Situ solution – Cuttings injection is the only current in-situ solution for drilled cuttings disposal of an offshore installation
- Cost effective – DCI can be a cost-effective alternative to ship-to-shore
- Environmental impact – Significantly reduced
- Reliable – Proven technology and system redundancy ensure a reliable system

TREATMENT AND DISPOSAL

The DCI System offers an effective solution of waste injection into:

- **Existing production wells**
- **Annular injection whilst drilling**
- **Dedicated wells**

In most instances the DCI process can be a cost-effective in-situ solution. However, it is always best to ensure that alternative solutions are considered. Midgard can offer experienced personnel to determine which solution is best for your particular disposal criteria.



SPECIFICATIONS

Slurrification System	OIL-SS2-1A
Volume	40 lbs each (or as required)
Capacity	Over 25 tonnes / hr
Agitators	2
Grinding Pumps	4
Type	5 x 6 centrifugal with modified impeller and low maintenance features
Mixing Hoppers	1
Weight (Net)	8,000 lbs (8,165 kg)
Weight (Gross)	65,000 lbs (29,485 kg)
Dimensions	
Length	248" (6,300 mm)
Width	98" (2,500 mm)
Height (net)	87" (2,200 mm)
Ventury System	**OIL-V56**
Quantity	1
Weight (Net)	772 lbs (350 kg)
Dimension	
Length	75" (1,900 mm)
Width	19" (480 mm)
Height (Net)	55" (1,400 mm)
Batch Holding Tank	
Quantity	1
Volume	50 bbls (or as required)
Compartment	2

Slurrification	OIL-SS2-1A
Type	Triplex
Drive	AC / CD motor power
Requirement	300 kW minimum
Pressure Rating	5 bbls / min at 2,00 psi 2.5 bbls/ min at 50,000 psi
Pump Suction Supercharging	Yes
Type	1 x Centrifugal Pump
Control Panel	Yes
Pressure Recorder	Yes
Pulsation Dampener	Yes
Pressure Relief Value	Yes
Weight	18,740 lbs (8,500 kg)
Certification	
Electrical	All electrical apparatus can be supplied to meet UL/CENELEC requirements
Certification	"Fit for purpose" authority ABS/DNV – as required
Quality Assurance/Control	
Weld Inspection	10% MPI on non-critical 100% on critical
Function Testing	Dry function testing included
Lift Testing	100% on all lift points
Utility Requirements	
Power	740 hp (550 kW) Sea
Water (Dilution)	60 m^3/hr at 5 bar
Plant Air	Negligible at 6.9 bar
Options	
• Screw Conveyor Collection System • Vacuum Collection System • Grinding Mill • Classification Shaker	